



Doosan Fuel Cell America, Inc.
101 East River Dr
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July 9, 2020

PETITION NO. 1406 - Doosan Fuel Cell America, Inc. petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a grid-side 9.66-megawatt fuel cell facility and associated equipment to be located at 600 Iranistan Avenue, Bridgeport, Connecticut, and associated electrical interconnection to the United Illuminating Company's existing Congress Street Substation.

RESPONSE TO COUNCIL INTERROGATORIES

Dear Ms. Bachman,

We are submitting an electronic copy of response to the Council's interrogatories dated June 18, 2020.

Respectfully Submitted,
Doosan Fuel Cell America, Inc.

Walter Bonola
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Doosan Fuel Cell America, Inc.



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1. Are there provisions for any extension of time in the power purchase agreement? Is there an option to renew at the end of the 20-year term? Does the PPA include the waste heat utilization into the thermal loop?
Response R1: There are no provisions for a time extension and there is no renewal option included in the PPA. The PPA does include the utilization of waste heat through the thermal loop. A copy of the PPA is included in PURA Docket No. 18-08-14.
2. How will the project be interconnected to UI's Congress Street Substation? What infrastructure is needed outside of the parcel footprint to facilitate the interconnections, including, but not limited to, the crossing of the Metro-North Railroad? How long is the interconnection route? What are the line voltages of the electrical interconnections?
Response R2: The project will be directly connected to existing infrastructure at the Congress St. Substation. After detailed study by United Illuminating it was determined that the existing duct bank would not accommodate the new cabling for the project. A new duct bank/ overhead route was determined by UI and is being constructed under separate contract. As currently proposed the length of route is 7800 feet. The line voltage will be a 13.8 kV.
3. Is the project interconnection required to be reviewed by ISO-NE? If so, has the review process commenced?
Response R3: The project has completed a Transmission System Impact Study required by ISO-NE. On June 16th, 2020 a Proposed Plan Application (PPA) presentation was made on behalf of NuPower Bridgeport LLC to NEPOOL and approved without comment or question by NEPOOL participants.
4. Is this project configured to operate as a micro-grid?
Response R4: The project is not configured to operate as a micro-grid.
5. Will the fuel cells be arranged so that several fuel cells comprise a power block that are interconnected with its own transformer, therefore operating independently from other fuel cell power blocks or will all of the units be connected together as one large power block with one large transformer?
Response R5: The facility is designed with blocks of fuel cells connected to independent transformers. The 21 Fuel Cells are connected in 4 groups of 5 and one group of one to 4- 4000 amp switchboards and one 1600 amp switchboard, 5 switchboards total. Each switchboard is connected to its own step-up transformer that connects the 480 Volt switchboard to a 13.8kV medium voltage distribution switchboard which is then connected to the United Illuminating distribution system.
6. Can each individual fuel cell unit be shut off for maintenance/repair purposes so that other fuel cell units can continue to supply power to UI's electric system?



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Response R6: Each individual fuel cell in the facility can be independently shutdown and isolated from the facility for maintenance/repair purposes. Other fuel cell units will continue to supply power to UI's electrical system.

7. Referring to Petition p. 15, when did Doosan meet with City of New Haven officials? What officials were present? What comments did the City have and how were any concerns addressed?

Response R7: On March 13, 2020 Scott Guilmartin of Nupower Bridgeport LLC and Walter Bonola of Doosan Fuel Cell America, Inc. met with Officials from the City of Bridgeport. Officials in attendance were Bruce A. Nelson, Building Official, Max Perez, Director of Business Development, Lynn Haig Director of Planning and Dan Roach, Chief of Staff to the Mayor. The conceptual building plan and plan elevations, the proposed retaining wall, fencing and general fuel cell operation expectations were discussed. It was mutually agreed that the proposed segmented block retaining wall would be utilized to adjust the overall elevation of the site. Chain link fencing was discussed and City officials took exception to the chain link fencing requesting a more decorative fencing type. The proposed fencing type was changed to a decorative steel fencing with anti-climb feature. Once final design drawings are developed a subsequent meeting will be held to review drawings and layout prior to application for building permit is made.

8. Did Doosan conduct outreach to the State Department of Transportation (DOT) regarding the proposed fuel cell building adjacent to Interstate 95? If so, when and with whom?

Response R8: Pursuant to the requirements of the Petition filing the Commissioner of the Department of Transportation was sent notification of the filing. Separate notice was sent by the Council. The response to that notice was sent by the DOT on June 10, 2020. The project has also been discussed with Mark Rolf, Deputy Commissioner and Chief Engineer through Mark Zessin of Anchor Engineering.

9. What is the distance of the proposed fuel cell building to the Interstate 95 abutments? What is the minimum required setback distance from the highway according to DOT and/or City regulations?

Response R9: The proposed structure will not be in a right of way of the highway and is located beyond the non-access highway line as depicted in the site survey. The proposed structure will be a minimum of 10'6" from the I-95 bridge pier caps and 13' from the bridge parapet. According to the site zoning classification, MU-LI, and the City of Bridgeport zoning regulations, there is no minimum setback from the rear or side lot line. The City of Bridgeport Zoning regulations do not include setbacks from highways.

10. Has UI reviewed the site plans? What is the minimum setback required from the fuel cell building to the adjacent 345-kV lines installed along Railroad Avenue? Would site fencing and other site infrastructure meet transmission line clearance requirements?

Response R10: UI has reviewed the site plans as part of the interconnection process. OSHA requires a minimum of 20' working distance from exposed energized lines 200 kV to 500 kV. The site fencing and other site infrastructure will meet transmission line clearance requirements.



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11. What is the distance of the proposed fuel cell building to adjacent streets?
Response R11: The proposed fuel cell building will be at least 40' from the sidewalk along Iranistan Ave. and at least 30' from the curb line of Railroad Ave.
12. Revise Attachment 1, photo 2 to include a box or other designation to indicate the location of the proposed fuel cell building and other infrastructure.
Response R12: See Attachment #20, updated satellite image with proposed fuel cell.
13. Referring to the site plan, define PCC and provide more detail regarding areas shown as "Medium Voltage", "SCRWA Vault", "Water and Backflow", and "Natural Gas".
Response R13: PCC is the point of common coupling with the electric utility. It is the location where electric service transitions from customer owned to utility owned.
Medium Voltage is the 13.8 kV electrical switchgear.
"SCRWA Vault" will be the water meter vault. The vault will be constructed in accordance with Aquarion Water Company specifications.
"R.O. Water & Backflow" will be a reverse osmosis system and backflow preventer. This equipment will be housed inside an electrically heated enclosure to prevent freezing.
"Natural Gas" will be the location of the SCG natural gas regulators and meter. The regulators and meters will be installed on a concrete pad constructed per SCG specifications.
14. Have any detailed site drawings been prepared that show the locations and details of the proposed building, other equipment/infrastructure, and overhead/underground connections? If so, please submit. If not, when will these be available for Council review?
Response R14: Detailed site drawings are under development and are not presently available. We anticipate the complete drawing package, suitable for submission to the City of Bridgeport Building Department, will be available by November 1, 2020.
15. What is the height of the cooling units that are mounted on the roof? Is there any concern regarding debris/objects falling from the elevated highway onto the roof and damaging the cooling units?
Response R15: The dry air coolers located on the top of the structure are 70.7" tall. The base of the coolers will be located at elevation 60'. The top of the parapet wall (base of steel structure) for the elevated highway ranges from 67.53' to 58.83' from east to west along the property. Any required protection will be put in place in conjunction with acoustical engineering controls once the final acoustical testing is completed and the final analysis is performed.
16. Would the fuel cell units' exhaust need to be combined and vented outside? If yes, where would such vents be installed? If applicable, how far above the roof of the building would such vents extend? Would such vents affect the Federal Aviation Administration notification exemption noted on page 9 of the Petition?
Response R16: The fuel cell vents will not be combined. They will be routed individually to the top of the structure and extended 9' above the base of the top floor of the structure at



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approximately 57' above the ground level. This does not impact the FAA notification exemption listed in the petition, which is based on 60' above the base ground level.

17. Does perimeter site fencing have anti-climb features? What other measures will be employed to deter unauthorized site access to the site/building/infrastructure?

Response R17: The proposed perimeter fencing is a decorative steel fence with a curved section at the top providing the anti-climb feature. The developer plans to deploy a CCTV/proximity sensor system tied to an alarm callout.

18. Is fencing or another type of barrier proposed around the perimeter of each floor? If so, provide detail.

Response R18: The perimeters of each floor will include OSHA-approved guardrails and kick-plates for fall protection at a minimum.

19. Have any subsurface investigations of the site parcel been conducted? Would site remediation be required prior to the commencement of facility construction? If so, how would that affect the project construction timeline?

Response R19: Geotechnical and Environmental sampling and testing has been performed. Environmental testing showed the soil is below direct exposure criteria and pollutant mobility criteria. The soil is appropriate for re-use on the site but not suitable for export from the site, which is not an issue as all soil will be reused on the site. Geotechnical testing showed the soil conditions on site are in-line with the geologic conditions of the surrounding area and prior fill brought onto the site. The structure will require some controlled structural fill and piers to stabilize the soil and support the weight of the structure. The soil characteristics will not affect the project construction timeline. A copy of the environmental testing consultant cover letter is included as Attachment #21.

20. What is the size of the fuel cell building in square feet?

Response R20: The fuel cell structure will have a ground footprint of approximately 7500 sq ft.

21. Describe exterior/interior lighting to be installed at the Project site. Would such lighting be oriented away from traffic on Interstate 95?

Response R21: All interior and exterior lighting will be LED. Interior lighting will consist of strip lighting sufficient to support intended tasks and meet OSHA required illumination. All exterior lighting will utilize flush lens design to minimize fugitive light. All lighting on the roof top level will utilize side shielding to minimize distraction on the highway.

22. Petition p. 2 describes a district thermal heating loop. What is the status of the thermal loop?

Response R22: The thermal heat loop is presently under design and the loop and offsite facilities will be constructed under separate contract. Several customers have signed letters of intent to purchase heat. Per these agreements, all heat generated will be utilized.

23. Petition Attachment 5, p. 2 – *Scope* states the Emergency Response Guide shall be integrated into the site Emergency Response Plan. Why are there two plans for one facility and how are they different?



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- Response R23: The fuel cell emergency response guide provides emergency response information specific to the fuel cell installation and supporting infrastructure. The fuel cell emergency response guide will be incorporated into the overall site Emergency Response Plan, which covers the entire property. At this time the site Emergency Response Plan will only include the Fuel Cell Emergency Response Guide. If additional equipment or infrastructure not related to the fuel cell system is added to the site at later point the site Emergency Response Plan will be expanded.
24. The Emergency Response Guide only has information for an individual fuel cell. No safety procedures specific to the fuel cell building, interconnection, nitrogen storage or heat loop are included. When will these details be available?
Response R24: The guide and response plan will include all project details and feedback from the city Fire Marshall prior to submission of a building permit application to the City of Bridgeport. The guide will be shared with the local first responders.
25. Describe any building wide fire suppression system.
Response R25: The site will use city fire hydrants for fire protection. Under the definitions in NFPA 853 the site is an outdoor installation with no flammable or combustible liquid fuel storage. NFPA 853 section 8.1.1.3 indicates that city hydrant protection shall be considered to meet required site protection fire requirements.
Per NFPA 853 Section 3.3.15.2 defines an outdoor installation as “A power system installation that is not located inside a building or that has only partial weather protection (maximum coverage of a roof and up to 50 percent enclosing walls.”
26. What noise reduction measures might be employed at this site? If facility noise mitigation measures cannot meet applicable regulations, is it possible some fuel cell units/associated cooling modules would be removed from the site?
Response R26: The proposed project will prove compliance with all applicable noise regulations through a post-installation sound test showing noise levels meeting applicable regulations. The primary source of noise for the proposed project is the dry air coolers located on the top floor of the structure. Possible noise reduction methods might be employed at this site if required to meet applicable noise regulations would be focused on those dry air coolers:
- 1) Installation of sound-absorbing material at the point of noise source to prevent the spread of fugitive noise. The probable location to install this material is to wrap around the sides of the air-cooling modules, the primary source of noise. This material would only be installed to the extent needed to meet applicable noise regulations.
 - 2) Installation of sound-absorbing material along the side walls of the structure. This material would only be installed to the extent needed to meet applicable noise regulations and would not exceed the NFPA 853 limit of 50% enclosure walls to keep the site classification as an outdoor installation.
 - 3) Use of alternative cooling modules. If sound absorbing mitigation efforts are insufficient to meet applicable noise regulations, alternative air-cooling modules will be utilized. Doosan has experience using extra-quiet air-cooling modules in dense urban environments where other methods of sound attenuation are insufficient.
27. Would Doosan obtain the required permits for off-site electrical, gas and water connections?



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Response R27: Doosan is not responsible for construction or permitting of off-site utility work. Doosan will coordinate onsite connections with the appropriate utilities who will be responsible for the necessary permitting.

28. The site renderings do not include other site infrastructure or fuel cell pumps, heat exchangers, ducts, and piping. At what point will site renderings be revised to include all infrastructure for Council review?

Response R28: Site renderings depicting the details of site equipment (pumps, heat exchangers, ducts, etc.) can be provided to the siting council as detailed equipment specifications are made and building permit drawings are completed. It is currently expected these details will be available by October 15, 2020.

29. Would the trees along the southern boundary be removed for the project?

Response R29: The trees shown in site photos on the southern elevation are on the adjacent property. The trees will be trimmed back to the property line but are not intended to be removed as part of this project.

30. Please identify the media to be used for pipe cleaning procedures at the proposed facility in accordance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

Response R30: In accordance with Public Act 11-101 the fuel line pipe cleaning procedure will use high pressure compressed air or inert nitrogen gas. At this time Doosan intends to use inert nitrogen for the pipe cleaning but may decide to use compressed air.

31. Estimate the amount of water the facility would consume per year with and without the thermal loop? What entity will supply water to the facility? Has Doosan discussed the project with the water supplier?

Response R31: The facility will use approximately 90,000 gallons of water per year, which is estimated based on a Reverse Osmosis system with a 70% recovery rate and 3,000 gallons per year per fuel cell. The thermal loop is a closed loop system and will not significantly impact the water consumption for the project. Water will be supplied by Aquarion Water Company. Water mains are located along Railroad Ave and Iranistan Ave. as depicted in the site survey. Doosan has discussed the project with Aquarion and will make formal application for service once final design drawings are complete.

32. Petition Section 7 states fill would be added to the site as needed to bring the base elevation for all equipment two feet above the flood elevation. What equipment would be elevated? Is it feasible to raise the base elevation to three feet above flood elevation? If so, what would be the incremental cost?

Response R32: All fuel cell power plants, electrical switchgear, transformers, natural gas meters, natural gas regulators, and heat recovery pumps will be raised 2' above the flood elevation. Doosan estimates that to raise an additional foot above the base flood elevation would be an incremental cost increase of \$117,000.



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33. Referring to Petition Attachment 6, Site plan, provide more information as to the “Future Expansion” - what is contemplated and under what circumstances would phase 2 proceed?
Response R33: No future expansion is planned at this time. the area is being held in reserve should further opportunities present at a future date.

Office of Rails:

The Office of Rail requests more detail regarding how the proposed fuel cell will connect to the electrical transmission system. They need to know if the proposed fuel cell will be connecting to the transmission system on monopoles within the Connecticut Department of Transportation Right of Way.

Response to Office of Rails: The proposed facility on Iranistan Ave. will connect directly to the UI Substation at Congress St. by way of a new underground duct bank. The proposed route utilizes surface streets owned by the City of Bridgeport. Once the route is finalized and accepted by UI and PURA the details will be forwarded to CTDOT and the appropriate encroachment permit applications submitted.

LIST OF ATTACHMENTS:

Attachment 20: Revised satellite photo

Attachment 21: Environmental Sampling Letter