



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

Phone:

June 10, 2020

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

Dear Ms. Bachman:

Subject: Petition 1406
 Construction of 9.66 MW
 Fuel Cell Grid – Side Distributed Energy Resource
 City of Bridgeport

The Department of Transportation has reviewed the above-mentioned Petition and offers the following comment.

The proposed 966 Fuel Cell Energy Resource Facility abuts CT Railroad right of way (Metro-North) to the North and CT DOT right of way to the South. The proposed Facility will feed power through two separate dedicated power cable runs to the United Illuminating, Congress St. substation. It appears that from the proposed project location to Congress St. substation will have to cross CT Railroad Right of way, either overhead or underground. Therefore, United Illuminating must attain an encroachment permit pursuant to the Highway Encroachment Permit Regulations in conjunction with the Connecticut General Statutes prior to performing any work within the state highway right of way.

The District 3 Permit Office will need to review three complete sets of construction plans which show all work within the state highway right of way, all site work, any required easements and standard details for highway construction prior to issuing the encroachment permit.

The District 3 Permit Office will determine what is necessary including but not limited to bond amount, insurance coverage, maintenance and protection of traffic, inspection, roadway and pavement restoration requirements. Please see attached D.O.T. Screening Checklist.

Should you have any questions, please contact Ms. Latoya Smith, Utility Engineer (Utilities) at (860) 594-2533.

Very truly yours,

Transportation Supervising Engineer
Division of Facilities and Transit
Bureau of Engineering and Construction

Enclosure

Latoya Smith:ls

bcc: Mark Rolfe

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STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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Screening Checklist

Connecticut Department of Transportation

Potential Transportation Infrastructure Impacts

Connecticut Siting Council Petition # 1406

Location: 600 Iranistan Ave, Bridgeport

1. Is the proposed facility abutting –the-right of way of a State maintained highway?

_____ No

Yes – Specify the location and show location on a detail site plan.

2. Is the access for construction and maintenance of the proposed facility needed directly from a State maintained highway.

_____ No

Yes – Identify specify needs and access location.

3. Is the proposed facility within or abutting a State owned Railroad Right-of-Way?

_____ No

Yes-Please provide an area and site plan.

4. Is the proposed facility within a two mile radius of any lands classified as preserved scenic land in accordance with CGS Section 13a-85a, "Acquisition of land adjacent to state highways for preservation and enhancement of scenic beauty and development of rest and recreation areas", or any designated scenic road in accordance with CGS Section 13b-31c, "Designation of scenic roads"?

No

_____ Yes

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

PETITION OF DOOSAN FUEL CELL, : PETITION NO.
AMERICA, INC. FOR A DECLARATORY :
RULING FOR THE LOCATION AND :
CONSTRUCTION OF A 9.66 MEGAWATT :
FUEL CELL GRID-SIDE DISTRIBUTED :
ENERGY RESOURCE AT 600 IRANISTAN AVE.,
BRIDGEPORT, CONNECTICUT

PETITION OF DOOSAN FUEL CELL AMERICA, INC. AS AN AGENT
FOR A DECLARATORY RULING

Pursuant to Conn. Gen. Stat. §§ 4-176 and 16-50k(a) and Conn. Agencies Regs. § 16-50j-38 et seq., Doosan Fuel Cell America, Inc. (“Doosan”), as an agent for and behalf of its Customer, NuPower Bridgeport FC, LLC (“NuPower”), requests that the Connecticut Siting Council (“Council”) approve by declaratory ruling the location and construction of a grid-side distributed resources project comprised of twenty one (21) new natural-gas fueled PureCell® Model 400 phosphoric acid fuel cells (“Fuel Cell”) and associated equipment (the “Facility”), providing 9.66-megawatts (“MW”) of power to the United Illuminating, Congress St. Substation, Bridgeport, CT. The Facility will be installed by Doosan and owned and operated by NuPower. The fuel cells will be maintained by Doosan.

Conn. Gen. Stat. § 16-50k(a) provides that:

Notwithstanding the provisions of this chapter or title 16a, the council shall, in the exercise of its jurisdiction over the siting of generating facilities, approve by declaratory ruling . . . (B) the construction or location of any fuel cell, unless the council finds a substantial adverse environmental effect or of any customer-side distributed resources project or facility . . . with a capacity of not more than sixty-five megawatts, as long as such project meets air and water quality standards of the Department of Energy and Environmental Projection.”

I. INTRODUCTION

The proposed Facility will be a grid-side distributed resource under 65 MW that complies with the air and water quality standards of the Department of Energy and Environmental Protection (“DEEP”). Doosan submits that no Certificate of Environmental Compatibility and Public Need is required because the proposed installation will not have a substantial adverse environmental effect.

II. DESCRIPTION AND PURPOSE OF THE PROJECT

The proposed facility will be a distributed generation resource with grid interconnection at the Congress St. Substation owned and operated by United Illuminating. The Facility at 600 Iranistan Ave. will consist of a 3 ½ story steel and concrete structure located directly adjacent to I-95 South bound on a vacant lot at the intersection of Iranistan Ave. and Railroad Ave (Attachment #1). The proposed installation consists of twenty one (21) 460KW Model 400 Fuel Cells manufactured by Doosan Fuel Cell America, Inc. in South Windsor, Connecticut (*See* Attachment #4 for Model 400 Data Sheets). The overall dimension of the individual Fuel Cells is eight feet four inches wide by twenty-seven feet four inches long by nine feet eleven inches tall. The Fuel Cells are totally enclosed and factory-assembled and tested prior to shipment.

The proposed Facility will feed power through two separate dedicated power cable runs to the United Illuminating, Congress St. Substation at medium voltage. Power produced by the facility will be sold to United Illuminating Co. in accordance with a PURA approved power-purchase agreement (PPA) between United Illuminating and NuPower Bridgeport FC, LLC

(Attachment #3). The completed facility will be capable of producing 9.66 MW of reliable power and up to 16.2 MMBtu/hr. of thermal energy to a district heating loop using a combination of high-grade and low-grade heat from the fuel cell. Natural gas supply for the facility will be provided by Southern Connecticut Gas.

When a utility grid outage occurs, the individual Fuel Cells will automatically disconnect from the facility electrical system using an internal breaker while continuing to operate providing all the internal loads needed to operate the Fuel Cells. Upon return of the utility supply, the fuel cells will monitor the grid for stability for five minutes and then will automatically reconnect and ramp up output.

The Fuel Cells are designed to have a minimum 20-year product life. This requires overhaul or replacement of major components after 10 years of operation. Components requiring overhaul include the cell stack assemblies and components in the fuel processing system.

III. SAFETY

The Fuel Cells are certified by CSA international to meet strict ANSI/CSA FC-1 2014 safety standards to protect against risks from electrical, mechanical, chemical, and combustion safety hazards. The Fuel Cells will be installed in strict accordance with NFPA 853. In accordance with Public Act 11-101, the fuel line pipe cleaning procedure uses inert nitrogen gas or atmospheric air. The following items are a few of the safety measures incorporated into the design. A draft emergency response plan is included in *Attachment #5*. Prior to operation of the facility, this plan will be reviewed with the City of Bridgeport Fire Marshall to determine any additional requirements they may have for an emergency response plan and safety training.

A. Fire Protection

The Fuel Cell design incorporates a combustible gas sensor and thermal fuses located throughout the Fuel Cell cabinet. The detection of a potential combustible gas mixture, a fire, or the failure of this detection circuit will result in a Fuel Cell shutdown, closing of the natural gas supply valves, and a subsequent inert gas (nitrogen) purge of the Fuel Cell stack and fuel processing system. This event will also result in an alarm callout notification to Doosan service personnel. The Fuel Cell is designed with an integral stop button on the outside of the enclosure to enable immediate shutdown in the event of an emergency. There is also a site-installed manual gas shut-off valve and electrical disconnect switch easily accessible to emergency personnel. First responders will have access to the site with the use of a Knox Security box positioned outside the gate directly adjacent to the natural gas shut off.

B. Gas Leak

The Fuel Cells are designed with a physical barrier that separates the equipment handling combustible gases (fuel compartment) from electrical or potential spark-creating equipment (motor compartment). The fuel compartment is maintained at a negative pressure relative to both ambient and the motor compartment to ensure that any gas leaks do not reach the electrical equipment in the motor compartment. The cabinet ventilation system (“CVS”) is designed to dilute a potential gas leak in the fuel compartment to non-combustible levels.

C. Cell Stacks and Hydrogen

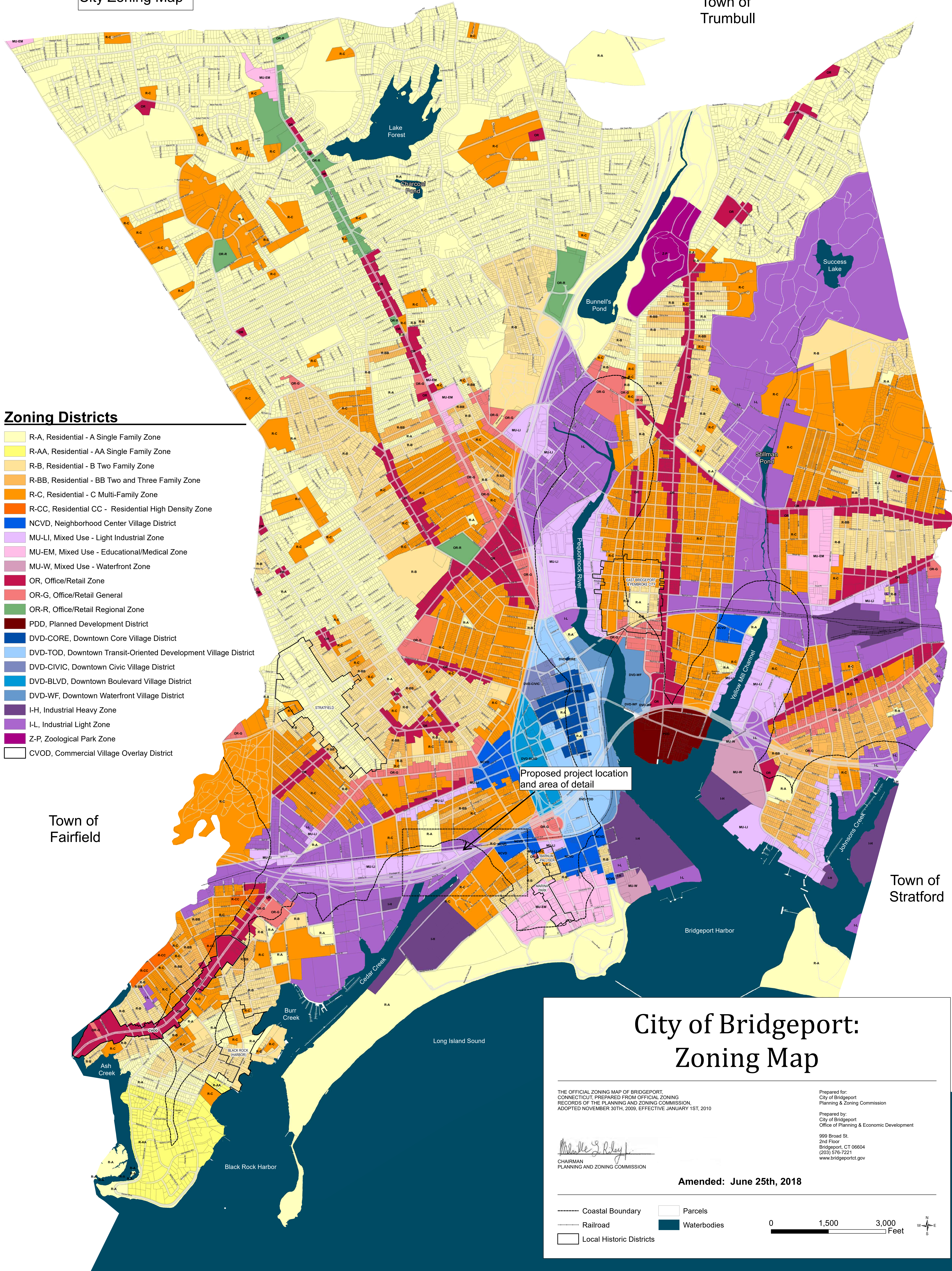
The Fuel Cells operate by converting hydrogen to DC electricity. Hydrogen is lighter than air and thus does not pool like other fuels and will readily dissipate with proper ventilation, making it less likely to ignite. Also, the Fuel Cell does not store hydrogen; instead, it produces hydrogen-rich gas at a rate equal to what it requires to produce power. The Fuel Cell stack is wrapped in a fire-retardant blanket. There are no materials inside the unit that would sustain a flame. There is no large volume of gas or any ignition that occurs within the cell stack.

D. Phosphoric Acid

Phosphoric acid is an integral part of the fuel cell system, acting as the electrolyte within the fuel cell stack. Phosphoric acid is a surprisingly common substance that is contained in common cola drinks. A leak of phosphoric acid is not possible because there is no reservoir of liquid: phosphoric acid is constrained within the porous structure of the fuel cell stack material by capillary action.

E. Fluid Leak

The only fluid source is water. All piping systems and pressurized water vessels are designed and fabricated to the appropriate ASME codes. Water produced through the electrochemical process is “pure” water and is reclaimed and reused by the process. Water mixed with propylene glycol and a rust inhibitor (to prevent rust and freezing in colder climates) is also used in the external cooling module.



Zoning Districts

- R-A, Residential - A Single Family Zone
- R-AA, Residential - AA Single Family Zone
- R-B, Residential - B Two Family Zone
- R-BB, Residential - BB Two and Three Family Zone
- R-C, Residential - C Multi-Family Zone
- R-CC, Residential CC - Residential High Density Zone
- NCVD, Neighborhood Center Village District
- MU-LI, Mixed Use - Light Industrial Zone
- MU-EM, Mixed Use - Educational/Medical Zone
- MU-W, Mixed Use - Waterfront Zone
- OR, Office/Retail Zone
- OR-G, Office/Retail General
- OR-R, Office/Retail Regional Zone
- PDD, Planned Development District
- DVD-CORE, Downtown Core Village District
- DVD-TOD, Downtown Transit-Oriented Development Village District
- DVD-CIVIC, Downtown Civic Village District
- DVD-BLVD, Downtown Boulevard Village District
- DVD-WF, Downtown Waterfront Village District
- I-H, Industrial Heavy Zone
- I-L, Industrial Light Zone
- Z-P, Zoological Park Zone
- CVOD, Commercial Village Overlay District

Town of
Fairfield

Town of
Stratford

City of Bridgeport: Zoning Map

THE OFFICIAL ZONING MAP OF BRIDGEPORT, CONNECTICUT, PREPARED FROM OFFICIAL ZONING RECORDS OF THE PLANNING AND ZONING COMMISSION, ADOPTED NOVEMBER 30TH, 2009, EFFECTIVE JANUARY 1ST, 2010

Prepared for:
City of Bridgeport
Planning & Zoning Commission

Prepared by:
City of Bridgeport
Office of Planning & Economic Development

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Michelle S. Riley
CHAIRMAN
PLANNING AND ZONING COMMISSION

Amended: June 25th, 2018

