FuelCell Energy
Ultra-Clean, Efficient, Reliable Power

June 30, 2014

VIA E-MAIL & REGULAR MAIL

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

Re: Petition No. _____ - Petition of UB Fuel Cell, LLC for a Declaratory Ruling That a Certificate of Environmental Compatibility and Public Need is Not Required for the Installation of a Fuel Cell Facility at the University of Bridgeport

Dear Ms. Bachman:

Enclosed please find an original and fifteen (15) copies of a Petition for Declaratory Ruling submitted on behalf of UB Fuel Cell, LLC for the installation of a fuel cell facility at the University of Bridgeport, together with a filing fee of $625.00.

Please feel free to contact me if you have any questions or require additional information. Thank you.

Sincerely,

Jennifer D. Arasimowicz
Vice President, Commercial Counsel

Encls.

FuelCell Energy, Inc.
3 Great Pasture Road
Danbury, CT 06813-1305
phone 203 825.6000
fax 203 825.6100
www.fuelcellenergy.com

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
PETITION OF UB FUEL CELL, LLC FOR A DECLARATORY RULING THAT A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS NOT REQUIRED FOR THE INSTALLATION OF A FUEL CELL FACILITY AT THE UNIVERSITY OF BRIDGEPORT	:	PETITION NO. _____
	:	JUNE 30, 2014

PETITION FOR DECLARATORY RULING:
INSTALLATION HAVING NO SUBSTANTIAL ENVIRONMENTAL EFFECT

I. INTRODUCTION

Pursuant to Connecticut General Statutes ("Conn. Gen. Stat.") § 16-50k, UB Fuel Cell, LLC ("UBFC") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Petition") that a Certificate of Environmental Compatibility and Public Need ("Certificate") is not required for the installation of a 1.4 megawatt ("MW") fuel cell combined heat and power generating facility with blackstart capability, including all associated equipment and related site improvements, as described herein (collectively, the "Project").

Conn. Gen. Stat. § 16-50k(a) provides, in pertinent part:

> Notwithstanding the provisions of this chapter or title 16a, the council shall, in the exercise of its jurisdictions over the siting of generating facilities, approve by declaratory ruling . . . the construction or location of any fuel cell unless the council finds a substantial adverse environmental effect . . . .

UBFC submits that the construction and operation of the proposed Project satisfies the criteria of Conn. Gen. Stat. § 16-50k(a) and, as described in more detail below, will not have a substantial adverse environmental effect.

II. THE PETITIONER

UBFC is a limited liability company organized under the laws of the State of Connecticut with an office located c/o FuelCell Energy, Inc. at 3 Great Pasture Road, Danbury, Connecticut 06810. UBFC is a wholly-owned special purpose entity of FuelCell Energy, Inc. ("FCE"), which was selected by the United Illuminating Company ("UI") as a winning bidder in UI's second round request for proposals for the Low and Zero Emission Renewable Energy Credit Program established under the provisions of Public Act 11-80, "An Act Concerning the Establishment of the Department of Energy and Environmental Protection ("DEEP") and Planning for Connecticut's Energy Future." As a result of the Project selection, FCE entered into a Standard Contract for the Purchase and Sale of Connecticut Class I Renewable Energy Credits with UI ("Standard Contract"), which contract will be assigned to UBFC. The Project selection and the Standard Contract were approved by the Public Utility Regulatory Authority in its Docket No. 11-12-06.

Correspondence and/or communications regarding this Petition should be addressed to:

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c/o FuelCell Energy, Inc.
3 Great Pasture Road
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(203) 825-6114 (office)
(203) 825-6100 (fax)
btoby@fce.com

A copy of all such correspondence or communications should also be sent to the Petitioner's attorney:

Jennifer D. Arasimowicz, Esq.
FuelCell Energy, Inc.
3 Great Pasture Road
Danbury, CT 06810
(203) 825-6070 (office)
(203) 825-6069 (fax)
jarasimowicz@fce.com

III. FACTUAL BACKGROUND

A. Public Benefit

A public benefit exists if a project "is necessary for the reliability of the electric power supply of the state or for a competitive market for electricity." Conn. Gen. Stat. § 16-50p(c)(1). The State of Connecticut has further articulated its energy goals in the Comprehensive Energy Strategy as encouraging the provision of cheap, clean, reliable electricity, fostering the development of microgrids and promoting economic development and job growth. The Project is located on the campus of the University of Bridgeport ("UB") in Bridgeport, Connecticut and will be used to satisfy much of the electrical and thermal needs of the campus. As a result, the electric load that UB will need to obtain from the electric grid will be reduced; thereby, reducing the stress on the system and reducing load on overloaded transmission lines. The Project will provide UB with savings as compared to grid purchased electricity and thermal energy. The Project will also have blackstart capability and will be microgrid enabled. The fuel cell will be manufactured in Connecticut, installed and operated by FCE of Danbury. Thus, the Project satisfies all of the articulated goals of the Comprehensive Energy Strategy.

B. Project

UBFC proposes to build, own and operate the Project to be located on the UB campus in Bridgeport, Connecticut. The Project will be installed on a 62 foot x 80 foot area surrounded by an eight foot (8') foot high wall and gate adjacent to the west side of Wheeler Recreation Center and north of the Greater Bridgeport Symphony office (the "Site"). *See* Site Plan attached at Tab A. The Site currently contains a small garage, some piled aggregate and trees, all of which are to be removed by UB prior to the commencement of construction.

The Project will include a natural gas-fired DFC1500 Direct Fuel Cell ("DFC") power plant provided by FCE. The Project will cogenerate a nominal 1.4 MW of Connecticut Class I renewable energy and 2.1 MMBtu per hour of hot water. Both the electricity and the hot water will be used by the UB campus. The Project will also include a natural gas-fired generator nominally rated at 200kw to provide grid independent and blackstart capability. The Project, as installed, will be microgrid capable.

The installations associated with the Project include the fuel cell module, electrical balance of plant, main process skid, desulfurization skid, water treatment skid, load leveler, and 200kw generator.

C. Local Input

On June 19, 2014, representatives of UBFC contacted Mr. David Kooris, Director of the Office of Planning and Economic Development for the City of Bridgeport, to discuss the Project and sent him a draft of this Petition. The City of Bridgeport has no concerns regarding the Project.

D. Notice of Petition

All land abutting the Project is owned by UB. A courtesy copy of this Petition has been sent to City of Bridgeport Mayor Bill Finch.

IV. THE INSTALLATION WILL NOT HAVE A SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

The Project will provide 1.4 MW of clean electrical energy and 2.1 MMBtu/hr of hot water without the environmental impacts normally associated with the use of natural gas as a fuel.

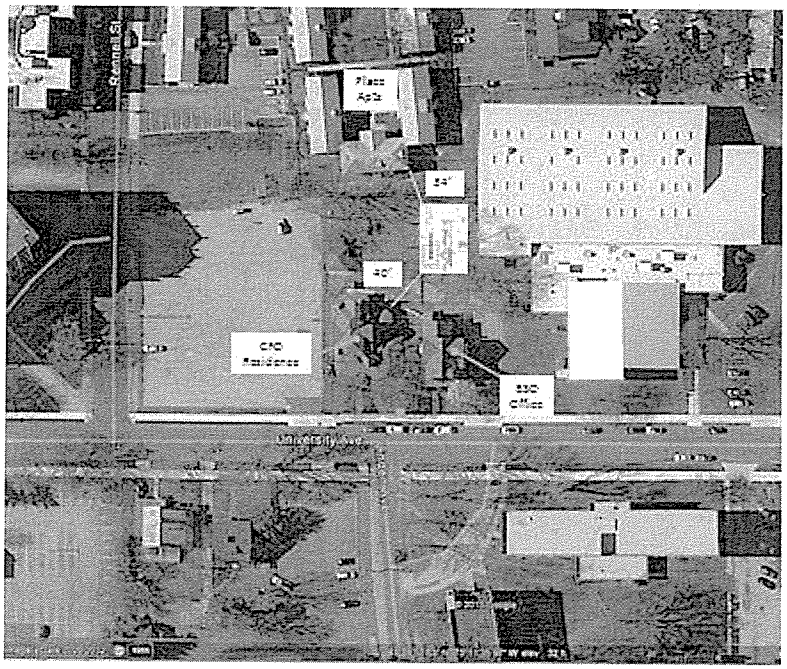
A. Natural Environment and Ecological Balance

Approximately 22,000 standard cubic feet ("scf") of nitrogen will be stored on-Site. Nitrogen is non-toxic; however, it is a Department of Transportation Division 2.2 (non-flammable gas) hazardous material. There are no U.S. Environmental Protection Agency ("EPA") reporting requirements for nitrogen.

B. Public Health and Safety

The Project will be located adjacent to the Wheeler Recreation Center, behind the Greater Bridgeport Symphony office and the campus residence of UB's Chief Financial Officer on University Avenue. *See* Figure 1 below. Access to the Project will require the extension and improvement of the existing driveway for the Greater Bridgeport Symphony office. The roadways in the area are adequate for all deliveries to support the construction and operation of the Project. These same roadways have been used in the past to deliver major equipment to the UB campus. The limited number of truck trips necessary to support installation will not have any adverse impacts on local roadways or traffic conditions. Operational personnel trips will be insignificant, as the Site will be unmanned and only visited periodically by technicians.

FIGURE 1



The Project has been designed with significant attention to protecting the community sound environment. The core of the fuel cell technology (*i.e.*, the Direct Fuel Cell® modules) will produce no significant sound. Ancillary equipment associated with the Project includes a blower that will pump fresh air through a silencer into the main process skid. A cooling condenser, which is similar to many used in residential applications, will be located above the water treatment cabinet to support equipment inside the cabinet and will produce sound only when the fan is actively providing cooling for the system. Relatively small transformers and electrical buses and inverters, as well as fans providing ventilation to some of the equipment, will produce modest sound. Under normal conditions, these few acoustic sources would produce consistent sound throughout the day and night.

The acoustic levels associated with the Project were modeled at sensitive community receptors per the Regulations of Connecticut State Agencies ("R.C.S.A.") § 22a-69-1 *et seq.* The Site is categorized as a Class B Noise Zone, where the sound level is limited to 62 dBA at Class C receptors, 62 dBA at Class B receptors, and 55 dBA at Class A receptors during the daytime and 45 dBA at Class A receptors during the nighttime. Since adjacent off-campus properties are residential, they were evaluated as a Class A Noise Zone. The Project is in an area of high ambient sound (predominantly I-95 traffic). Thus, the regulations permit an increase of 5 dBA from the lowest ambient measurement (48 dBA). The results of the modeling indicate that the Project can be operated at the Site within the applicable noise performance criteria. *See* Noise Assessment Study attached at Tab B.

Since the Project also includes an emergency generator, the acoustic profile of the emergency generator was modeled as well. The emergency generator will only be used for weekly maintenance checks during daytime hours only and in the rare instance when both utility power and fuel cell power are lost (*i.e.,* major storms with local damage). In such instances, the emergency generator will be operated only long enough to start the fuel cell when the fuel cell is tripped off at the time of utility power loss. The results of the modeling indicate that even with generator operation, the Project can be operated within the applicable noise performance criteria.

Additionally, although the regulatory criteria do not apply to on-campus receptors, UBFC has taken the extra step of modeling the acoustic profile of the Project as it will impact on-campus receptors. Although the local ambient acoustic profile is fairly high, UBFC has designed the Project to improve sound containment around the blower/motor/intake assembly using staggered acoustic walls with an absorptive interior surface.

Prior to operation, UBFC will discuss the Project with the Bridgeport Fire Department. In addition, in accordance with the Council's Final Decision in Docket NT-2010, UBFC is attaching an Emergency Response Plan ("ERP") for the Council's review. *See* ERP attached at Tab C. The ERP includes the following information:

- A description of any simulated emergency response activities with any state and/or local emergency response officials;
- Details of any facility Site access system; and
- Establishment of an emergency responder/local community notification system for on-Site emergencies and planned construction-related activities that could cause community alarm.

All other requirements of the NT-2010 Decision will be adhered to.

C. Scenic Values

The proposed Project will have little impact on the visual character of the community. Generally, the potential visual impact is inherently small due to the low profile of the Project in the context of the existing buildings on the UB campus. Views to the West will be obstructed by UB's Wheeler Recreation Center. Views to the North will be obstructed by the Greater Bridgeport Symphony office and the campus residence of the Chief Financial Officer. Views to the South will be obstructed by the University Place Apartments. Although there will be unobstructed views from adjacent Rennell Street to the West, those views will be mitigated by an eight (8) foot high wall, such that only the top portions of the Project will be visible. Moreover, while some elements of the Project will be visible from the adjacent roadway and nearby residences, it will have a low profile and be consistent with the existing UB campus buildings.

D. Historical Values

A request was made with the Connecticut State Historic Preservation Office ("SHPO") regarding the Project's effect on historic, architectural or archaeological resources listed on or eligible for the National Register of Historic Places. The SHPO determined that the proposed Project will have no effect upon the state's architectural or archaeological resources. *See* Correspondence at Tab D.

E. Air Quality

Air emissions from the fuel cell associated with the Project, assuming continuous year-round operation, are expected to be:

Pollutant	Total Potential Emissions (tpy)
Oxides of Nitrogen ("NO_x")	0.06
Oxides of Sulfur ("SO_x")	0.0006
Particulate Matter ("PM")	0.0001
Carbon Monoxide ("CO")	0.61
Volatile Organic Compounds ("VOC")	0.12
Carbon Dioxide ("CO_2")	6,009

In addition to the emissions from the fuel cell itself, there will also be minor emissions associated with a 5 MMBtu/hr gas-fired startup burner that will be included with the fuel cell power plant and the natural gas-fired emergency generator. The burner is used at start-up only to heat the plant to its required operating temperature. The emergency generator will only be run for testing and maintenance and for short blackstart durations during rare events of loss of both utility grid and fuel cell power. Since the fuel cell is expected to run constantly, it is anticipated that the burner and generator will each only be used a few times a year. The criteria pollutant

potential emissions (assuming 8,760 hours of operation) associated with the gas-fired burner and generator along with the fuel cell are less than 15 tpy using conservative EPA AP-42 emission factors.

Total emissions from the proposed Project, including the blackstart emergency generator, will be below levels that would render the Project a "major stationary source" as defined at R.C.S.A. § 22a-174-1(57). The Project's maximum emissions will operate well below the serious non-attainment area thresholds for VOC and NO_x. Thus, the Project will be a minor source and is not subject to Federal Non-Attainment New Source Review ("NSR"). Also, there is no requirement for emission offsets for this Project as it will be below the non-attainment NSR major source thresholds.

A Permit to Construct and Operate Stationary Sources is not required for the Project because the potential emissions of any individual criteria air pollutant are less than 15 tpy; the source is not a new major stationary source; and, the source is not a new major source of hazardous air pollutants. The Project is also not subject to DEEP's "permit by rules" because the potential emissions from each of the fuel cell and the blackstart emergency generator are less than 15 tpy. Thus, there are no registrations or applications required to be submitted to the DEEP; nor are there anticipated to be any approvals from the DEEP Air Bureau required prior to the construction and operation of the Project.

On May 13, 2010, EPA issued the final greenhouse gas ("GHG") Tailoring Rule. This rule effectively raised the thresholds for GHG emissions that define when permits under the Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. However, since the potential GHG emissions from the

Project will be well below the 75,000 tpy trigger established by the Tailoring Rule, those emissions will not trigger the requirement for an air permit. In fact, since the heat recovery associated with the fuel cell will cogenerate hot water and offset fuel consumed by UB, the net CO_2 emissions will be reduced by this cogeneration process.

On average, the Project will avoid the need to burn 17,938 MMBtu per year of boiler fuel and power generated by the fuel cell will offset power from the utility grid, which has an average CO_2 footprint of 1,107 lbs CO_2 per MWh (EPA EGRID 9th Edition (February 2014) NEWE New England subregion, non-baseload). As a result, operation of the Project will result in the following net reduction of CO_2 GHG:

- CO_2 produced from power generation: 980 lbs/MWh
- CO_2 avoided from heat recovery: 242 lbs/MWh
- CO_2 avoided by not using grid power: 1,107 lbs/MWh

Net CO_2 impact: 369 lbs/MWh or approximately 1,616 tpy **reduction**

F. Water Quality

The Project Site is not located within either 100- or 500-year floodplains or the coastal zone. There are also no surface water bodies, wetlands or hydric soils at or near the Project Site.

The Project Site occupies less than one acre and, as such, a DEEP general permit construction stormwater pollution prevention plan is not required. Groundwater in the Site vicinity will not be impacted by the installation and operation of the Project. Limited excavation of soils will be required for installation of the Project and no wastewaters will be discharged on-Site. To the extent necessary, the small number of personnel periodically operating and/or maintaining the Project will use existing sanitary facilities at UB.

The fuel cell to be installed as part of this Project (*i.e.*, DFC1500) will require approximately 6,500 gallons per day ("gpd") of raw water and will discharge approximately 3,200 gpd of wastewater. Most of the makeup water will be released as water vapor with the fuel cell exhaust gas. Water will be obtained from the existing UB water system and the wastewater will be discharged to the existing UB wastewater system. The Project will register under DEEP's Miscellaneous Sewer Compatible Discharges general permit. Thus, adequate water supply and infrastructure are available to supply the Project. Therefore, no substantial adverse environmental effect will occur from the Project's water use and wastewater disposal.

G. Fish and Wildlife

A request was made with the Connecticut DEEP for a review of the Natural Diversity Data Base Map. In response, the DEEP indicated that the Project will not impact any extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur in the vicinity of this property. *See* Correspondence at Tab E.

H. Summary

Overall, the proposed installation would have an incremental visual impact and would not cause any significant change or alteration in the physical or environmental characteristics of the Site or the surrounding area. In fact, as discussed in Section IV.E above, the Project will actually provide an environmental benefit to the State of Connecticut by reducing CO_2 emissions by approximately 3,500 tpy.

V. CONCLUSION

For all the foregoing reasons, UBFC requests that the Council issue a determination, in the form of a declaratory ruling, that the proposed installation as described above is not one that would have a substantial adverse environmental effect and, therefore, that a Certificate is not required.

Respectfully submitted,

UB FUEL CELL, LLC

By _____

Jennifer D. Arasimowicz, Esq.
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Its Attorney

CERTIFICATION

I hereby certify that a copy of the foregoing was emailed or mailed via first-class mail, postage pre-paid, to the following on this 30th day of June, 2014.

MUNICIPAL OFFICIAL/AGENCY	NAME/ADDRESS/EMAIL
Bridgeport Chief Elected Official	Mayor Bill Finch Office of the Mayor City of Bridgeport Margaret E. Morton Government Center 999 Broad Street Bridgeport, CT 06604 mayor@bridgeportct.gov
Bridgeport Planning and Zoning Commission & Inland Wetlands and Watercourses Agency	Melville T. Riley, Jr., Chairperson City of Bridgeport Inland Wetlands and Watercourses Agency Room 212 – 45 Lyon Terrace Bridgeport, CT 06604
Bridgeport Office of the City Attorney	Mark Anastasi, Esq. City Attorney 999 Broad Street Bridgeport, CT 06604 mark.anastasi@bridgeportct.gov
Bridgeport Office of the Planning and Economic Development	David Kooris, Director Office of Planning and Economic Development 999 Broad Street Bridgeport, CT 06604 david.kooris@bridgeportct.gov
Bridgeport Regional Planning Agency	Brian T. Bidolli, Executive Director Greater Bridgeport Regional Council 525 Water Street, Suite One Bridgeport, CT 06604 bbidolli@gbrpa.org
Bridgeport State Senator	The Honorable Andres Ayala, Jr. State Senate – 23rd District Legislative Office Building, Room 2200 Hartford, CT 06106-1591 Andres.Ayala@cga.ct.gov

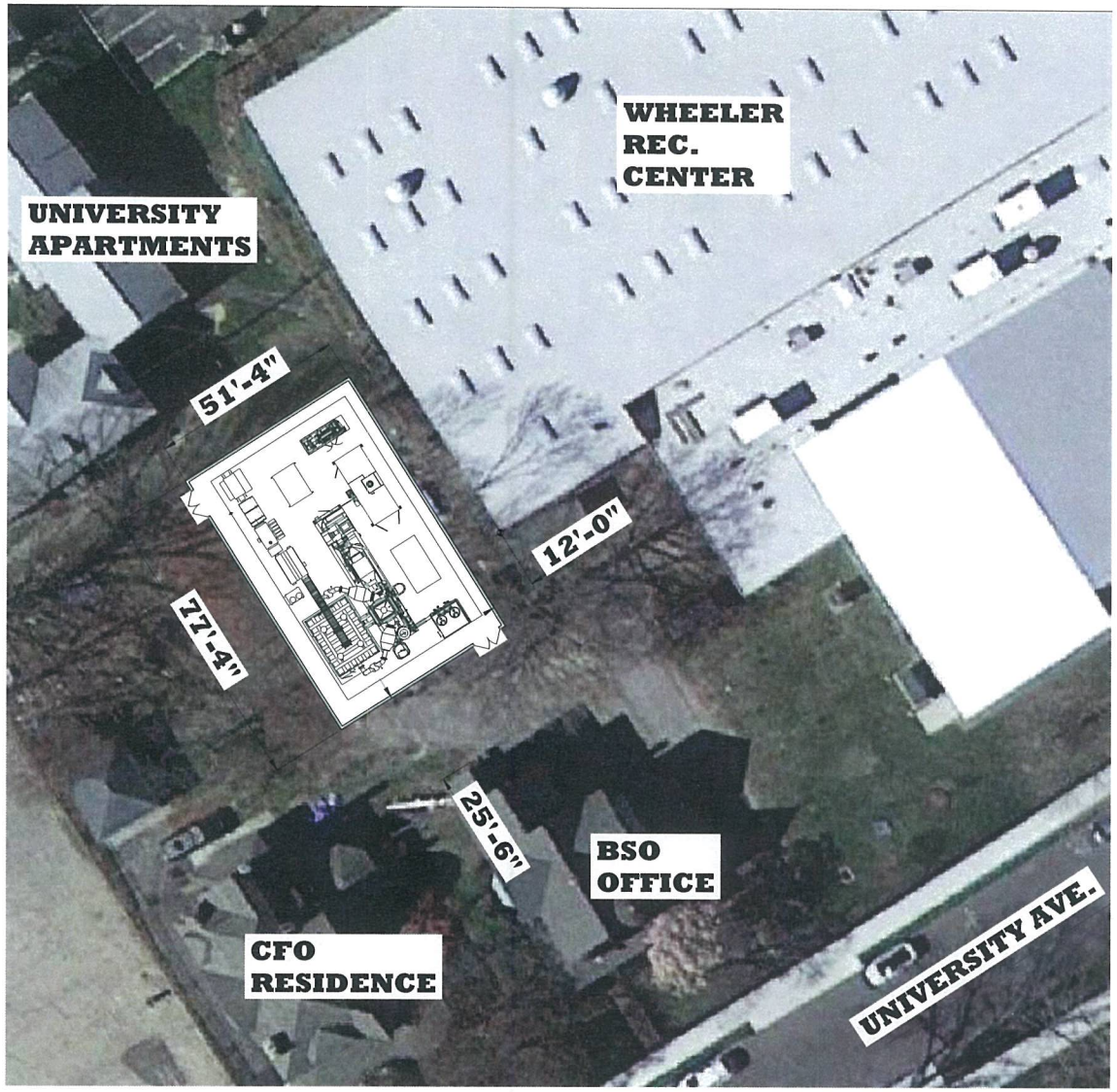
Bridgeport State Senator	The Honorable Anthony J. Musto State Senate – 22nd District Legislative Office Building, Room 2200 Hartford, CT 0606-1591 Anthony.Musto@cga.ct.gov
Bridgeport State Representative	The Honorable Auden C. Grogins State Representative – 129th District 155 Brewster Street Bridgeport, CT 06605 Auden.Grogins@cga.ct.gov
Bridgeport State Representative	The Honorable Ezequiel Santiago State Representative – 130th District 991 State Street Bridgeport, CT 06605 Ezequiel.Santiago@cga.ct.gov
STATE OFFICIAL AGENCY	**NAME/ADDRESS**
Connecticut Attorney General	George Jepsen, Attorney General Office of the Attorney General 55 Elm Street Hartford, CT 06106 attorney.general@ct.gov
State Department of Energy and Environmental Protection	Robert Klee, Commissioner Department of Energy and Environmental Protection 79 Elm Street Hartford, CT 06106-5127 robert.klee@ct.gov
State Public Utilities Regulatory Authority	Arthur House, Chairman Department of Energy and Environmental Protection Public Utilities Regulatory Authority 10 Franklin Square New Britain, CT 06051 arthur.house@ct.gov

State Department of Public Health	Dr. Jewel Mullen, Commissioner Department of Public Health 410 Capitol Avenue Hartford, CT 06134 dph.commissioner@ct.gov
State Council on Environmental Quality	Susan D. Merrow, Chair Council on Environmental Quality 79 Elm Street Hartford, CT 06106 Karl.wagener@ct.gov
State Department of Agriculture	Steven K. Reviczky, Commissioner Department of Agriculture 165 Capitol Avenue Hartford, CT 06106 steven.reviczky@ct.gov
Office of Policy and Management	Benjamin Barnes, Secretary Office of Policy and Management 450 Capitol Avenue Hartford, CT 06106 ben.barnes@ct.gov

State Department of Economic and Community Development	Catherine Smith, Commissioner Department of Economic and Community Development 505 Hudson Street Hartford, CT 06106 catherine.smith@ct.gov
State Department of Transportation	James P. Redeker, Commissioner Department of Transportation 2800 Berlin Turnpike Newington, CT 06111 james.redeker@ct.gov

Jennifer D. Arasimowicz

REVISION HISTORY				
REV	DESCRIPTION	BY	APPROVED	DATE
1	INTERNAL REVIEW	KGG	I.COREA	10/02/13
2	REVISION PER INTERNAL REVIEW	MHB	I. COREA	01/30/14
3	ADDED FLOW DIAGRAM - SHEET 3	KGG	L ERNST	05/19/14

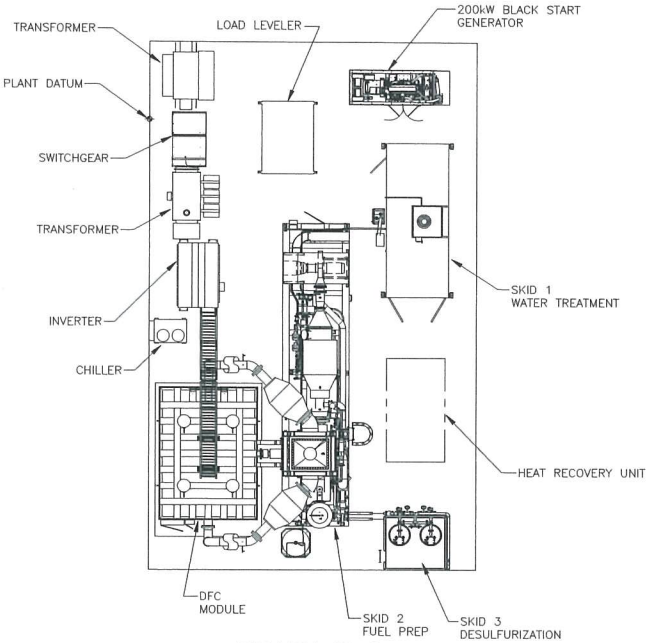


PLOT PLAN

10' 0 20' 40'

GRAPHIC SCALE

UB Fuel Cell, LLC
Petition No. _____
June 30, 2014
Tab A



DFC1500 BL 5
PLAN VIEW

5' 0 10' 20'

GRAPHIC SCALE

FUELCELL ENERGY, INC. PROPRIETARY THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND MAY NOT BE DISCLOSED, COPIED OR REPRODUCED EXCEPT BY WRITTEN PERMISSION FROM FUELCELL ENERGY INC.	SIGNATURES K.GROSS 10/02/13 I.COREA 10/02/13	FuelCell Energy 3 Great Pasture Rd., Danbury, CT 06813	
	UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE ±1/16"	TITLE: DFC1500 BL5 POWER PLANT UNIVERSITY OF BRIDGEPORT PLAN VIEW	
CAGE CODE 63131	REVISION INDICATOR FLAG NOTE	SIZE D; Location ---; DWG NO 13-0014; REV 3	
		SCALE AS SHOWN	SHEET 1 OF 4

PLOT PLAN

10' 0 20' 40'

GRAPHIC SCALE

FUELCELL ENERGY, INC PROPRIETARY

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CAGE CODE 63131

FuelCell Energy 3 Great Pasture Rd. Danbury, CT 06813

TITLE

DFC1500 BL5 POWER PLANT
UNIVERSITY OF BRIDGEPORT
HEATING LOOP - TRENCH

SIZE	Location	DWG NO	REV
D	---	13-0014	3

SCALE AS SHOWN SHEET 2 OF 4

Sound Level Assessment

University of Bridgeport Fuel Cell

Bridgeport, Connecticut

October 20, 2013

Prepared For:

Fuel Cell Energy Inc.
3 Great Pasture Road
Danbury, CT 06813

Prepared By:

Modeling Specialties
30 Maple Road
Westford, MA 01886

Modeling Specialties

Environmental Sound Level Assessment
University of Bridgeport Fuel Cell

Background

The University of Bridgeport is planning to install a fuel cell generating facility manufactured by FuelCell Energy, Inc. on its Bridgeport, Connecticut campus. In contrast to other types of power generating facilities, fuel cell equipment has a low profile with few mechanical processes with the potential to emit sound energy. The unit includes a heat recovery cycle to optimize its energy efficiency. The facility is designed to operate with sound levels that are consistent with the ambient sound levels in the area. The analyses in this report evaluate the potential of the facility to affect the community receptors nearest the equipment. The study is based on equipment configuration and layout provided by FuelCell Energy, Inc. The assessment is based on the criteria provided in the City of Bridgeport's Noise Control Regulations, which have the same numerical criteria as the Connecticut Department of Environmental Protection Noise Regulations.

Ambient sound levels in the area were established by direct measurements with standardized equipment. Equipment sound levels were estimated based on vendor design discussions and previous measurements at similar equipment. Sound level modeling techniques were used to estimate the potential impacts at receiving locations in various land use zones. In each case, the modest sound levels associated with the facility will meet the applicable standards.

Overview of Project and Site Vicinity

The Project site is located in Bridgeport between University Ave. and Atlantic Street. This is on the University of Bridgeport campus and is surrounded by University properties. However, there are a few parcels within the boundary of the campus that are not University property. The equipment sound is modeled at these locations to represent the highest potential off-campus impacts. It is the intent of this project to contribute to the renovation plans for the area. A brief overview of observed land uses is illustrated on an annotated land use map of the campus area in Figure 1. The property surrounding the site is relatively flat. The proposed equipment footprint is the rear yard of a building used by the Bridgeport Symphony Orchestra administration and is adjacent to the University Recreation Center.

Aircraft and distant trains were occasionally noted during field studies. The dominant source of sound in the area is the nearby Interstate 95, which is raised in this area. Most of the elevated section in this area is fitted with barrier walls, but the highway still produces the sound which dominates the daytime and nighttime sound levels in the area. .

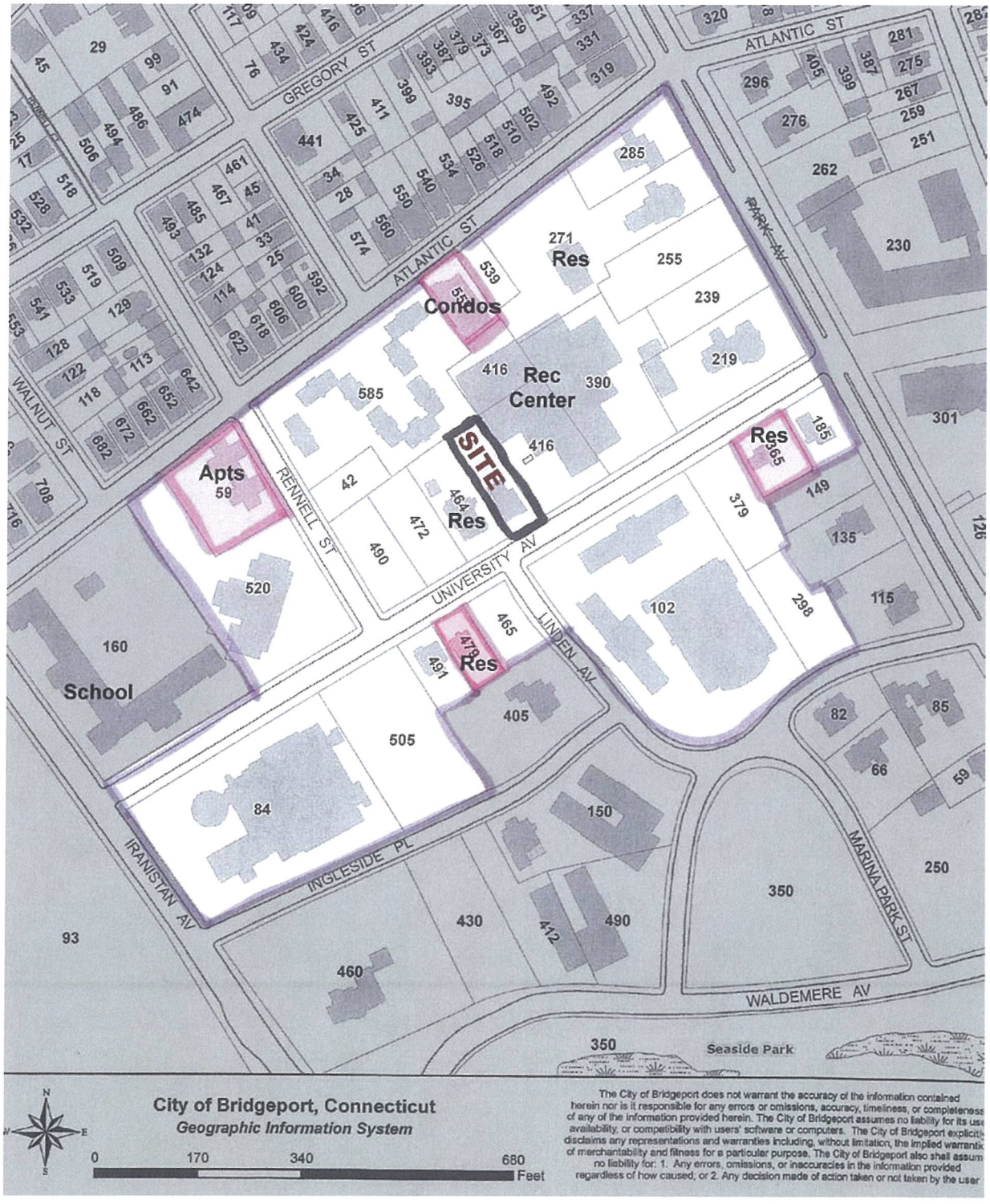

Figure 1: Overview of the Analyzed Area, showing the Campus Boundary and non-University parcels within the boundaries

Discussion of General Noise Analysis Methods

There are a number of ways in which sound (noise) levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. Following is a brief introduction to the noise measurement terminology used in this assessment.

Noise Metrics

The Sound Level Meter used to measure noise is a standardized instrument.[1] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. One of these is the *A-weighting* network. A-weighted sound levels emphasize the middle frequency sounds and de-emphasize lower and higher frequency sounds; they are reported in decibels designated as "dBA." Figure 2 illustrates typical sound levels produced by sources that are familiar from everyday experience.

The sounds in our environment usually vary with time so they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are *exceedance levels* and *equivalent level.* Both are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are designated L_n, where "n" can have any value from 0 to 100 percent. For example:

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the *residual* sound level, which is the sound level observed when there are no loud, transient noises.
- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the *intrusive* sound level because it is caused by occasional louder noises like those from passing motor vehicles. By using exceedance levels, it is possible to separate prevailing, steady noises (L_{90}) from occasional, louder noises (L_{10}) in the environment.
- The *equivalent level* is the level of a hypothetical steady sound that has the same energy as the actual fluctuating sound observed. The equivalent level is designated L_{eq}, and is also A-weighted. The equivalent level is strongly influenced by occasional loud, intrusive noises.

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1 *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

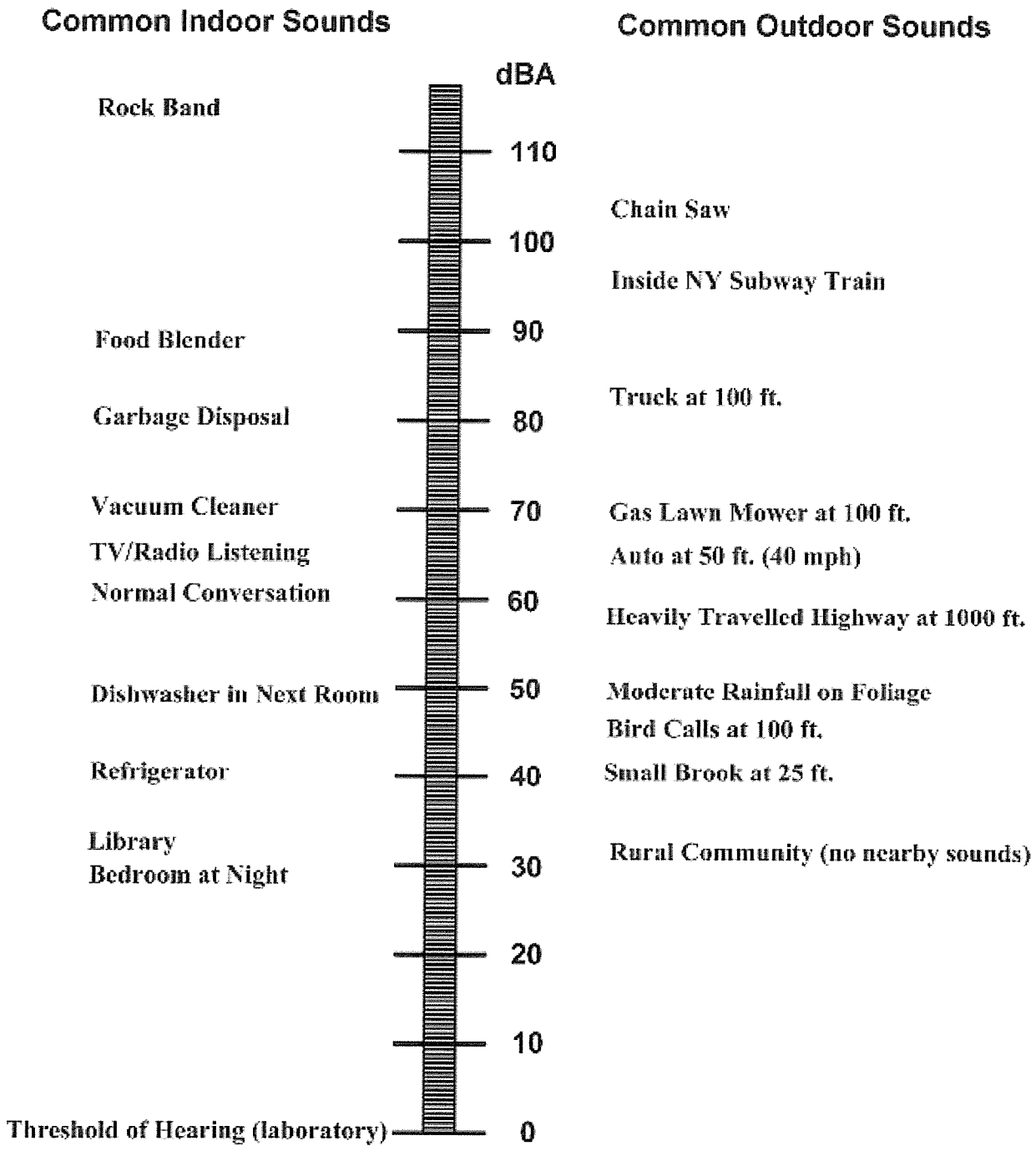

Figure 2:
Typical Sound Levels from Everyday Experience

When a steady sound is observed, all of the L_n and L_{eq} are equal. This analysis is based on the L_{eq} metric. All broadband levels represented in this study are weighted using the A-weighting scale.

In the design of noise control treatments, it is essential to know something about the frequency spectrum of the sound of interest. Noise control treatments do not function like the human ear, so simple A-weighted levels are not useful for noise-control design or the identification of tones. The frequency spectra of sounds are usually stated in terms of *octave band sound pressure levels*, in dB, with the octave frequency bands being those established by standard.[2] The ambient sounds in the community were measured in 1/3 octave band levels. The sounds expected as a result of this project have been evaluated with respect to the octave band sound pressure levels as well as the A-weighted sound level. For simplicity and consistency with the applicable standards, the study results are summarized in this report in terms of the combined A-weighted level.

Noise Regulations and Criteria

Sound compliance is judged on two bases: the extent to which governmental regulations or guidelines are met, and the extent to which it is estimated that the community is protected from excessive sound levels. The governmental regulations that may be applicable to sound produced by activities at the Site are summarized below.

- ***Federal***

  Occupational noise exposure standards: 29 CFR 1910.95. This regulation restricts the noise exposure of employees at the workplace as referred to in Occupational Safety and Health Administration requirements. The facility will emit only sounds of modest levels, as demonstrated by this study.

- ***State of Connecticut***

  Project sounds are controlled by Connecticut Regulation Title 22a, Sections 69-1 through 69-7.4, Control of Noise. Pursuant to Section 22a-69-2.5, the Project is in a Class B Noise Zone (Institutional) and is considered for this study to be a Class B emitter. The nearest off-campus properties are residential land use. The corresponding numerical criteria are shown in Table 1 below.

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2 *American National Standard Specification for Octave, Half-octave and Third-octave Band Filter Sets*, ANSI S1.11-1966 (R1975).

Table 1: Summary of Connecticut Noise Standards for Class B Emitters

"(a) No person in a Class B Noise Zone shall emit noise exceeding the levels stated herein and applicable to adjacent **Noise Zones:"**

		Receptor	
Industrial	***Commercial***	***Residential Day***	***Residential Night***
62 dBA	**62 dBA**	**55 dBA**	**45 dBA**

- ***Local Bridgeport Standards***

Bridgeport has Noise Control Ordinances under Health and Safety at Chapter 8.80. The quantitative standards are the same as the State standards, as summarized in the Ordinance excerpt below. The Bridgeport standards define the nighttime period to be somewhat more constrictive (longer) than the state standards. For this reason, the Bridgeport standard will be used for the project. Daytime is defined in Section 8.80.020 of the Bridgeport Noise Ordinance to be 7:00 am to 6:00 pm on weekdays and 9:00 am to 6:pm on weekends.

A. It is unlawful for any person to emit or cause to be emitted any noise beyond the boundaries of his/her premises in excess of the noise levels established in these regulations.

B. Noise level standards:

	Receptor's Zone			
Emitter's Zone	**Industrial**	**Commercial**	**Residential/Day**	**Residential/ Night**
Residential	62 dBA	55 dBA	55 dBA	45 dBA
Commercial	62 dBA	62 dBA	55 dBA	45 dBA
Industrial	70 dBA	66 dBA	61 dBA	51 dBA

C. High background noise levels and impulse noise.

1. In those individual cases where the background noise levels caused by sources not subject to these regulations exceed the standards contained in this chapter, a source shall be considered to cause excessive noise if the noise emitted by such source exceeds the background noise levels by five dBA, provided that no source subject to the provisions of this chapter shall emit noise in excess of eighty (80) dBA at any time, and provided that this section does not decrease the permissible levels of other sections of this chapter.

2. No person shall cause or allow the emission of impulse noise in excess of eighty (80) dB peak sound pressure level during the nighttime to any residential noise zone.

3. No person shall cause or allow the emission of impulse noise in excess of one hundred (100) dB peak sound pressure level at any time to any zone"

Since the noise standards are based on the land use of the emitter and the receiver, the current land use in the area is important to the study. The adjacent parcels are also controlled by the University. The nearest off-campus residential land uses are shown in pink on Figure 1. As presented in the following section, the area is in an existing area of high ambient sound. The sound is dominated by traffic on I-95, which is outside the control of Bridgeport, so the project goal is an increase of 5 dBA from the lowest ambient measured (48 dBA). In this way, the project criteria at sensitive receptors is 52 dBA, which when added to 48 dBA will produce a total of 53 dBA (an increase of 5 dBA).

Existing Community Sound Levels

A site survey and noise measurement study was conducted for this facility on October 9 and 10, 2013. The baseline sounds are dominated by the nearby I-95 freeway . The results of the contiguous monitoring survey are shown in Figure 3. The curves illustrate the diurnal variation of levels with wild fluctuations during the daytime and more steady lower levels during the night. The moment-to-moment sound levels reflect the community events that occur during that ten minute sample. The quiet period for the area is shown to be from about midnight to 5:00 am. However, the momentary lowest levels were measured in the early afternoon. The monitoring results indicate that the existing sound levels at the Site are 48 to 50 dBA during the quietest hours of the night period. During the daytime there were construction activities at several nearby residences. The sound from roadway and aircraft traffic were much more frequent during the daytime than at night. The corresponding daytime levels ranged from the mid 40's dBA to the mid 50's dBA. Individual 10-minute intervals reached as high as 63 dBA (Leq). The highest intervals were observed to be associated with individual events like a flight of helicopters overhead and construction activities.

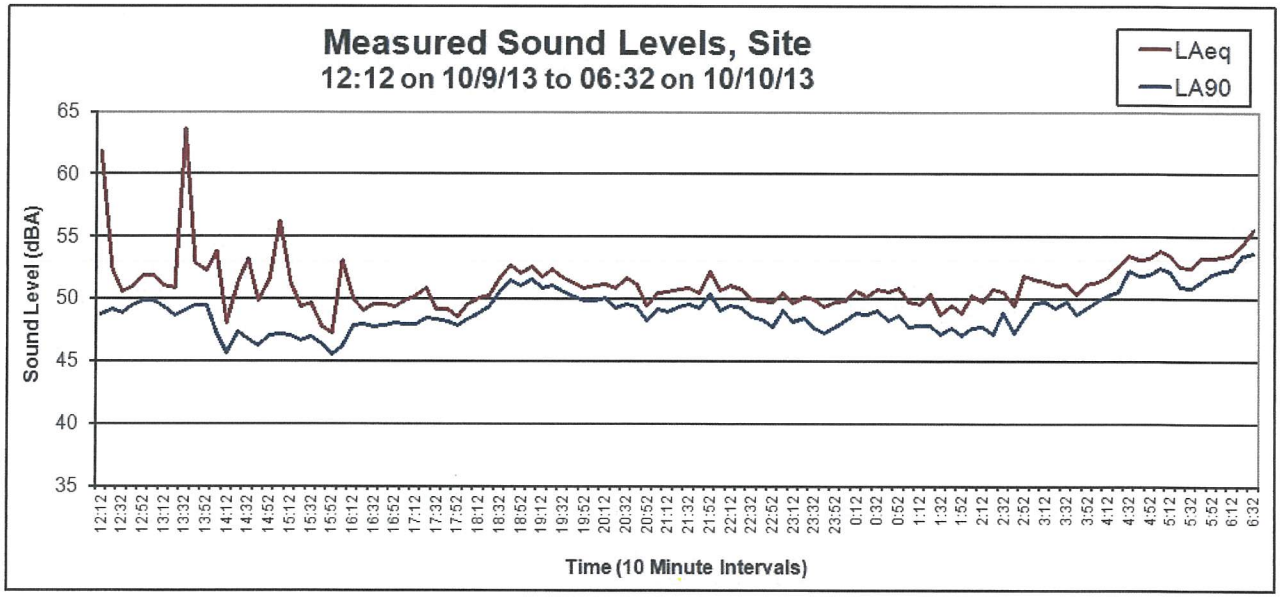


Figure 3:
Graphical Summary of Long Term Measurements at the Proposed Site

The contiguous measurements were made with a Rion NA-28 sound level meter. The microphone was mounted on a tripod at a height of about 5 feet with a factory recommended 8-inch environmental windscreen. The meter continually samples the sound, but was programmed to calculate the sound level statistics at 10-minute intervals. Various statistical metrics were collected, but the L_{eq} cited in this report represent the sound level of all community sources near and far.

Attended spot sound level measurements were occasionally made during the survey using another Rion NA-28 sound level meter. The attended measurements were made for the purposes of spot checking the long term monitor, to capture the frequency-specific character of the sound and to compare the sound levels at specific community receptors with that of the continuously measured site. The meter used for spot measurements was mounted on a separate tripod, also approximately 5 feet above the ground. The microphone was fitted with the factory recommended 3-inch foam windscreen. The meter was programmed to take measurements for 20 minutes and then to store processed statistical levels. During each of the attended spot samples the fluctuating levels were similar to the levels measured by the long-term monitor. The results of the spot measurements are summarized in Table 2.

All meters meet the requirements of ANSI S1.4 Type 1 – Precision specification for sound level meters. Each meter was factory verified within one year of the study. They were calibrated in the field using a Rion NC-74 acoustical calibrator before and after the measurement session. The results of the field calibration indicated that the meters did not drift during the study. The meters are equipped with real time octave band filter sets. Their filters comply with the requirements of the ANSI S1-11 for octave band filter sets.

TABLE 2: Summary of Ambient Sound Level Spot Measurements

Location	**Time**	**Period**	**Leq (dBA)**	**Dominant Sound Sources**
1. Res West	13:05	Day	49	Distant traffic, industry south, train.
(at Parking Area)	11:47	Night	51	Distant traffic, distant aircraft, HVAC.
2. Condos North	12:15	Day	53	Distant traffic, distant aircraft.
	11:47	Night	53	Traffic, distant traffic, distant aircraft, HVAC.
4. Res East	13:33	Day	51	Traffic, distant traffic, distant aircraft, HVAC.
	00:13	Night	51	Traffic, distant traffic, construction distant .

The Analysis of Sounds from the Proposed Installation

A computer model was developed for the facility's sound levels based on conservative sound propagation principles prescribed in the acoustics literature. For conservatism, all sources were assumed to make continuous contributions to the area sound levels during operation. Input source values for the equipment design and operating sound level were developed using file data on similar equipment and from vendor input. Each of the potential sources during routine operation of the facility was identified. The sound from each facility-related source is estimated at the source and at the nearest off-site receptors. The sum of the contributing sources is used to represent the predicted sound level at the modeled locations. Identifying specific receiving locations is a key element of the noise modeling, since sound levels decrease with increasing distance. The distances used in this study represent the distance between the facility sources and the nearest off-campus receptor in each general direction from the equipment. No receptors are placed to the South of the equipment because the shielding provided by the Recreational Complex eliminates the exposure of those receptors.

The proposed installation has been designed with significant attention to protecting the community sound environment. The fuel cell technology itself does not require the mechanical sources of sound that are typical of power generation facilities. Most of the components planned for the installation will produce no sound. Each expected sound source is described below, quantified in terms of sound power and modeled to obtain a cumulative level at the industrial and community receptor locations. As a result of the mitigation measures, the results of this analysis demonstrates that it is feasible to operate the proposed equipment at the site within the noise criteria of the City of Bridgeport and the Connecticut Department of Energy & Environmental Protection ("DEEP").

Sources of Project Sound

There are various sources of modest sound at the facility including the fuel cell modules, pumps and fans. The core of this technology, the fuel cell modules, will produce no significant sound. Ancillary equipment includes a fresh air blower that will provide fresh air into the main process skid. The blower is fitted with silencer and wrapped to minimize the potential noise impact. Above the water treatment cabinet will be located a cooling condenser to support equipment inside the cabinet. The water treatment condensers are similar to many air conditioners in the area used at residential locations, producing sound only when the fan is actively providing cooling for the system. There will be several secondary sources of sound in and on the enclosures that contain the Electrical Balance of Plant equipment. There will be transformers in one section, with electrical buses and inverters in other sections. While the electronics produce almost no sound, these components require ventilation that will be provided by fans mounted in the enclosures. The gas processing equipment and water pump skids will produce some sound, but will be less than other sources and is limited to high frequencies that are quickly absorbed by the atmosphere. They are included in the study, but will not contribute significantly to the cumulative project sound. Finally, there is a chiller that provides additional cooling to the

electrical balance of plant. The chiller cools a fluid that transfers the cooling to the electronics. This unit operates as needed, so fluctuates in its operation based on ambient and equipment temperature. The transformer is included in the model, but it is relatively small and does not contribute significantly to the overall plant sound, which is dominated by the fresh air blower and blower motor. They are described below and are shown graphically in Figure 4.

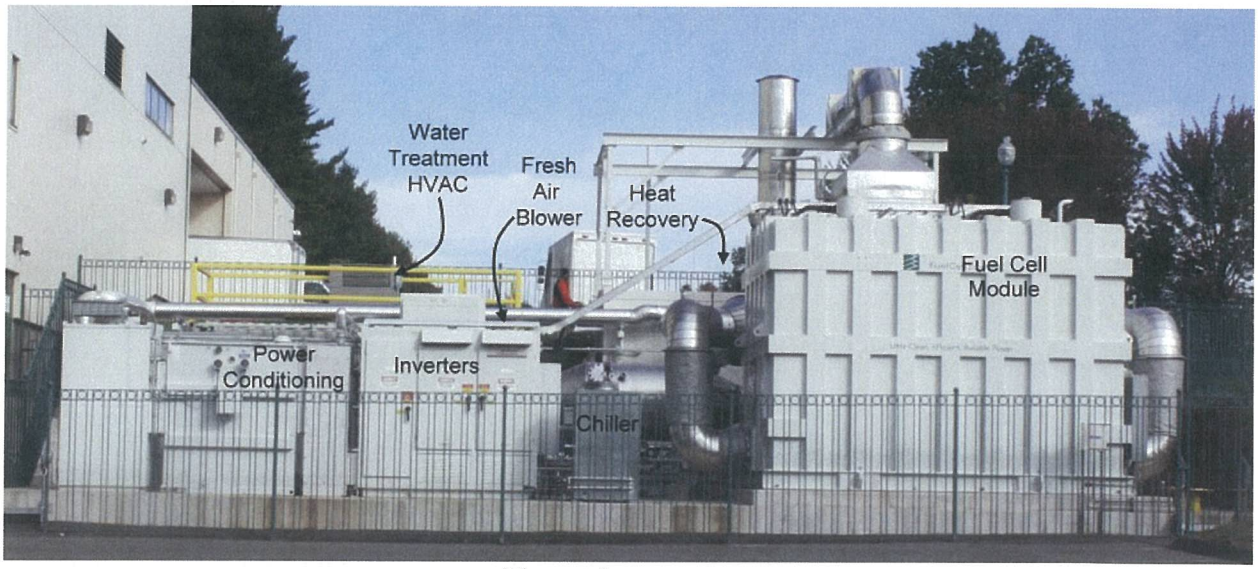


Figure 4:
Annotated View of another DFC 1500 installation showing Individual Sources of Sound
(shown as viewed from the west)

Under normal conditions, the facility sources will produce consistent sound through the day and night. Some equipment will cycle on and off based on the process temperature and cooling requirement, but for this conservative study, all sources are analyzed as continuous sources. The entire site will be surrounded by an 8-foot visual screen around the perimeter of the equipment pad. Initially, it is assumed to have no sound mitigation properties. While the character or materials of the visual screen have not yet been determined, it is shown in this field image as an open steel fence. The proposed site layout is also shown in plan view in Figure 5.

Noise Modeling Procedures

The acoustical modeling for this project was conducted with the Cadna/A computer software program from DataKustik GmbH. The outdoor noise propagation model is based on ISO 9613, Part 1: Calculation of the absorption of sound by the atmosphere, (1993) and Part 2: General method of calculation, (1996). The meteorological conditions used were downwind conditions which favor the transmission of sound from the facilities to each receptor. Each source is defined by an individual sound level contribution at a reference distance. It is noted that these individual contributions will not necessarily be isolated since all sources are necessary for facility operation. Nevertheless, it is important to clearly define each source to allow the noise model to calculate a cumulative value at each of the modeled receptors. The resulting values represent expected combined facility sound emission based on the vendor design for this project.

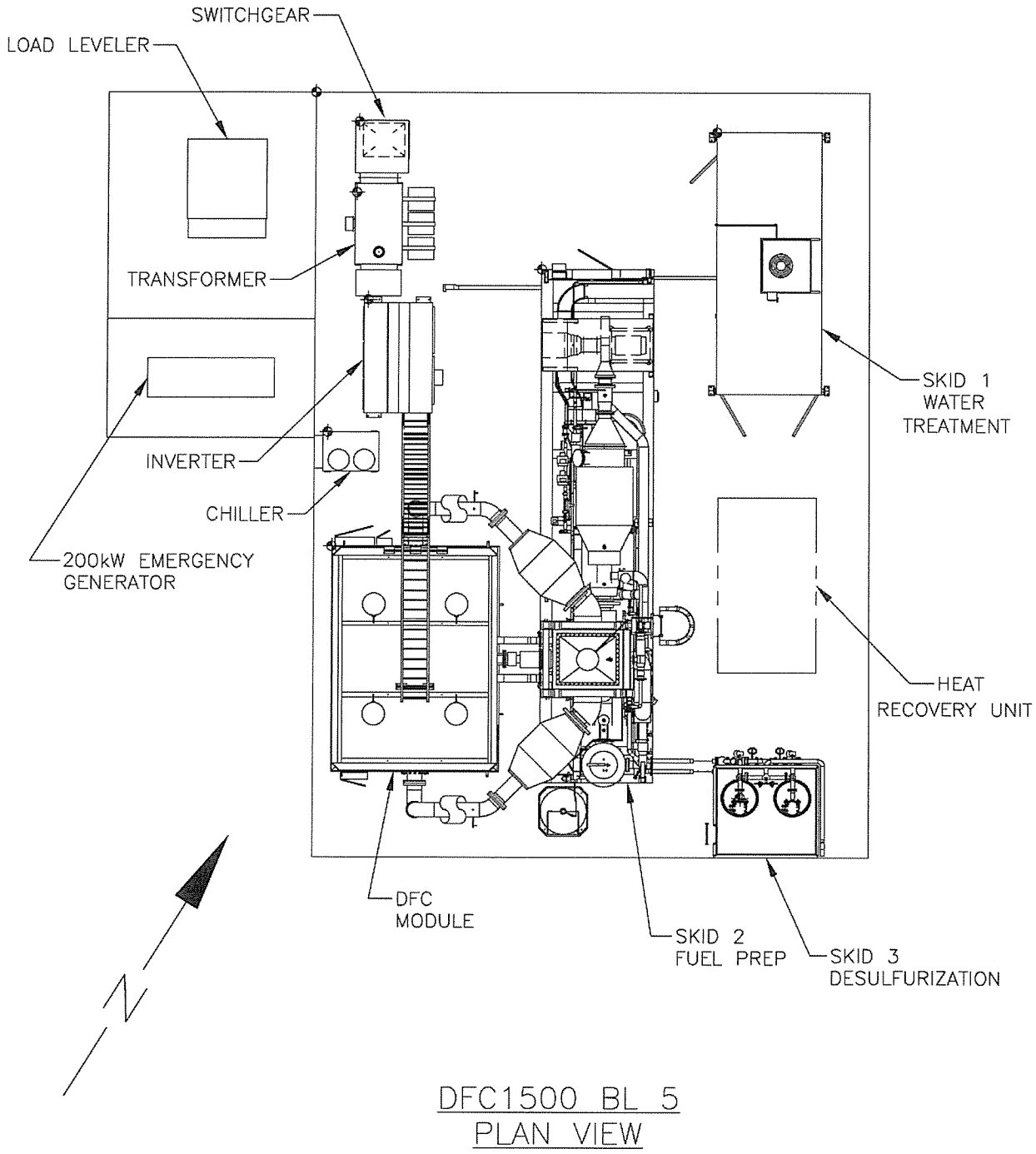


Figure 5:
Annotated Block Model Summarizing of Individual Facility Components

Modeling Parameters

The sound power of each source was developed from detailed measurements on and around an operational DFC-1500 unit. The source levels were defined in the near field and also in the far field, as used in this study. The fundamental propagation assumptions are typical of industry standards. The following specific input parameters were made to assure that the estimates of sound at distant receptors is consistent with site specific conditions:

- Terrain is relatively flat so is assumed to be none
- Temperature 10°C
- Relative Humidity 70%
- Weather Condition 5 mph, directly from facility to receptor*
- Ground Attenuation 0.5, rural area
- Number of Sound Reflections 2
- Receptor Height 1.5 meter above ground level

* Propagation calculations under the ISO 9613 standard incorporate the adverse effects of certain atmospheric and meteorological conditions on sound propagation, such as gentle breeze of 1 to 5 m/s (ISO 1996-2: 1987 and ISO 9613-2:1996, at elevations between 3 m and 11 m above ground) from source to receiver.

The results of the modeling are shown in Table 3. The terrain is relatively flat in all directions and shielding from nearby campus buildings was incorporated in this analysis. The CADNA model was used to estimate the sound level at the nearest sensitive residence in each general direction from the equipment. The analysis is based on the contributions of individual sources and includes propagation losses to the analyzed receptors. The distances used in the study were scaled from the equipment site plan for property line sources. The results demonstrate that the Project meets all applicable local and state noise standards at the surrounding residential, commercial and industrial receptors.

Table 3: Summary of Noise Modeling Results for Base Load Operation

Receptor	Distance (ft)	Equipment Sound (dBA)	Criterion (dBA)
Residence South	300	43	52
Condos West	330	39	52
Residences North	345	35	52

While the results indicate compliance with the off-campus regulatory limits, it will be necessary to screen the facility to address on-campus visual and sound level effects. For this reason, the equipment is proposed with an 8 foot visual screening wall. This wall can be designed to also address sound control features. While the benefit will be significant at on-campus receptors, the barrier will also offer a minor benefit at the more distant off-campus receptors. The configuration with a solid wall is summarized in Figure 6 and Table 4.

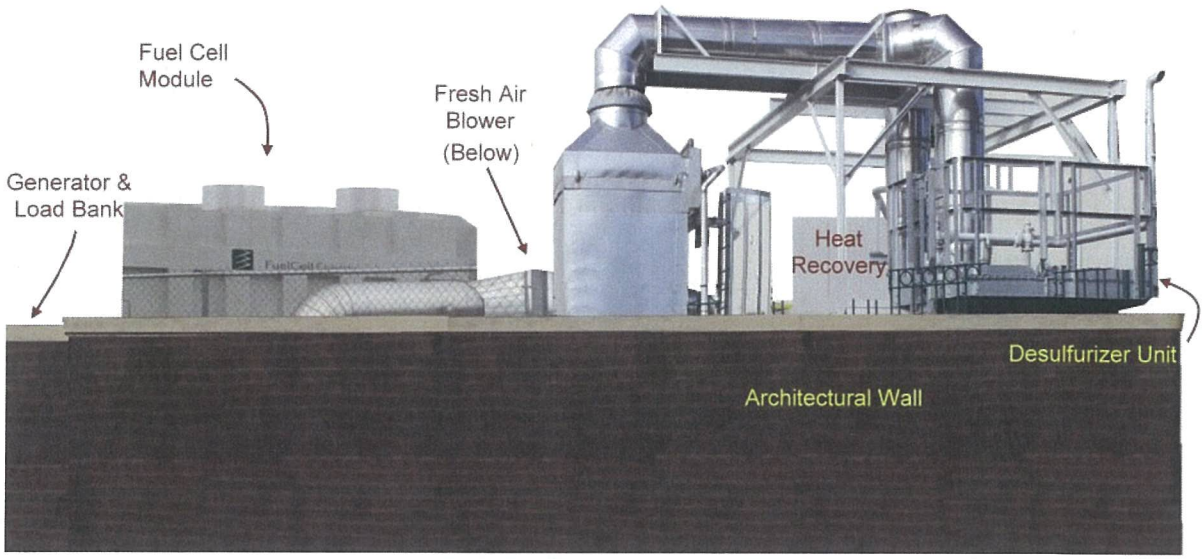


Figure 6:
Annotated Model Summarizing of Individual Sources of Facility Sound with Solid Wall
(shown as viewed from the south)

Table 4: Summary of Noise Modeling Results for Base Load Operation

Receptor	Distance (ft)	Equipment Sound (dBA)	Criterion (dBA)
Residence South	300	39	52
Condos West	330	38	52
Residences North	345	35	52

Conclusions

The core of this facility is the fuel cell technology which lacks the heavy mechanical equipment that is commonly associated with electrical generation. In the optimized configuration of this unit, it also includes a heat recovery system to capture additional useful energy from the fuel cell process. But it will be designed for mitigated sound emissions to be consistent with the low levels emitted by the fuel cells. There will be several other ancillary sources of modest sound such as blowers, pumps, condensers and fans associated with the fuel cell units. The size of the equipment and character of the sound will be typical of commercial mechanical rather than of industry.

The existing sound levels were established by a comprehensive survey of the sound levels at the site and nearest receptors. The potential facility sound sources have been identified and quantified. The sound levels were estimated using modeling techniques at the nearest community locations. The results indicate that the facility levels will meet the City of Bridgeport and Connecticut state criteria at the nearest residential receptors. Since sound decreases with distance, the sound will be less at more distant locations. Furthermore, the study indicates that the equipment sounds will remain below the existing ambient levels at community locations. Therefore, the sound from the facility is not expected to be noticed at these sensitive land uses.

Attachment 1: Sound From Facility Upset Conditions

The Load Leveler

The fuel cell is connected to a high pressure natural gas fuel source that is not dependent on the availability of local utility electrical power. The residual power to operate the equipment is self-generated. In this way, the Fuel Cell production will not usually be affected by the lack of utility power. But there are two sources that are associated with that specific condition. Neither of these sources are a routine contribution to facility sound, so they were not included in the steady state modeling analysis.

Any network of power supply must have an active balance between the power supply and the power consumption. In contrast, the Fuel Cell technology is ideally suited for long term steady-state production. This is usually not a problem, as the electricity is exported into the grid, providing the necessary stabilization of the moment-to-moment production and utilization. In the absence of the grid, this facility is designed to instantly support an electrical "island". As noted, the operation of the fuel cell does not inherently support a load tracking capability. To provide this feature, the facility incorporates a load leveler. This unit provides instant adjustment of the unit output to match the moment-to-moment demand. It does this by simply consuming the excess energy using a resistive heater (load bank). In order to reject the heat from this unit, the load bank has a fan driving airflow past the multiple layers of heating elements.

Because of the need for immediate load leveling in the absence of the grid, the load leveler will be instantly activated whenever the grid power is lost and will remain active until utility power is restored. While this is a rare upset condition, it is fundamental to the operation of the facility. For that reason, the sound associated with the load leveler fan will be designed to operate within the applicable performance criteria.

Table 3: Summary of Noise Modeling Results for Base Load Operation

Receptor	Distance (ft)	Equipment Sound (dBA)	Criterion (dBA)
Residence South	300	37	52
Condos West	330	41	52
Residences North	345	47	52

The Emergency Generator

As stated, the fuel cell equipment is powered by natural gas and operates on self generated electrical power. It is designed to be instantly disconnected from the grid when utility power is lost. However, instability at the time of the power outage could translate into a tripped unit. If the unit trips as the utility power is lost, then it requires the necessary electrical startup to restore the power island. An electrical generator is incorporated into the facility design to accommodate that need.

The generator specified for the facility is a 200 kW Generac unit that is fired by natural gas. The generator will be installed on a separate pad just west of the DFC 1500 footprint. The generator will be a standalone unit configured for quiet operation. There are several upgrades that are available for the unit. The most effective is the Level 2 Noise Mitigation Enclosure that is proposed for this unit.

There are only two occasions when the generator will be used. The first is for weekly routine maintenance checks during daytime hours only. The second is during that rare event when the utility power is lost ***-and-*** the fuel cell facility power was also lost. This is only expected to take place during major storms with local damage. Unlike most emergency generators which will operate for the duration of the power outage, this unit will only need to operate long enough to perform a hot start for the tripped unit during the special case when the unit tripped at the time of power loss.

While this is also a rare upset condition, it is fundamental to the reliability of the facility. For that reason, the sound associated with the generator will also be designed to operate within the applicable performance criteria.

Table 3: Summary of Noise Modeling Results for Generator Operation

Receptor	Distance (ft)	Equipment Sound (dBA)	Criterion (dBA)
Residence South	300	36	52
Condos West	330	40	52
Residences North	345	43	52

FuelCell Energy

EMERGENCY RESPONSE/SAFETY PLAN

Prepared for:

UB Fuel Cell, LLC

Located at:
446 University Avenue (in back)
Bridgeport, CT

Prepared by:

FuelCell Energy, Inc.
3 Great Pasture Road
Danbury, CT 06813

Submitted to:

Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

May 2014

A current copy of this Plan is to remain in an accessible location on-site at all times

Document Number: SHE_Eng-84
Revision: 2

Plan Contents

Appendices

1 INTRODUCTION

UB Fuel Cell, LLC, ("UBFC") a special purpose entity wholly owned by FuelCell Energy, Inc. ("FCE"), has entered into a power purchase agreement ("PPA") with the University of Bridgeport. Pursuant to the PPA, UBFC will construct a 1.4MW nominally rated fuel cell power plant with blackstart and microgrid capability. This Emergency Response / Safety Plan has been prepared for submission to the Connecticut Siting Council in fulfillment of the requirements of the Decision and Order pursuant to Docket NT-2010. The NT-2010 order requirements for the preparation of an Emergency Response / Safety Plan are similar to the requirements imposed by other regulatory programs, namely, the Emergency Action Plan required by the Occupational Safety and Health Administration (OHSA) general industry standard, the Fire Prevention & Emergency Plan requirement of the National Fire Protection Agency Standard 853 and the development of safety programs required by OSHA. Accordingly, these plans, currently in DRAFT form, in addition to other information, are incorporated into this Plan in fulfillment of the NT-2010 requirements.

1.1 General

FCE Direct Fuel Cell ("DFC") plants are designed and operated as unmanned power generation facilities. The control system for the plant is designed for the system to "fail safe" in the event of a process upset. For any event or upset condition that has a potential safety consequence, the plant control system initiates an emergency shutdown ("ESD") sequence that isolates the external fuel source from the plant and trips the fuel cell inverters off the grid.

A DFC plant Emergency Shut Down event isolates the natural gas fuel supply from the plant through the use of dual fast-acting, spring-loaded block valves located at the plant fuel gas supply connection. An ESD event also triggers automatic isolation of the fuel desulfurizer vessels and initiates the purging of the downstream fuel train components through the module using the onsite supply of inert nitrogen gas. Purging the residual fuel train contents out through the module results in the fuel being oxidized to innocuous end products. An ESD event also results in the fuel cell module(s) and inverter(s) being disconnected from the electric utility grid. Process upset or equipment operation malfunctions that can only cause equipment damage but no possible safety consequences can result in the fuel cell plant switching off the electric grid while remaining operational (islanding) so as to allow time for either the electric grid or the fuel cell plant to stabilize, prior to resynchronizing with the grid. During any of these types of events, operators at FCE's 24/7/365-manned Global Technical Assistance Center ("GTAC"), will immediately assess the operational condition of the plant and take appropriate actions to stabilize or recover the plant to operational status, whichever is appropriate for the situation. If any on-site response is appropriate for the situation, the GTAC operator will contact appropriate personnel, be they an FCE field service technician, or in the very unlikely event of a developing emergency response situation, local emergency response personnel.

Following, in Table 1, is an outline description of the fuel cell plant equipment included in this project.

Table 1: Plant Description

Plant Model: DFC1500B5

Each DFC1500B plant consists of one (1) DFC module, a Mechanical Balance-of-Plant (MBOP – skids 1-3), and an Electrical Balance of Plant (EBOP).

Number of Installed Fuel Cell Plants: **1**

Total Power Output: **1.4 Megawatts**

Installation Location: **Outdoors**

Fuel type: **Pipeline Natural Gas**
Utility supply pressure: XX psig
Plant reduced operating pressure: <15psig

Output Voltage: **480 VAC**

EBOP Manufacturer: **Rockwell**

EBOP Transformer Type / Dielectric Fluid:
Oil Filled / FR3 "less-flammable" seed-based transformer oil

Nitrogen Supply: **Liquid microbulk tank (~250 gal. liquid capacity)**

Additional Appurtenant Equipment

Fuel Cleanup Equipment: **None**

Ancillary Equipment

Black Start natural gas fueled electric generator
Electrical Load Leveler
Heat Recovery Unit (hot water/glycol solution, w/ pumps)
480V/13.82KV step-up transformer (containing 359 gal. FR3 dielectric fluid.)

Equipment not described above is not covered by this plan

2 EMERGENCY RESPONSE / SAFETY – PLANS

Employers are required by the Occupational Safety and Health Administration ("OSHA") Standard at 29 CFR 1910.38 to have a written Emergency Action Plan ("EAP") for workplaces. The EAP can serve to fulfill the requirements of an Emergency Response Plan when the plan for emergency response activities is to evacuate the premises and to allow professional emergency responders to perform the required emergency response activities. Due to the nature of FCE DFC power plants being unmanned, remotely operated, and fail-safe in operational philosophy and control, it is the practice and policy of FCE to instruct workers, through a workplace EAP, to evacuate the premises in emergency situations and to summon professional emergency responders to perform required emergency response activities.

NFPA 853 requires the preparation of a written Fire Prevention and Emergency Plan for fuel cell installations. The Fire Prevention and Emergency Plan is to be prepared in accordance with the requirements of Section 8.2 of NFPA 853 and is to include descriptions of fire prevention procedures, inspections, housekeeping practices, flammable material storage, control of ignition sources, procedures for fire protection equipment impairment, fire emergency plans and other information.

The OSHA standards for General Industry (Part 1910) and Construction (Part 1926) at Title 29 of the Code of Federal Regulations require that employers comply with a host of health and safety standards. Such requirements are outlined in employer safety programs and policies. Summary statements of corporate health and safety policies are often prepared for employee quick reference on an individual plant or project-specific basis.

Copies of a DRAFT Emergency Action Plan, DRAFT Fire Prevention & Emergency Plan and a DRAFT Plant/Project Safety Plan follow.

2.1 Emergency Action Plan

Following is a DRAFT version of an EAP for the subject plant. As the plant is under construction, the DRAFT EAP will be updated as necessary to appropriately reflect specific site conditions and limitations, as FCE becomes aware and as construction progresses.

Emergency Action Plan

Site Name: **University of Bridgeport**

Site Address: **446 University Avenue (in back)**
Bridgeport, CT 06605

Plant Operator: FuelCell Energy, Inc.
3 Great Pasture Road
Danbury, CT 06810

Plant Owner: UB Fuel Cell, LLC
c/o FuelCell Energy, Inc.
3 Great Pasture Road
Danbury, CT 06810

A. *Emergency Plan Coordinator & Other Contacts*

Emergency Plan Coordinator –

Name:	**Global Technology Assistance Center (GTAC)**
Company:	FuelCell Energy, Inc. **(FCE)**
Description:	24 hour / 365 day Plant Monitoring
Telephone No:	**(800) 326-3052**

Additional Contact information –

Site Operator Contacts: ***(NOTE: private telephone numbers redacted from public report to protect privacy)***

Name:	Steve Ibanez
Co./Dept./Title:	FCE / Field Service / Eastern Region Manager
Telephone No:	(203) 830-7408 (FCE)
	(XXX) XXX-XXXX (Home) *(available in user copies)*
	(XXX) XXX-XXXX (Cell) *(available in user copies)*

Name:	Steve Brown
Co./Dept./Title:	FCE / Field Service / Director of Field Operations
Telephone No:	(203) 205-2449 (FCE)
	(XXX) XXX7-XXXX (Home) *(available in user copies)*
	(203) XXX-XXXX (Cell) *(available in user copies)*

Name:	Mark Benedict
Co./Dept./Title:	FCE / Process Engineering /Principal Engineer, Product EHS
Telephone No:	(203) 830-7429 (FCE)
	(XXX) XXX-XXXX (Home & Cell) *(available in user copies)*

Name:	Gordon Brookes
Co./Dept. /Title:	FCE / FuelCell Energy Corporate EHS Director
Telephone No:	(860) 496-2207 (FCE)
	(XXX) XXX-XXXX (Cell) *(available in user copies)*

Additional Site Contacts:

Name:	David P. Cote
Co./Dept./Title:	Univ. of Bridgeport / Facilities Planning & Operations / Executive Director
Telephone No:	(203) 576-4898

Site Utility Contacts:

Company:	**Southern Connecticut Gas Company (Natural Gas)**
Name/Dept /Title:	Gas Leaks or Emergency 24-hr contact
Telephone No:	(800) 513-8898 (24-hour)

Company:	**United Illuminating (Electrical)**
Name/Dept /Title:	UI Customer Care Phone Support Number - Emergency
Telephone No:	(800) 722-5584 (24 hour)

Company:	**Aquarion Water Company (Water)**
Name/Dept /Title:	Aquarion Service Center (answering service during non-business hours)
Telephone No:	(203) 732-9678

Company:	**Bridgeport Water Pollution Control Authority (Sewer)**
Name/Dept /Title:	William Robinson / WPCA / General Manager
Telephone No:	(203) 332-5550

Company:	**Airgas (Nitrogen)**
Name/Dept /Title:	Jason Clinkscales / Bulk Gas Operations / Business Manager
Telephone No:	(203) 624-0320 ext. 30
	(603) 401-4411 (cell)

Government Official Contacts:

(Note: Government officials are only to be contacted by designated FCE personnel, per established FCE policy/procedure, described later in this Plan)

City of Bridgeport –
Mayor – William Finch; (203) 576-7201
Homeland Security / Emergency Management – Scott Appleby; (203) 579-3822

State Legislators –
State House Representative – Ezequiel Santiago (District 130); (203) 450-9741
State Senator – Andres Ayala (District S23); (800) 240-8864 (aide Carlos Cosme)

Private Residences/Establishments requesting notification of emergency response incidents:

Neighboring Resident or Establishment Name	Neighbor Street Address	Contact Information – Phone and/or email

B. Preferred Means of Reporting Emergencies

GTAC is to contact local Emergency Responders in accordance with this Plan, if required, or when requested to do so by on-site personnel.

Emergency	Make Initial Notification to:
Fire / Explosion	**(203) 367-5351** **(for calls originating from other than on-site)** **9-1-1 (for calls originating on-site only)**
Flammable/Hazardous Material Release	
Medical Emergency	
Threat / Violence	
Severe Weather	Coordinate with FuelCell Energy GTAC (800) 326-3052

C. ***Emergency Action Plan Elements***

- **Emergency Escape Procedures and Routes**

  Emergency escape routes, exits and rally areas are depicted in the Plant Layout drawing provided in Appendix A.

  Upon discovery of the need for an evacuation (either self-initiated or in response to an evacuation call), all personnel on site shall immediately proceed to the nearest safe site exit and then proceed immediately to the designated rally area. Non-FCE contractors and guests shall be escorted by their host FCE employee to the nearest safe exit. The standard lock combination is known by operating /maintenance personnel for any exits that may be secured at times when the plant is occupied.

  In the course of evacuation, ***a call shall immediately be placed to GTAC with a request/instruction for the second GTAC operator to immediately call local Emergency Responders*** *(See Emergency Action Plan, Section II)* to initiate action by the local emergency response organization(s). The caller is to stay on the line and provide all information requested, including name, location and nature of emergency and additional contact information, as may be requested.

  With the exception of small 'incidental' spills (as defined by OSHA and per FCE employee training), FCE employees are not to perform chemical spill response activities. Emergency or private spill response contractors are to be retained for the cleanup of non-incidental spills.

  All releases of ANY material are to be reported to the FCE Product EHS Principal Engineer and to the FCE EHS department as soon as practical.

- **Procedures for Employees who Remain to Operate Critical Operations Before Escape**

  All employees are expected to proceed immediately to the designated primary or backup rally location during any call for site evacuation.

- **Employee Accountability Procedures after Evacuation**

  The proposed University of Bridgeport fuel cell is a normally unmanned site; however, one or several FCE, owner or visiting personnel may be present on site at any time to perform operating, maintenance or other tasks. Per established site work/visitation procedure, all FCE and other personnel present on-site will be known by both the senior FCE Field Service employee present at the site as well as by the off-site GTAC operator. Upon the implementation of an evacuation, cell phone

contact is to be established immediately with GTAC to update or confirm the list of on-site personnel. Accounting of all on-site personnel is to then be made at the rally area, or backup rally area, wherever the situation dictates that assembly occur.

- **Rescue and Medical Duties**

  FCE employees are not routinely provided with rescue or in-depth medical training, and as such are not required or expected to perform rescue or medical duties. FCE employees are NOT to reenter the site following an evacuation prior to an 'all-clear' call being made from the professional first responder person in charge.

- **Alarm System**

  FuelCell Energy plants are normally unmanned sites, with only a small number of workers present on site at any given time. Typically one, sometimes two, and on rare occasions more than two workers are present on site when work is being performed. When multiple workers are on site, they will typically be working together.

  The employee alarm system to be used at the University of Bridgeport site is direct voice communication. *The OSHA standard for employee alarm systems at 29 CFR 1910.165 allows the use of direct voice communication as an acceptable procedure for sounding an alarm system for workplaces of 10 or fewer employees, provided all employees can hear the alarm.*

  Upon discovery of a situation requiring evacuation, the discovering employee shall directly communicate the evacuation requirement to his/her fellow employees. Any non-employee guests on-site will be escorted by their host employee to the nearest clear exit at that time. It is envisioned that all employees present on site at any time will be capable of hearing a call for evacuation under foreseeable circumstances.

- **Training**

  All employees and contractors working at, and visitors to FCE fuel cell power plants are to be trained in the elements, policies and procedures of this Emergency Action Plan prior to, or at the time of their first visit. All persons present at FCE plant sites are expected to comply with all elements of this plan in emergency situations.

D. Emergency ShutDown (ESD) Procedures

All FCE fuel cell power plants are equipped with multiple ESD pushbuttons.

- Each DFC1500 plant is equipped with 6 ESD pushbuttons:
  - 2 on Skid 2 (one on each end)
  - 2 on Skid 1 (one inside and one outside)
  - 1 on the EBOP PCU
  - 1 on the EBOP Tie Breaker Switchgear

Depressing any one of these pushbuttons shuts down the respective fuel cell plant. ***NOTE: Plant Electrical Balance of Plant switchgear and transformer equipment will remain energized even after depressing an ESD.*** Note also that the some Mechanical Balance of Plant electrical devices are UPS (uninterruptable power supply) fed, so some low voltage equipment may remain energized even after engaging an ESD pushbutton.

The locations of the plant ESD pushbuttons are depicted in the drawing in Appendix B.

E. Special Training

FuelCell Energy personnel who work at fuel cell plants receive Hazcomm training in the chemical hazards that are present on site. Operating personnel also receive training in other occupational safety and health (OSHA) standards, as appropriate for the tasks to which they are assigned.

F. Personnel Accounting Following Evacuation

All personnel present on site at the time of an evacuation are to proceed to the designated rally area, depicted on the drawing in Appendix A, in order to be accounted for. Contact will be made with GTAC and the ranking supervisor on site will determine if all personnel are accounted for or if any personnel are missing. The results of the accounting determination will be reported to the professional first responder in charge of the emergency response.

G. Rescue And Medical Duties

All rescue and medical duties required at any FCE fuel cell plant will be performed by professional emergency response personnel.

2.2 Fire Prevention & Emergency Plan

Following is a DRAFT version of a Fire Prevention & Emergency Plan for the subject plant. As the plant has not yet been constructed, the DRAFT Fire Prevention & Emergency Plan will be updated as necessary to appropriately reflect specific site conditions and limitations, as FCE becomes aware and construction progresses.

Fire Emergency Plan

Purpose:

This document provides information specific to FuelCell Energy's Direct FuelCell (DFC) power plant, as described in the Plant Description section earlier in this Plan (Table 1). The document has been prepared in accordance with the requirements of Section 8.2 of NFPA 853-2010.

A. Response to Fire or Other Emergency Condition

- **Overview of fire hazards present**

  Natural gas (odorized) at a nominal pressure of XX psig is supplied to the fuel cell power plant gas meter via an underground pipe from a connection in the street. The aboveground gas meter and manual shutoff valves that supply the fuel cell are located approximately 50 southeast of the fuel cell plant at the southwest corner of the Wheeler Recreation Center. The piping runs underground from the shutoff valve/metering station to the interior of the plant enclosure where it emerges above grade and connects to the plant. The fuel cell plant immediately reduces the fuel gas pressure to less than 15 psig and directs the gas flow to the plant desulfurization equipment.

  Natural gas is de-odorized by flowing through the two desulfurizer vessels of the fuel cell power plant. The desulfurizer vessels are each equipped with a safety pressure relief valve (PRV), sized for both a failed pressure reducing valve and a fire exposure condition. The PRVs discharge to a vent termination approximately 20' above grade over the desulfurizer vessels. Any flow through a PRV is immediately detected by an in-line flow sensor, which in turn immediately initiates a plant ESD. De-odorized fuel flows through the fuel cell power plant equipment, including the fuel humidifier and the preconverter and the into the fuel cell module. The air heater also operates on an intermittent basis on de-odorized fuel. All fuel gas is confined within code complying process piping and vessels. All fuel sample valve taps are small bore and "double blocked" by virtue of tethered caps.

  The fuel cell power plant operates at high internal temperatures. Temperatures inside the insulated fuel cell module are approximately 1200°F and the fuel fired air heater also operates at temperatures of up to 1200°F. The fuel humidifier and connecting pipes also operate at high temperature. Insulation or guards are provided to maintain external skin surfaces at safe temperatures.

  Ancillary pieces of electrical equipment are provided with or are appurtenant to the fuel cell power plant. Some electrical equipment operate at high current and/or medium voltage (>500V) and therefore generate appreciable heat. All electrical

equipment are designed to applicable codes, including provisions for adequate heat dissipation.

- **Notifications and coordination**

  Upon discovery of a fire or other emergency condition, or acknowledgement of a fire alarm associated with the fuel cell power plant, the discovering or acknowledging person shall make notifications to the appropriate persons as outlined in the site Emergency Action Plan.

  An on-site discovering person who is trained in the operation and maintenance of the fuel cell power plant and who has evacuated the site for an emergency situation shall remain stationed in proximity to the site and accessible to emergency responders through the emergency response time frame in order to assist and support responders with technical expertise as they may request or require.

  An on-site discovering person who is a representative of the plant/facility owner shall remain on-site through the emergency response time frame to assist and support responders with plant/facility owner information and resources, including access to required resources and traffic control as emergency responders may request or require.

- **Plant security**

  Public access to the fuel cell equipment is restricted by an eight foot high enclosure surrounding the site. The enclosure is equipped with personnel and equipment doors or gates for necessary access. All doors/gates are kept locked when facility personnel are not present. All doors/gates are equipped with Local Fire Department specified and keyed Knox Locks, daisy-chained to the operator-provided combination lock. The daisy-chained locks provide the necessary security, while at the same time they also provide the means for required access by both authorized owner and operator personnel as well as Emergency Response personnel.

- **Evacuation and restriction of non-response personnel**

  Upon discovery of a fire or other emergency condition associated with the fuel cell power plant, the plant area shall be immediately evacuated of all non-response personnel to a minimum distance of 50 feet. Plant host facility representatives and qualified plant operating personnel shall identify themselves to Emergency Response personnel and remain nearby and available to assist in response activity support, as necessary. Notifications of nearby residents as required by the Emergency Responses Person in Charge, shall be undertaken as directed, per the EAP.

- **Operator activities**

  On-site personnel:

  - Upon discovery of a fire or other plant emergency condition with the plant still running, while immediately evacuating the area of self and others, depress any Emergency ShutDown (ESD) pushbutton, if it is safe to do so. ESD buttons are situated at several locations around the plant as indicated in Appendix B, and can be identified by their red mushroom caps and labeling, as depicted in Figure 2, below.
  - Upon discovery of a fire or other emergency condition with a plant that has experienced an Emergency ShutDown (ESD), immediately evacuate others and self.
  - Contact GTAC and instruct GTAC to in turn contact local Emergency Responders. As an emergency situation, advise GTAC to make other required notifications to management personnel, owner, and others, per Emergency Action Plan.
  - Remain on-site at a safe distance to assist and support responding personnel, including providing plant access, restricting access to non-responding personnel or controlling traffic.

  Remote GTAC (Global Technology Assistance Center) operators:

  - Upon advisement or acknowledgement of a *fire-related* Emergency Shutdown or knowledge of other emergency condition, make Emergency Responder and all other required notifications as described in Emergency Action Plan.
  - If not already present, dispatch field service personnel to the site to assist and support response personnel with fuel cell technical expertise.

B. *Fire Extinguishment / Emergency Plant Shutdown*

- **Fire water application concerns**

  FIRE WATER SHALL NOT BE APPLIED TO COMPONENTS OF THE FUEL CELL POWER PLANT AT ANY TIME. Certain fuel cell components may remain electrically energized with either alternating current or direct current voltage even after a system shutdown via one of the Emergency ShutDown (ESD) pushbutton switches.

- **Appropriate extinguishing media**

  Only fire extinguishing medias appropriate for live electrical equipment shall be applied to fuel cell power plant components. Only listed fire extinguishers for Class A:B:C type fire are provided inside the plant enclosed area.

Upon Emergency ShutDown (ESD) of the fuel cell power plant, all fuel supplies to the plant are automatically shut off via two in-line fast-acting spring-loaded isolation valves.

Following an ESD, **ELECTRICAL ISOLATION IS NOT ASSURED**. Substantial AC and/or DC voltages may still remain for significant durations following an Emergency ShutDown event.

FOLLOWING AN ESD SOME NATURAL GAS WILL REMAIN ISOLATED WITHIN THE FUEL DESULFURIZER VESSELS, however, these vessels are protected from overpressurization by pressure safety valves sized for fire exposure conditions. Following an ESD, nitrogen gas supplied from an on-site liquid source will flow through the fuel cell plant equipment. As with the desulfurizers, the nitrogen source supply is protected against overpressurization by a safety relief valve provided by the gas supplier.

A Plant Layout drawing is provided in Appendix A. The locations of key utility shutoffs (fuel gas(es), electricity) are indicated on the layout drawing.

- **Other Emergencies**

  Hazardous material spills – Hazardous materials that may be temporarily present on-site other than natural gas are typically solids, and usually only in small quantities. Trained hazardous material operations and response personnel are on-site for any operations or maintenance activities that involve the handling of bulk or containerized hazardous materials. Small quantities of water treatment chemicals are contained in the water treatment (Skid 1) enclosure.

  Personnel injuries – For injuries requiring medical attention, the injured party or his/her companion shall seek appropriate medical attention for the injured. For serious injuries, call GTAC to summon local Emergency Responders per the Emergency Action Plan. For less serious injuries that require medical attention the injured shall obtain medical treatment at the nearest emergency medical care facility. All accidents and injuries (and near misses) shall be reported to FCE EHS.

C. Plan Validation

The executable elements of this Fire Emergency Plan consist of the manual activation of an Emergency ShutDown upon discovery, evacuation of the power plant area and notifications.

ESD buttons are all hard-wired in a fail-safe circuit. All fuel cell operating personnel are trained and regularly re-trained in a complete suite of safety programs.

A. *Egress*

A Plant Layout drawing is provided in Appendix A. The plant emergency egress paths are depicted on the drawing.

B. *Emergency alarms and ShutDowns*

The fuel cell power plant is provided with Emergency ShutDown (ESD) pushbuttons. ESD pushbuttons have red mushroom caps and are clearly labeled. ESD pushbutton locations are indicated on the drawing in Appendix B. Photos of typical ESD pushbuttons are shown in Figure 2. Depressing an ESD pushbutton will immediately shut down fuel flow to the power plant as well as shut down all of the mechanical balance of plant equipment. **HOWEVER, THE ESD DOES NOT OPEN THE ELECTRICAL GRID TIE BREAKER, SO ELECTRICAL BALANCE OF PLANT COMPONENTS WILL REMAIN ENERGIZED. ADDITIONALLY, UNINTERRUPTABLE POWER SUPPLIES (UPS) WILL PROVIDE POWER TO A NUMBER OF MECHANICAL BALANCE OF PLANT COMPONENTS AND THE FUEL CELL MODULE WILL RETAIN SIGNIFICANT DC VOLTAGE POTENTIAL ENERGY IF OPERATING OR HOT PRIOR TO THE ESD.**

The following types of automatic acting emergency sensors are provided with the fuel cell power plant:

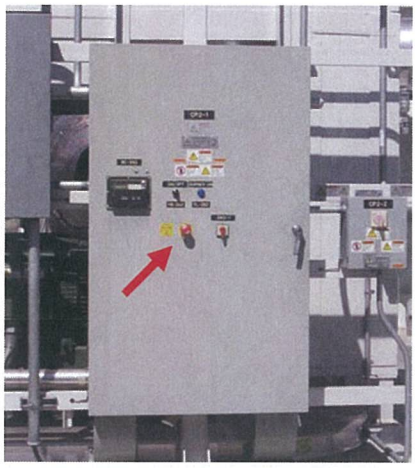
- Combustible gas detectors
- UV/IR Flame detectors
- Smoke detectors

In addition process flows, temperatures, pressures and voltages are continuously monitored for deviations from expected values. Process sensors are used to verify proper operation of the process and will quickly sense and shutdown the process upon severe deviations, such as would occur in the case of excessive seismic activity. Emergency sensors have either supervisory signals or are wired to alarm on sensor failure such that the plant will ESD on the loss of any one of these devices. Emergency sensors are calibrated in accordance with an established schedule as described in the maintenance manual. Sensor locations are depicted in the drawing in Appendix B.

Sensor detection of flame, MBOP smoke, or presence of excessive combustible gas concentration (45% of Lower Explosive Limit [LEL]) will result in an Emergency ShutDown (ESD) of the plant. In the case of combustible gases, detection of a concentration of approximately 25% LEL will result in a high LEL warning alarm. EBOP

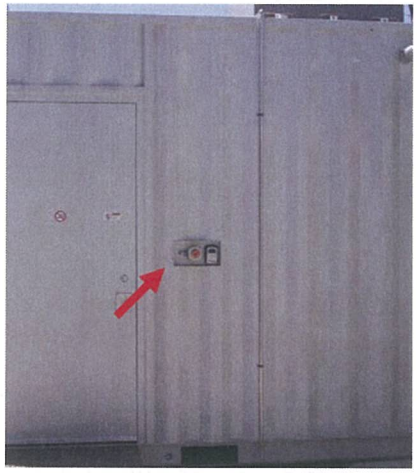
smoke detectors provide an alarm function only as other performance shutdowns protect the equipment in case of actual fire.

Tie Breaker Switchgear



Skid 2, Main Process Skid, Control Panel

Electrical Balance of Plant Power Conditioning Unit



Skid 1, Electric & Controls / Water Treatment System Skid

Figure 2: Typical Emergency ShutDown (ESD) Pushbuttons

Fuel cell plant operating personnel are provided with portable gas detectors for use in operating and maintenance tasks including surveillance for gas leaks should such be necessary.

C. ***Fire prevention***

The fire prevention strategy for the fuel cell power plant consists of the following Plan elements:

- **Housekeeping**

  The area around the fuel cell power plant shall be kept orderly and free of combustible and flammable materials, including combustible and flammable liquids, flammable gases and combustible and flammable solid materials. Trash shall not be allowed to accumulate. The water treatment system container shall not be used for general material storage.

- **Storage and Handling of flammables/combustibles**

  STORAGE OF FLAMMABLE AND COMBUSTIBLE MATERIALS IS PROHIBITED WITHIN THE PLANT ENCLOSURE WITHOUT PRIOR WRITTEN PERMISSION FROM THE LOCAL AUTHORITY HAVING JURISTICTION. Transient flammables and combustibles may include gases, small containers of flammable liquids such as solvents, trash and virgin and spent consumables used in the fuel cell process. These materials are to always be stored in packaging appropriate for their material properties and retained on site for as short of a duration as feasible. Flammable and combustible materials are to be kept separated from sources of ignition, fuel piping and processing equipment and electrical equipment and shall be protected from weather. Appropriate packaging materials for consumable materials are as follows:

  - Catalysts, virgin or spent – steel drums
  - Desulfurizer media, virgin – manufacturer's original packaging
  - Desulfurizer media, spent – steel drums

- **Flammable/combustible materials and potential ignition sources**

  The following are flammable/combustible materials *potentially* present at the fuel cell power plant:

  - Natural gas (present in piping and desulfurizer vessels only - no on-site storage)
  - Electrical equipment
  - Plastics
  - Insulation jacketing
  - Desulfurizer media (activated carbon)
  - MBOP and EBOP Transformer oil (FR3 "less flammable" transformer oil)
  - 50% aqueous solution Propylene Glycol EBOP chiller coolant
  - Misc. new and used filter elements, PPE, packaging, etc.
  - Granular nickel based catalyst (DOT Div. 4.2, PG II/III; transient, never long-term)

Natural gas piping within the plant security fencing is identified with yellow "Natural Gas" pipe markers, complying with ANSI A13.1 requirements.

The following are potential ignition sources present at the fuel cell power plant:

- Heat from process
- Electrical equipment
- Catalysts
- Hot work
- Unauthorized Smoking or open flame
- Internal combustion equipment/vehicles

The fuel cell power plant design and procedures established to operate and maintain the plant have been formalized to minimize any potential for fire.

- The entire plant has been designed to and complies with the provisions of the ANSI/CSA safety code FC-1 (2004).
- The plant is equipped with automatic safety sensors to safely shut down the process in cases of leaking fuel or fire (Section 2.)
- All fuel is pipeline supplied with minimal fuel holdup within the process.
- Desulfurizer vessels have been provided with pressure safety relief valves sized for fire emergencies.
- All of the plant piping has been designed in accordance with ASME B31.3 standard for process piping code. Piping is marked in accordance with ANSI A13.1.
- Areas of potential hazardous (classified) atmospheres have been identified and sources of potential ignition have been removed and any electrical equipment within complies with the area classification designation.
- Electrical equipment is designed to and complies with the provisions of UL1741.
- Smoking is NOT allowed within the fuel cell plant area.
- Hot Work within the fuel cell plant area is by Permit only, with potential sources of flammable materials removed from the area of potential ignition when hot work is conducted. Hot Work Permits are to be issued by the plant owner. Additionally, any hot work conducted under the supervision of FuelCell Energy will also be permitted under the FCE Hot Work Permit program.

- **Portable Fire Extinguisher**

Sufficient type A:B:C portable fire extinguishers (20 lb. minimum) are provided and installed by the plant owner for this power plant such that the travel distance to nearest extinguisher does not exceed 50 feet. Portable fire extinguishers required for specific maintenance procedures are brought to site by service personnel as special equipment for that procedure.

- **Inspections of plant area and fire prevention equipment**

  All inspections and maintenance of fuel cell components and systems are to be performed in accordance with the latest revision of the plant maintenance manual. Operating personnel also conduct an informal "walk around" inspection every time they visit the plant site. As the plant operates remotely without the presence of operators, the walk around inspection is simply to check for any out of the ordinary situations or accumulated materials. FuelCell Energy operators log any negative findings into a Computerized Maintenance Management System (CMMS) database. Sensors are calibrated or replaced in accordance with an established maintenance schedule based on equipment manufacturer's instructions; with work orders scheduled and records maintained by the database.

  If, during an operator site visit or walkaround inspection a fuel leak is discovered, an immediate evaluation and disposition shall be undertaken. For sizeable leaks, an immediate plant shutdown may be necessary, while leaks of a very minor nature may be able to be addressed by such remedies as flange bolt retorquing or other measures. Contracted operators are equipped with portable fuel gas (LEL) meters to assist in the evaluation of leak severity. Any discovered leak and its corrective measures shall be recorded in the CMMS database.

  UV/IR flame detectors, combustible gas (LEL) sensors and smoke detector automatic sensors shall be tested, calibrated, maintained and/or replaced at the frequency provided in the DFC1500B plant maintenance manual. A summary of these requirements is provided below:

Automatic Sensor	Frequency	Maintenance Action
Skid 1 Smoke Detectors	18 mos.	Test & replace if required
EBOP Smoke Detectors	18 mos.	Test & replace if required
Combustible Gas Detectors	18 mos.	Clean & calibrate
UV/IR Flame Detector	12 mos.	Clean & Test

- **Fire protection system/equipment impairment**

  Unintended impairment of any fire protection sensor system will automatically ESD the plant. Manual short-term sensor impairment for the purpose of on-site maintenance occurs only at times when maintenance personnel are on-site and vigilant for signs of fire or potential fire. As a policy, extended system impairment is not permitted with rare exceptions and only when alternative monitoring methods can be implemented by remote monitoring and for as short of a duration as possible.

- **Incident investigation and reporting**

  Any fire-related incident shall be immediately reported to the local fire department as "lead investigator." Plant owner representatives as well as FuelCell Energy qualified personnel will be called upon to assist the department in the site and technical aspects of the investigation. Such incidents will also be investigated by the fuel cell operator/manufacturer as required by the manufacturer's Certifying Agency. Results/conclusions of the investigation will be reported to the plant owner. External reporting to other agencies will be as directed by the responding department commanders and as required by regulation, as established at the time of incident.

2.3 Plant/Project Safety Plan

Following is a DRAFT version of a Safety Plan for the subject plant. As the plant has not yet been constructed, the DRAFT Safety Plan will be updated as necessary to appropriately reflect specific site conditions and limitations, as FCE becomes aware and as construction progresses.

Safety Plan

FCE will address site security and personnel safety as the highest priority to ensure a safe and healthy work environment. Minimum safety requirements and policies have been identified and will be provided and enforced on all levels and for all organizations performing work at the facility during both the construction and operation phases of the project.

In addition, all contractors and subcontractors will be required to provide, adhere to, enforce, and report on their own safety policies and practices. Such policies, procedures and/or handbook will be provided to FCE prior to contract execution for FCE's review and consideration.

A. Site Supervision

FCE, or their prime construction subcontractor, will provide a construction/safety manager to be present while any work is being performed on site at any time. FCE Project Management representatives and EHS professionals will perform additional on-site review and inspections to further enforce all safety policies and practices.

Further, contractors and subcontractors will be required to have their own safety supervisor on site at all times when work is being performed. The safety supervisor is responsible for their personnel's adherence to all required and prudent safety policies and practices. The supervisor is to be responsible for:

- Enforcing safety policies and practices,
- Providing safety orientation for any new personnel onsite,
- Daily safety "toolbox" meetings covering daily activities and associated risks, by trade,
- Recording the daily safety meetings,
- Weekly safety status meetings and discussion topics,
- Performing and reporting on weekly safety audits,
- Maintaining a daily personnel attendance log (for personnel accounting),
- Site walks with FCE's safety and construction managers on request, and
- Monthly formal reports including labor hours worked, incidents (including near misses, recordable events, and reportable events) along with a detailed description of corrective actions, audit results, and a summary of any site walks that occurred during that period.

At any time, FCE or subcontractor's safety or construction management personnel can enforce a stop work directive to correct any safety infractions.

B. *FCE Safety Program Policies*

Construction contractor and plant operator shall plan and conduct all work to safeguard persons and property from injury and will direct performance of work in compliance with reasonable safety and work practices and with applicable federal, state and local laws, rules, and regulations including but not limited to "Occupational Safety and Health Standards" promulgated by the U.S. Department of Labor. Work in areas adjacent to electrically energized equipment and/or operating natural gas equipment shall be performed in accordance with said practices, laws, rules, and regulations.

As part of FCE's continuing efforts to provide a safe and healthy workplace, it is required that all work activities be performed in accordance with all applicable regulatory requirements. While impossible to foresee all potential circumstances, the below list of Environmental, Health and Safety requirements constitutes the minimum basic elements to be followed during both the construction and operation phases of the fuel cell power plant project.

- SIGN IN: All individuals must sign in/out at the office each day that they are on site.
- ACCIDENT, ILLNESS & INJURY: All accidents and injuries occurring on the premises shall be reported immediately to the Construction Manager in charge of the work being performed, or during operation phase of plant, to the FCE EHS department as soon as possible.
- CHEMICAL RELEASE OR SPILL: Any release of chemicals on site, regardless of volume, must be immediately reported to the Construction Manager, or during operation phase of plant, to the FCE EHS department as soon as possible.
- COMPRESSED GAS MANAGEMENT: The management and use of compressed gas is to be performed in accordance with OSHA standard 29 CFR 1910.0101 "Compressed Gasses, General Requirements."
- CONFINED SPACES: All work in "confined spaces" is to be managed in accordance with OSHA standard 29 CFR 1910.146.
- CRANE HOIST & SLING SAFETY: The operation of cranes and hoists is to be performed in accordance with OSHA standard 29 CFR 1910.179; and the use of slings is to be in accordance with OSHA standard 29 CFR 1910.184.
- ELECTRICAL SAFETY: All work involving electricity is to be performed in accordance with OSHA standards 29 CFR 1910 Subpart S, "Electrical Safety"; 1910.269 "Electric Power Generation, Transmission & Distribution; and NFPA 70E-2004 "Electrical Safety In The Workplace" as applicable.
- EYE PROTECTION: During all times that ANY work is being performed anywhere on the facility, all personnel at the facility must be wearing eye protection.
- FALL PROTECTION: All work performed at heights of six feet or greater must be provided with at least one form of fall protection that will either prevent a fall from occurring, or properly arrest a person's fall once the event has occurred. However, platforms, or other surfaces designed primarily for walking, shall be provided with an approved guardrail system when they are either; >4' above the adjacent floor or ground level, or, above dangerous equipment (conveyor belts, chemical baths, exposed rebar, etc...) regardless of height. In all cases, work at height must be performed in accordance with OSHA standards 29 CFR 1910.23, 132, and 503.
- HAND & PORTABLE POWER TOOL SAFETY: Hand and portable power tools are to be used in accordance with OSHA standard 29 CFR 1910 Subpart P.
- HAZARD COMMUNICATION; RIGHT to KNOW: 29 CFR OSHA standard 29 CFR 1910.1200: Employees shall not be exposed to Hazardous Chemicals without first receiving training on the associated physical and health hazards and the measures needed to protect the employee from these hazards.
    - FCE utilizes green on white Target Organ Labels identifying the Name and the Physical & Health hazards of a material; these labels shall be

used for all containers not otherwise adequately labeled by the manufacturer.

- Hazardous materials brought on site shall be labeled and a Material Safety Data Sheet (MSDS) supplied to the Environmental Health and Safety (EHS) Department prior to working with the chemical.
- An MSDS station detailing all chemicals currently onsite is available for review.

- HAZARDOUS MATERIALS: FCE EHS is to be notified in advance of all hazardous materials to be brought on site. Storage, use and off-site transportation of these materials shall be performed in accordance with applicable requirements of the Connecticut General Statutes, the Regulations of Connecticut State Agencies and Titles 29 (OSHA), 40 (EPA), 49 (DOT) of the Code of Federal Regulations.
- HOT WORK PERMIT SYSTEM: As part of FCE's overall Fire Prevention Program, Client utilizes a formal "Hot Work Permit" program. Hot work is any operation that introduces a potential ignition source, which in the presence of combustible or flammable materials can result in a fire. HOT WORK includes, but is not limited to, operations such as brazing, cutting, grinding, soldering, torching, and welding. The use of a Hot Work Permit is required for all hot work operations outside of designated hot work areas. Hot work can be performed without a permit only in areas specifically designated and posted as a "Hot Work" area.
- LADDER SAFETY: The use of ladders is to be done in compliance with the following OSHA standards:
  - 29 CFR 1910.25 - PORTABLE WOOD LADDERS
  - 29 CFR 1910.26 - PORTABLE METAL LADDERS
  - 29 CFR 1910.27 - FIXED LADDERS
  - 29 CFR 1910.29 - MANUALLY PROPELLED MOBILE LADDER STANDS & SCAFFOLDS

- LOCKOUT TAGOUT PROGRAM: All servicing and maintenance of equipment is to be performed in accordance with the requirements of OSHA standard 29 CFR 1910.147 or 269 as applicable. These standards require locking out all potential energy sources prior to the performance of work.
- PERSONAL PROTECTIVE EQUIPMENT: In accordance with OSHA standard 29 CFR 1910.132-138 and Subpart I, work is to be performed using all necessary PPE. Hazard Assessments and Training in the use of required PPE are to be performed and documented prior to performance of work. PPE shall be removed before leaving the work area and disposed of according to waste management procedures to ensure that contaminants are not spread to personnel, through the facility(s), and/or to the environment.
- POWERED INDUSTRIAL TRUCKS: Forklifts and other industrial lift trucks are to be operated only by personnel trained in accordance with OSHA standard 29 CFR 1910.178.
- POWERED PERSONAL LIFT TRUCKS: Powered personal lift trucks are to be operated only by personnel trained in accordance with OSHA standard 29 CFR 1910.67 and 29 CFR 1926.453.
- SAFETY DEVICES: Equipment safety devices are not to be removed, bypassed or otherwise modified without review and approval by Client.
- SCAFFOLDING: All use of scaffolding shall be in accordance with the following OSHA standards:
- 29 CFR 1910.28 – "Safety Requirements for Scaffolding"
- 29 CFR 1910.29 – "Manually Propelled Mobile Ladder Stands & Scaffolds"
- STORMWATER POLLUTION PREVENTION: In accordance with the Connecticut Department of Environmental Protection (CTDEP) "General Permit for the Discharge of Stormwater Associated with Industrial Activity"; activities which will directly or indirectly release hazardous or non-hazardous materials into the storm water system are not permitted.
- WASTE MANAGEMENT: FCE is to be notified in advance of all waste to be generated. Under state and federal rules, FCE, as the site operator, is the "Generator" of all waste generated/created on site(s). As such, FCE is responsible for the proper Management, Storage, Transportation and Disposal of all wastes generated at site. This is to be done in accordance with all applicable requirements of the Connecticut General Statutes, the Regulations of Connecticut State Agencies and Titles 29 (OSHA), 40 (EPA) and 49 (DOT) of the Code of Federal Regulations.
- WORKING ALONE: Working alone can introduce additional hazards not necessarily present during the course of performing work with other personnel.

The biggest risk in working alone is during the occurrence of an incapacitating injury to the lone employee; a lack of timely medical attention could exacerbate the injury leading to greater harm. To prevent this, tasks must be assessed for hazards before assigning the employee(s) to perform them alone. If hazards do exist, either periodic monitoring, assignment of additional personnel, or re-scheduling of the work must be done. Further, it is important that task limitations be clear in order that new hazards are not introduced during any work performed alone.

- GENERAL DUTY CLAUSE: The General Duty Clause of the Occupational Safety and Health Act requires that employers provide a place of employment that is free of recognized health or safety hazards to employees. It is FCE policy to provide such a workplace.

3 SITE SECURITY & ACCESS

Public access to the fuel cell equipment is restricted by an eight foot high enclosure surrounding the site. The enclosure is equipped with personnel and equipment doors or gates for necessary access. All access door/gates are kept locked when facility personnel are not present. All access door/gates are equipped with Local Fire Department specified and keyed Knox Locks, daisy-chained to the operator-provided combination lock. The daisy-chained locks provide the necessary security, while at the same time they also provide the means for required access by both authorized owner and operator personnel as well as by Emergency Response personnel.

All FCE power plants are remotely monitored 24 hours per day, 7 days per week, year round by FCE's GTAC operations center. Any tampering or unauthorized manipulation of fuel cell components that would result in any significant performance change for the plant will be immediately detected by the GTAC operator and/or result in an Emergency ShutDown of the plant, restoring the plant to a safe condition. All FCE fuel cell power plants are designed for "fail-safe" operation, where all foreseeable process deviations have been considered and the consequences minimized, through a hazard and operability (hazop) analysis.

4 EMERGENCY RESPONDER / LOCAL COMMUNITY COORDINATION & NOTIFICATION SYSTEM

FCE will coordinate with local emergency response departments to familiarize personnel with the operations and equipment installed at the site. At a point prior to plant mechanical completion, FuelCell Energy will contact the Local Fire Department to schedule a walk around tour and training event for the near-completed installation. Either prior to or at this time, a compilation of Safety Data Sheets for chemicals used on the site can be provided to the Fire Department. It is not anticipated that any chemical quantities on-site will exceed Emergency Planning and Community Right-to-know Act (EPCRA) notification or reporting thresholds at any time, so therefore Tier II notifications and reporting will not be required.

During the construction phase, prior to a scheduled delivery of any piece of major equipment, the police department will be notified and contracted to manage and, as required, control local traffic. Prior to connecting or making natural gas available at the facility, FCE will coordinate with the local fire department, provide training regarding the facility equipment and facility safety features, tour Department personnel and provide description of how the plant facility will respond should a fire, smoke, or volatile gas release occur.

As all abutting property is owned by the University and due to the transient nature of University residents, FuelCell Energy will solicit the names and contact information of those local residents that wish to be informed of any actual emergency response situation that may develop at the subject power plant which may affect them. Concurrently, FCE will work with the University to develop an on-site resident coordination and notification system that can be used to communicate emergency response situation information to potentially affected on-campus residents. The names and contact information of both the local residents and the campus emergency notification system will be incorporated into the Emergency Action Plan in the table provided for notification in an emergency response situation that could potentially affect these residents. Responsibility for making such notifications will be the on-site manager during the construction phase of the project, and GTAC during the operation phase of the project.

Department of Economic and Community Development

Connecticut
still revolutionary

May 22, 2014

Ms. Jennifer Arasimowicz
Fuel Cell Energy
3 Great Pasture Road
Danbury, CT 06813

Subject: Fuel Cell Power Plant
University of Bridgeport
446 University Avenue
Bridgeport, Connecticut.

Dear Mr. Arasimowicz:

The State Historic Preservation Office (SHPO) is in receipt of your request for our comments on the potential effects of the referenced project on historic properties. SHPO understands that Fuel Cell Energy, Inc. plans to install a fuel cell power plant and connector on the University of Bridgeport campus. The proposed project is under the jurisdiction of the Connecticut Siting Council.

There are no properties listed in the State or National Registers of Historic Places recorded within the Area of Potential Effects (APE) for this project. Furthermore, much of area has been subject to previous ground disturbance associated with the existing recreational center. Based on the information provided to our office, it is SHPO's opinion that no historic properties will be affected by this undertaking.

The State Historic Preservation Office appreciates the opportunity to review and comment upon this project. These comments are provided in accordance with the Connecticut Environmental Policy Act. For additional information, please contact Catherine Labadia, Environmental Reviewer, at (860) 256-2764 or catherine.labadia@ct.gov.

Sincerely,

Daniel T. Forrest
State Historic Preservation Officer

Connecticut Department of

ENERGY & ENVIRONMENTAL PROTECTION

June 4, 2014

Jennifer D. Arasimowicz
UB Fuel Cell, LLC
3 Great Pasture Rd
c/o Fuelcell Energy, Inc.
Danbury, CT 06810
jarasimowicz@fce.com

Project: Energy Infrastructure Improvements at University of Bridgeport campus, 446 University Ave., Bridgeport
NDDB Determination No.: 201405598

Dear Jennifer D. Arasimowicz,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for the proposed Energy Infrastructure Improvements at University of Bridgeport campus, 446 University Ave., Bridgeport, Connecticut. I do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from your proposed activity at the site. This determination is good for one year. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by June 4, 2015.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

Dawn M. McKay

Dawn M. McKay
Environmental Analyst 3