



March 30, 2021

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

RE: Petition of ClearCell Power, Inc. for a declaratory ruling for the location and construction of a 0.46 Megawatt Fuel Cell customer-side distributed energy resource at 490 Saw Mill Road, West Haven, Connecticut

Dear Attorney Bachman:

We are submitting this scanned version of the above-captioned Petition, and we are sending in the original Petition with the filing fee of \$625.

In the Petition, ClearCell Power, Inc. ("ClearCell") requests the Connecticut Siting Council approve the location and construction of a 0.46 MW fuel cell and associated equipment (the "Facility"). The Facility will be located at the Best Western Hotel at 490 Saw Mill Road, West Haven, CT (the "Site"). Electricity generated by the Facility will benefit Best Western Hotel, an associated data server, and any excess electricity will be exported to the electric grid. The Facility will be fueled by natural gas.

Should you have any questions, concerns, or require additional information, please contact me directly at (413) 388-3805.

Sincerely,

A handwritten signature in black ink, appearing to read "Josh Abrams", written over a white background.

ClearCell Power, Inc.
Josh Abrams
(413) 388-3805
AiBuildersNE@gmail.com



PETITION OF CLEARCELL POWER, INC. FOR A DECLARATORY
RULING FOR THE LOCATION AND CONSTRUCTION OF A 0.46-
MEGAWATT FUEL CELL CUSTOMER-SIDE DISTRIBUTED ENERGY
RESOURCE AT 490 SAW MILL ROAD, WEST HAVEN, CONNECTICUT

Prepared for the Connecticut Siting Council Review

March 27, 2021

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**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

PETITION OF CLEARCELL POWER, INC.
FOR A DECLARATORY RULING FOR THE
LOCATION AND CONSTRUCTION OF A 0.46
MEGAWATT FUEL CELL CUSTOMER-SIDE
DISTRIBUTED ENERGY RESOURCE AT 490
SAW MILL ROAD, WEST HAVEN,
CONNECTICUT

PETITION NO. _____

March 25, 2021

PETITION OF CLEARCELL POWER, 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., ClearCell Power, Inc. ("ClearCell"), requests that the Connecticut Siting Council ("Council") approve by declaratory ruling the location and construction of a customer-side distributed resources project comprised of one (1) new natural-gas fueled PureCell[®] Model 400 phosphoric acid fuel cell ("Fuel Cell") and associated equipment (the "Facility"), providing 0.46-megawatts ("MW") (net) of power to the Best Western hotel located at 490 Saw Mill Road, West Haven, Connecticut (the "Site") (*See Attachment #1*). The Facility will be installed, owned, maintained, and operated by ClearCell.

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 Protection."

I. INTRODUCTION

The proposed Facility will be a customer-side distributed resource under 65 MW that complies with the air and water quality standards of the Department of Energy and Environmental Protection ("DEEP"). ClearCell 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 Facility will be a customer-side installed distributed generation resource with grid interconnection to be located at the Site. The Facility will be placed in the south corner of the Best Western-West Haven parking lot. (See Attachment #1). The proposed installation consists of one (1) Fuel Cell manufactured by Doosan in South Windsor, Connecticut (See Attachment #2 for Model 400 Data Sheets). The Fuel Cell's overall dimension is eight feet four inches wide by twenty-seven feet four inches long by nine feet eleven inches tall. The Fuel Cell unit is enclosed and factory-assembled and tested before shipment. The Fuel Cell cooling module will be located on the Fuel Cell roof to minimize the footprint of the Facility. (See Attachment #3).

The purpose of the proposed Facility is for distributed generation. The Fuel Cell for the Best Western-West Haven will be capable of producing a total of 460 kW of continuous, reliable electric power. The Facility will be net-metered and will operate in parallel with the utility grid.

The Facility will provide 100% of the building's electrical requirements under normal circumstances and 100% of the Data Server electrical requirements. Any additional baseload power required will be imported from the electrical grid. When the Facility meets both the building and Data Server electrical needs, the electrical power will be provided to United Illuminating as agreed upon in the LREC contract (See *Attachment #4*). The Facility installation will have an overall annual electrical efficiency of 41% from the Fuel Cell.

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

Fuel cell technology represents an important step in advancing Connecticut's goal of diversifying its energy supply through the use of renewable energy, and as expressed in Connecticut's General Statutes Section 16-244 et seq, The Facility will serve as a cost-effective clean energy source while also reducing the demand for grid electricity from this location. Further, this Fuel Cell installation will support the State of Connecticut's efforts to be a leader in the utilization of fuel cell technology.

Because a fuel cell does not burn fuel, the system will significantly reduce air emissions associated with acid rain and smog. Emissions standards of Connecticut will further be discussed in the next section. The Facility is designed to operate in total water balance - no make-up water is normally required after startup, and no water discharges to the environment will occur under normal operating circumstances.

III. SAFETY

The Fuel Cell is 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 Cell will be installed in 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. Please also refer to the Best Western, 490 Saw Mill Road, West Haven, CT Emergency Response Plan (*See Attachment #5*).

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 off 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 an emergency. A site-installed manual gas shut-off valve and electrical disconnect switch are easily accessible to emergency personnel.

B. Gas Leak

The Fuel Cell is 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 motor compartment's electrical equipment. 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 Cell operates 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 liquid reservoir; 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.

IV. HAZARDOUS MATERIALS

The Fuel Cell can deliver 460 kW of electric power. As with other fuel cell technologies, hydrogen and oxygen combine in the presence of a catalyst, which causes an electrochemical reaction to produce an electric current. A phosphoric acid fuel cell uses an inorganic, concentrated phosphoric acid as the electrolyte, allowing the electrochemical reaction. The Fuel Cell also employs on-board natural gas reforming to provide hydrogen to the fuel cell as part of the plant. Within this Fuel Cell, there are only two components that contain hazardous material: the Cell Stack Assembly ("CSA") and the Integrated Low-Temperature Shift Converter ("ILS"). Neither of these components presents a risk when servicing the Fuel Cell. The material in both the CSA and the ILS is classified as a hazardous material for the purposes of shipping. The CSA is classified as a "bulk bin," made from the Fuel Cell stack's repeating elements. Some of these repeating elements are porous carbon graphite plates. The phosphoric acid used as the electrolyte is contained by capillary action within the pores of these plates. The LS is a tank containing a self-heating solid catalyst composed of copper, zinc oxide, and alumina. Safety Data Sheets ("SOS") are available in the Best Western 490 Saw Mill Road West Haven CT Emergency Response Plan (*See Attachment #5*).

A. Shipping of Hazardous Material

The Fuel Cell is classified as "hazardous in transportation" under the U.S. Department of Transportation ("DOT") 49CFR regulations, and likewise as dangerous goods under the International Maritime Dangerous Goods ("IMDG") regulations. The description of hazardous materials contained within each Fuel Cell are listed in subsections B and C below.

B. Integrated Low Shift Converter

The tank, a non-DOT specification container as described below, is a SELF HEATING SOLID INORGANIC N.O.S. (contains metallic copper on zinc oxide and alumina), CLASS 4.2, UN3190, PGII, 900 lb. net wt. of hazardous material.

C. Cell Stack Assembly

The bulk bin, a non-DOT specification container as described below, is a SOLIDS CONTAINING CORROSIVE LIQUID N.O.S. (contains phosphoric acid), Class 8, UN3244, PGII, 1200 lb. net of hazardous material. The amount of phosphoric acid in the Fuel Cell complies with all applicable state and federal regulations. The exact amount of phosphoric acid is proprietary-technical information and is less than the 5,000 lb. reportable quantity under 40 CFR 117.3.

D. Integration into Fuel Cell Power Plant

The above items are individual components assembled side by side, with other non-hazardous components, to form one complete Fuel Cell. The containers holding the hazardous material are non-DOT specification containers. DOT regulations allow for the transportation of the hazardous material noted above in non-DOT specification portable tanks and closed bulk bins, as used for the Fuel Cell shipment. IMDG regulations require United Nations ("UN") specified containers or an exemption for international ocean transport.

E. Servicing of Product with Hazardous Material Present

The hazardous material within the CSA and the ILS presents no danger to installation and service personnel because direct exposure to the material is impossible. Under normal operating conditions, each container, as defined above, will retain its hazardous material for the

life of the component. When the end of life requires replacement of either component, no special precautions need to be employed for handling because hazardous materials will not come in contact with service personnel.

F. Hazardous Waste

The Fuel Cell does not produce any hazardous waste.

V. **THE SITE**

The Facility is to be located entirely on the Site. The proposed location is zoned Commercial Design ("CD"), under the zoning regulations of the City of West Haven, CT (the "City"). The surrounding parcels bordering the north, south, and west of the host property are zoned for CD, and the area directly to the east is I-95 (*See Attachment# 6*). Attachment #6 also includes an aerial map of the Facility's location on the Site showing the nearest residential properties are east and south of the property at about 1,100 feet from the Facility----the closest residential property is across I95 and the Northeast Train track corridor. The proposed Fuel Cell will be protected from unauthorized intrusions or vehicle traffic by a fence and bollards as per the Best Western-West Haven Site plan (*See Attachment #3*). No trees over 6 inches in diameter are required to be removed for the installation of the Facility. Parking Spaces: the West Haven Zoning Board of Appeals on February 17, 2021, and the West Haven Planning and Zoning Commission on February 23, 2021, approved the siting of the Fuel Cell and Data Server to occupy six existing parking spaces-(*See Attachment #7*). Tweed Airport in New Haven is the nearest airport and is 4.5 miles from the proposed facility across New Haven Harbor. The proposed Facility will be less than the maximum of 25 feet above ground level and does not fall under the FAA notification requirement of 14 CFR Part 77.9.

VI. ENVIRONMENTAL EFFECTS

A. Water, Heat and Air Emissions

The proposed installation will have no substantial adverse environmental effect. The installation and operation of the Fuel Cell will meet all air and water quality standards of DEEP.

Section 22a-174-42 of the Regulations of Connecticut State Agencies ("RCSA") governing air emissions from new distributed generators exempts fuel cells from air permitting requirements. Notwithstanding this exemption, the Fuel Cell meets the Connecticut emissions standards for a new distributed generator, as shown in Table I below. No permits, registrations, or applications are required under rules based on the Fuel Cell's actual emissions.

Furthermore, the Fuel Cell is certified by the California Air Resources Board to meet the Distributed Generation Certification Regulation 2007 Fossil Fuel Emissions Standards (*See Attachment #8*).

Table 1: CT Emissions Standards for a New Distributed Generator

Air Pollutant	CT Emissions Standard (lbs/MWh)	PureCell Model 400 Fuel Cell System at Rated Power (lbs/MWh)
Oxides of Nitrogen	0.15	.01
Carbon Monoxide	1	.02
Carbon Dioxide	1650	1,049

With respect to water discharges, the Fuel Cell is designed to operate without water discharge under normal operating conditions. To the extent that minimal water overflow may occasionally occur, such discharges will consist of de-ionized water and will be directed to a site sanitary drain or dry well. This discharge will be incorporated into the overall site design and covered by the Site's water discharge permit, if necessary. The Fuel Cell operates in a water balance below 86°F. The initial fill requires 350 gallons of water. The amount of make-upwater above 86°F increases linearly from 0gpm to 1gpm at 110°F.

The Facility will also meet state criteria thresholds and projected emissions for all greenhouse gases defined in Section 22a-174-1(49), as shown in Table 2. Section 22a-174-1(49) states the following: "Greenhouse gases" or "GHGs" means the aggregate of the following six components gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), any hydrofluorocarbon (HFC) or any perfluorocarbon (PFC)." There is no defined criteria threshold for these compounds; however, Section 22a-174-1(21) provides a method for computing carbon dioxide equivalent emissions "CO₂." The proposed Facility will have no emissions of SF₆, HFC, and PFC. Emissions of CH₄ and N₂O will be exceptionally low and will not contribute significantly to the GWP of the proposed Facility.

Table 2: PureCell® Model Emissions Data

Emission Type	Projected Emissions	GWP _{in40CFR} 98, Table A-1	Projected CO _{2e}
CO ₂	2025 ton/yr	1	2025 ton/yr
CH ₄	<0.02 ton/yr	25	<0.5 ton/yr
N ₂ O	<0.01 ton/yr	298	<3 ton/yr
SF ₆	N/A	22,800	N/A
HFC	N/A	12 to 14900*	N/A
PFC	N/A	7,390 to 17,340	N/A

B. Wildlife and Habitat

According to the relevant portion of the CT DEEP West Haven Natural Diversity Database Areas Map and the City of West Haven's DEP Wetland Soils Map (*See Attachment #9*), the proposed Site is not located within or near the Natural Diversity Data Base Areas or a Wetland area.

C. Noise

The Facility's noise levels will be below the dBA levels of the adjacent I-95 levels. The Fuel Cell's cooling module's noise levels are tested at less than 65 dBA at 33 feet (10m). The property owner's closest hotel room is 115' and at 90 degrees to the direction of the cooling module fan noise source. The adjacent building to the south is 160' from the Facility, and a 17' retaining wall and the adjacent building's sheds block view and noise from the Facility's location. All residential areas are more than 1,000 feet away, the closest on the other side of I-95 and the Northeast train corridor tracks.

D. Visual Impact

The Facility will not cause significant visual effects to the adjacent buildings. The Site is in the southern corner of the Best Western parking lot, and a 17' retaining wall on the south side of the Facility blocks it from the south and south-west side; on the west and north sides of the Facility, the south side of the Best Western hotel's masonry wall, which has no units, will face the Facility. The east side of the Facility will face I-95 (*See Attachment #1*)

E. Public Notice

Notices were provided via certified mail to all property owners, abutters, and state and local officials pursuant to Conn. Agencies Regs. §16-50j-40(a). A copy of ClearCell's notice letter, Abutter's list, and Abutters' Map are included in *Attachment #10*. In addition, ClearCell sent notices to all applicable State and Municipal officials of the city of West Haven as listed in *Attachments #11*, which has the certified mail receipts for State and Municipal officials and Abutters. As noted previously, ClearCell held public meetings and received approval from the City of West Haven's Zoning Board of Appeals and the West Haven's Planning and Zoning Commission to prepare for permits, CT Siting Council Review, and address any concerns. (*Please see attachment #7*).

F. Project Decommissioning Plan

Following the 20-year operational life of the Facility, the decommissioning plan is as follows:

A) Isolate, lockout, and disconnect all piping for the cooling module at the power module.

Remove gas piping to the unit. Disconnect nitrogen purge system at power module.

B) Disconnect all electrical conductors and conduit at the Fuel Cell to include electrical power, cooling module power, and nitrogen pressure switch.

C) The contractor will work in concert with Doosan's Service Department personnel during decommissioning and shutdown.

D) Return Site to original condition except for the concrete pads.

E) The decommissioned Fuel Cell will be stripped, and the parts are separated and either recycled, reclaimed, or transported to a landfill.

G. Aquifer Protection Area, Coastal Boundaries, and Flood Zones

Based on an analysis of the Federal Emergency Management Agency's ("FEMA") National Flood Insurance Program ("NFIP") flood mapping data for West Haven (*See Attachment #12*), the proposed Facility is not situated in a 100-year flood zone. The Site is in an already disturbed area with previous construction on the Site. The City of West Haven has no Aquifer Protection Areas near the Site, and there is no close wetland to the proposed Site (with the nearest watercourse, Phipps Lake, more than 1,200 feet away on the other side of the I95 and the Northeast train track corridor).

Due to the distance of the proposed Facility from any recognized watercourses, flood protected zones, wetlands, or coastal boundaries and the implementation of ClearCell construction protection measures: no negative impact to the watercourses and wetlands is anticipated throughout the construction or operation of the Fuel Cell.

H. Cultural Resources.

The proposed Facility will be located in an already developed area; consequently, the Fuel Cell's construction and operation will have no deleterious effect on any cultural (historical and archaeological) resources in the area.

I. Natural Gas Desulfurization Process

Sulfur is present in pipeline natural gas. It is primarily used as an odorant so leaks can easily be detected. Unfortunately, sulfur is also a poison to fuel cell systems and must be removed by the Fuel Cell. For further details of desulfurization, please refer to the attached Desulfurization Memo (*See Attachment #13*).

VII. CONSTRUCTION AND MAINTENANCE

ClearCell plans to start construction work by August 2021. Construction will take approximately fifteen weeks, followed by about four weeks of testing and startup. Regular working hours for the proposed project are Monday through Friday from 8:00 am to 5:00 pm. ClearCell and its contractors will fully cooperate with the City Inspector and follow all the City of West Haven and Connecticut State construction policies and codes.

VIII. LOCAL INPUT AND STATE FUNDING

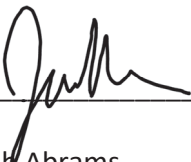
ClearCell presented and received the City of West Haven’s approval from the Zoning Board and the Planning and Zoning Commission to install the Facility. In addition, the City of West Haven Building Official reviewed initial plans (*See Attachment #7*). This project also has been awarded a contract to sell Low Emission Renewable Energy Credits (LREC) (*see attachment #4*) to the United Illuminating Company through the CT Low and Zero Emission Renewable Energy Credit Program. ClearCell will complete all necessary permitting before installing the FuelCell.

IX. CONCLUSION

As set forth above, ClearCell requests that the Council issue a determination, in the form of a declaratory ruling, that the proposed installation above would not have a substantial adverse effect. Therefore, a Certificate is not needed.

Respectfully submitted,

ClearCell Power, Inc.

By  _____

Josh Abrams
AiBuildersNE@gmail.com
Ai Builders-New England, LLC
17 Stanton Avenue
South Hadley, MA 01075
413-388-3805