

August 20, 2021

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

Re: Petition 1350 - EIP Investment LLC Petition for a Declaratory Ruling, Pursuant to Connecticut General Statutes §4-176 and §16-50k, for the Proposed Construction, Maintenance and Operation of a 19.98-Megawatt Combined Heat and Power Fuel Cell Facility and Associated Equipment to be Located Within Building 107 on the Corner of Curtis Street and the Pan Am Southern, LLC Railroad Tracks at the Stanley Black & Decker Campus, 480 Myrtle Street, New Britain, Connecticut - *Motion of EIP Investment LLC to Reopen and Modify the Decision in Petition 1350 Due to Changed Conditions*

Dear Ms. Bachman:

EIP Investment LLC ("EIP") hereby submits to the Connecticut Siting Council ("Council") a Motion to Reopen and Modify Petition 1350 ("Motion").

The original and fifteen (15) hard copies of the Motion and all other relevant attachments in connection therewith will be mailed to the Council.

Should the Council require any additional material for the review of this Motion or have any questions regarding such, please do not hesitate to contact me.

Very truly yours,



Bruce L. McDermott

Enclosures

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STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

Petition of EIP Investment LLC for a Declaratory Ruling that : Petition 1350A  
no Certificate of Environmental Compatibility and Public :  
Need is Necessary for a 19.98-Megawatt Fuel Cell Project :  
in New Britain, Connecticut : August 20, 2021

MOTION OF EIP INVESTMENT LLC  
TO REOPEN AND MODIFY PETITION 1350

I. Introduction

Pursuant to Connecticut General Statutes §4-181a(b), EIP Investment LLC (“EIP”), a Massachusetts limited liability company, respectfully moves the Connecticut Siting Council (the “Council”) to reopen Petition 1350 and modify, based on changed conditions described herein, its October 25, 2018 decision on the Petition (the “2018 Decision”). The 2018 Decision approved the construction, operation and maintenance of a 19.98 megawatt (“MW”) combined heat and power fuel cell facility and associated equipment to be located at the Stanley Black & Decker Campus at 480 Myrtle Street in New Britain, Connecticut (the “Project”). Support for the Council’s reopening on the basis of changed conditions is discussed in this Motion and the attached testimony of Mark Wick, a manager/member of EIP (the “Wick Testimony”). EIP respectfully requests that the Council reopen Petition 1350, modify the decision, and issue a declaratory ruling that no Certificate is required for the construction, operation, and maintenance of the Project.

Finally, because the 2018 Decision provides that construction of the facility must be completed within three years from the date of the mailing of the 2018 Decision, EIP

requests that any determination by the Council concerning the modified project include a condition that the start date of the three-year construction period is to begin on the date of the mailing of the Council's decision on this Motion.

## II. Procedural Background

On September 21, 2018, EIP filed a petition for a declaratory ruling that a Certificate of Environmental Compatibility and Public Need is not required for the construction, operation, and maintenance of the Project. The project will be located at the soon to be demolished "Building 107" and "Building 110" of the approximately 53-acre historic Stanley Black & Decker campus in New Britain, Connecticut (the "Property"). On October 25, 2018, the Council ruled that the Project meets air and water quality standards and would not have a substantial adverse environmental effect, and pursuant to Conn. Gen. Stat. §16-50k would not require a Certificate of Environmental Compatibility and Public Need.

## III. Statutory Authority to Reopen and Modify

Pursuant to Conn. Gen. Stat. §4-181a(b), which in pertinent part provides that, "[o]n a showing of changed conditions, the agency may reverse or modify the final decision, at any time, at the request of any person or on the agency's own motion"; the Council has the authority to reopen Petition 1350 and modify the 2018 Decision due to changed conditions. The Council will find changed conditions when there is "new information or facts, identification or any unknown or unforeseen events or evidence..."

that were not available at the time of the final decision”. See Docket No. 190B, Conclusions of Law dated September 19, 2012, p. 4.

Consistent with its authority under Conn. Gen. Stat. §4-181a(b), the Council has reopened several dockets and revised final decisions based on new facts or when circumstances not previously contemplated by the Council have arisen. See Docket No. 192, *Towantic Energy, LLC Certificate of Environmental Compatibility and Public Need: Reopening pursuant to Connecticut General Statutes (CGS) § 4-181a (b)*, that permits an agency to consider whether changed conditions exist, and then consider whether such changes, if any, justify reversing or modifying the Council’s original decision dated June 23, 1999. See also, Docket No. 1310A, Quinebaug Solar, LLC, Council Decision on Motion to Reopen, December 6, 2019 (finding that modifications to the project layout based on the results of environmental surveys, current best development practices and guidance from the Council, and other changes justified reopening and modifying the Council’s decision); Docket No. 187, PDC-EI Paso Milford LLC, Opinion for Connecticut General Statutes (CGS) §4-181a (b) Proceeding, April 7, 2009, p. 2 (reopening the docket to allow the continued use of potable water because “at the time of certification, the record did not speak to sources of cooling water for contingency events.”); Docket No. 187A, Milford Power Company, LLC, Opinion, December 2, 2010 (finding that an increase in natural gas supply, improvements to the electrical transmission grid and construction of other generating facilities were changed conditions supporting removal of dual fuel requirements); Docket No. 225B, Kleen Energy Systems, LLC, Opinion, July 22, 2009 (finding that the State’s imposition of an aquifer protection zone was a changed condition justifying relocation of oil pipeline route); Docket No. 265A, Dominion Nuclear

Connecticut, Inc., Council Findings of Fact, May 2, 2013 (finding that changes in Dominion Nuclear Connecticut, Inc.'s planned plant operations and management of spent fuel constituted changed conditions); and Docket No. 470, NTE Connecticut, LLC, Opinion, June 6, 2019 (finding pre-qualification by ISO-NE to participate in Forward Capacity Auction, air permit modifications, use of a different combustion turbine generator and other changes justified a Certificate for the plant).

As set forth in this Motion, EIP satisfies applicable standards with respect to reopening the docket and modifying the 2018 Decision.

#### IV. Proposed Changes

As discussed more fully in the Wick Testimony, the proposed changes to the Project are expected to meet the applicable air and water quality standards of the Connecticut Department of Energy and Environmental Protection ("DEEP"), as well as the applicable City and State noise regulatory ordinances, and will not have a substantial adverse environmental effect. Furthermore, all energy, environmental and economic benefits previously identified with the construction, operation and maintenance of this Project are expected to remain the same.

The following changes to the Project are being proposed:

- Buildings 107 and 110 of the Stanley Black & Decker Campus in downtown New Britain, the proposed location of the fuel cell system that is the subject of this petition, will be demolished. EIP will install and operate the proposed fuel cell system and electrical switchgear on the footprint of Buildings 107 and 110 after the buildings are demolished. The location of the project will continue to be the Stanley

Black & Decker Campus. The proposed fuel cell units will operate outdoors but within the Stanley Black & Decker Campus.

- The forty-five (45) PureCell® Model 400 fuel cell energy units will be substituted with seventy-four (74) smaller-sized Bloom fuel cell energy units that are expected to provide the same energy output of 19.98 MW.
- Seven transformers instead of nine will be used to transform the 480V fuel cell output to 13.8kV.

#### V. Justification for the Proposed Changes

Due to financial complications, specifically, the inability to secure financing for the purchase and on-going maintenance of PureCell® Model 400 fuel cells, EIP opted to replace these units with another make and model, the Bloom fuel cells.

Although more energy efficient, given the differences in design specifications, seventy-four (74) Bloom fuel cells are needed to produce an energy output of 19.98 MW. However, an arrangement of seventy-four (74) Bloom fuel cells that ensures the units are adequately ventilated does not meet the general arrangement plans of Buildings 107 and 110. For this reason and previously identified benefits of the Project's site, it was decided that Buildings 107 and 110 would be demolished to accommodate the Project's new design.

VI. Conclusion

EIP respectfully requests that the Council reopen Petition No. 1350 for the limited purpose of reconsidering the new information provided herein and any other information the Council may deem relevant or appropriate, modify the decision, issue a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is needed pursuant to Conn. Gen. Stat. §16-50k, and re-establish the three-year construction period as previously requested.

Respectfully submitted,

On behalf of  
EIP Investment LLC



By: \_\_\_\_\_

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STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

TESTIMONY OF MARK WICK  
IN CONNECTION WITH PETITION 1350A

August 20, 2021



1 Q. Please state your name, relation to the petitioner, and business address?

2 A. My name is Mark Wick, I am a manager/member of EIP Investment, LLC (“EIP”),  
3 and I am providing testimony on behalf of EIP’s Motion to Reopen Petition 1350.  
4 My business address is 31 Pinnacle Ridge Road, Farmington, Connecticut.

5 Q. What is the purpose of your testimony?

6 A. The purpose of my testimony is to discuss the changes made to the fuel cell project  
7 that is the subject of Petition 1350, specifically, the changes that have been made  
8 to the project since the Siting Council issued its decision to approve this petition  
9 on October 25, 2018.

10 Q. Briefly describe the Project that was approved by the Siting Council on October  
11 25, 2018.

12 A. EIP is undertaking a multi-phase economic development project that will be known  
13 as “New Britain Energy and Innovation Park.” The first phase of this project entails  
14 the installation of a 19.98 megawatt (“MW”) fuel cell system, a 69 kV electrical  
15 interconnection, and associated equipment (together, the “Project”) at the Stanley  
16 Black & Decker campus in downtown New Britain. Originally, the fuel cell system  
17 would consist of forty-five (45) PureCell® Model 400 fuel cell energy units that  
18 would all be housed within Buildings 107 and 110 of the Stanley Black & Decker  
19 campus. The Project will use natural gas from a utility pipeline distribution system  
20 for its fuel supply and transformers, which will be used to transform the 480V fuel  
21 cell output to 13.8kV. In the Burritt Street Substation, the 13.8kV output will be  
22 transformed to 69kV via a new 25MVA transformer and then connected to the  
23 existing 69kV busbar in the Burritt Street substation. Transmission of power from

1 6SBD/FRPC Burritt Street substation to Black Rock will be over existing 69kV lines  
2 (Circuit 680) owned by both The Farmington River Power Company and  
3 Eversource.

4 Q. Briefly describe the changes that are being made to the Project.

5 A. The forty-five (45) PureCell® Model 400 fuel cell energy units are being replaced  
6 by seventy-four (74) smaller-sized Bloom fuel cell energy units. The seventy-four  
7 (74) Bloom fuel cell energy units will individually have a nameplate capacity in the  
8 200 kW to 300 kW range and collectively will have a 19.98 MW rating. The fuel  
9 cell units and electrical switchgear will be installed and operated outdoors, on the  
10 footprint of Buildings 107 and 110 of the Stanley Black & Decker Campus in  
11 downtown New Britain. The fuel cell units will be placed on an elevated platform  
12 to support utility infrastructure. All other aspects of the Project will remain the  
13 same.

14 Q. Why are those changes made to the Project?

15 A. During the process of negotiation for the purchase of the PureCell® Model 400  
16 fuel cells, the manufacturer of the units added terms to the Sales Contract and the  
17 Operation and Maintenance Agreement that precluded EIP from securing  
18 financing, on the current Investment Tax Market, for the Project. In order to be  
19 able to obtain financing for the Project, EIP had to make some modifications to the  
20 Project, which included changing the manufacturer of the fuel cell units. For this  
21 reason, EIP is replacing the PureCell® Model 400 fuel cells with the Bloom fuel  
22 cells. Although the Bloom fuel cells are more energy efficient than the PureCell®  
23 Model 400 fuel cells, more fuel cell units are needed to meet the Project's design

1 energy output of 19.98 MW due to the Bloom units' smaller size. However, an  
2 arrangement of seventy-four (74) Bloom fuel cells is not conducive for Buildings  
3 107 and 110 of the Stanley Black & Decker Campus. Furthermore, the Bloom fuel  
4 cells require air for cooling and installing them outdoors will ensure that these units  
5 receive adequate ventilation. Consequently, Buildings 107 and 110 are to be  
6 demolished to accommodate the Project's new design.

7 Q. Provide a specification sheet for the Bloom fuel cells.

8 A. The specification sheet for the Bloom fuel cells is attached (Attachment 1). See  
9 the "Physical Attributes and Environment" section for a list of the units' dimensions.  
10 The proposed facility will have an operational life of 20 years and the fuel cell  
11 stacks are rebuilt at 10-year intervals. Because there are 74 units, there would be  
12 no material impact to power output during maintenance and stack rebuilds, as  
13 these activities will be performed sequentially.

14 Q. The previously approved project was designed to use both low grade and high  
15 grade waste heat from the fuel cells. Will the revised project do that?

16 A. Yes. The facility will have heat recovery capabilities.

17 Q. Will the redesigned project require the addition of transformers as was discussed  
18 in Petition No. 1350?

19 A. Yes, but the project will now require seven transformers instead of nine.

20 Q. Are any changes to the interconnection of the project to the Burritt Street  
21 Substation from what was discussed in Petition No. 1350 contemplated?

22 A. No changes are needed.

1 Q. Are any additional modifications to the Burritt Street Substation from what was  
2 discussed in Petition No. 1350 needed?

3 A. No additional modifications are needed.

4 Q. Provide an updated Site Plan that shows the location of the fuel cell system and  
5 surrounding buildings.

6 A. The updated Site Plan is attached. (Attachment 2).

7 Q. Does the installation and operation result in a substantial adverse environmental  
8 effect on noise?

9 A. The predicted project sound levels will comply with the regulatory limits specified  
10 by the City and the State. Veneklasen Associates, Inc. was hired to evaluate the  
11 noise impact of the installation and operation of the Bloom fuel cells and their  
12 findings confirm that all property line noise levels will be in compliance with  
13 applicable noise ordinances as designed. A copy of the Veneklasen Associates  
14 Analysis is attached. (Attachment 3)

15 Q. Does the installation and operation of the Bloom fuel cells require an air permit?

16 A. The revised Project has potential emissions less than fifteen (15) tons per year of  
17 any individual air pollutant, less than ten (10) tons per year of any individual  
18 hazardous air pollutant and less than twenty-five (25) tons per year of combined  
19 hazardous air pollutants. As such, the revised Project is not considered a new  
20 major stationary source, as that term is defined in Section 22a-174-1(65) of the  
21 Regulations of Connecticut State Agencies, and a Permit to Construct and Operate  
22 the Bloom fuel cells pursuant to Section 22a-174-3a of the Regulations of  
23 Connecticut State Agencies is not required. As it was originally determined,

1 greenhouse gases emissions will be minimal and will not contribute significantly to  
2 the Global Warming Potential of the proposed facility. Petition No. 1350 Staff  
3 Report at 4. Furthermore, the Project will offset power from the utility grid, thereby  
4 reducing Carbon Dioxide emissions by more than 2,330 tons per year.  
5 Consequently, the changes in fuel cell units and outdoor placement of such, are  
6 not expected to result in any changes to the air quality effects of this project, as  
7 previously assessed.

8 Q. Are there any potential environmental effects from the revised Project? If there  
9 are, what mitigation measures will be implemented?

10 A. As with the original Project, there are no environmental impacts from the revised  
11 Project and no mitigation measures need to be implemented. The revised Project  
12 will comply with all applicable air and water quality standards and will not have a  
13 substantial adverse environmental effect. The proposed fuel cell facility will have  
14 virtually no water usage or discharge and water consumption will occur only at  
15 system fill and emergency shutdown.

16 Q. Because the project will now be located outside will any tree clearing be  
17 necessary?

18 A. There is minimal vegetation in the area, feeders in underground conduits and no  
19 physical expansion of the Burritt Street Substation footprint, therefore, no tree  
20 clearing will be necessary.

21 Q. Has EIP completed development of its emergency response plan in accordance  
22 with American National Standards Institute and Canadian Standards Association  
23 (ANSI/CSA) America FC1-2014 for stationary fuel cell power?

1 A. Extensive hardware, software and operator safety control systems will be utilized,  
2 and will be controlled from a Bloom Energy Remote Monitoring Control Center  
3 (“RMCC”). Internal sensors will continuously monitor system operation and will  
4 provide for system components to shut down if safety circuits detect a condition  
5 outside normal operating parameters; the RMCC operator will then initiate an  
6 emergency shutdown if warranted. City of New Britain Fire Department personnel  
7 will be provided with an Emergency Response Plan. See Attachment 4 for  
8 additional information.

9 Q. Will the units have redundant manual and automatic shut-off features in the event  
10 of a natural gas pipe break?

11 A. The nearest railroad line is approximately 55 feet from the project location.  
12 However, there are speed restrictions on the carriers on this line and EIP believes  
13 that there is no risk of derailment affecting fuel cell facility operations. Furthermore,  
14 the Bloom fuel cells have several sensors and safety features that are initiated  
15 when circuits detect a condition outside normal operating parameters, such as  
16 those experienced in the unlikely event of a train striking the system. In addition,  
17 the units will be monitored and controlled remotely, consequently, the RMCC  
18 operator will remotely initiate an emergency sequence if needed. Lastly, the  
19 natural gas supply system to the facility and to each unit will have redundant  
20 manual and automatic shut-off features in the event of a pipe breakage.

21 Q. Are there any changes to the visual impact from the Project?

22 A. Despite the outdoor placement of the fuel cell system, the visual impact from the  
23 Project will remain minimal. The Project site is compatible with the surrounding

1 industrial development. Additionally, the nearest residential structure is located  
2 approximately 354 feet from the Project site and there will be no sight line from  
3 such residence because a concrete framed six-story building obstructs the sight  
4 line. Petition No. 1350 Staff Report at 4. See Attachment 5 for aerial photographs  
5 of the existing and proposed project site.

6 Q. If the proposed changes are approved, approximately when would construction  
7 commence and when is it expected to be completed and operational?

8 A. Construction is contemplated to begin in the second quarter of 2022 and the  
9 Project will be commissioned and powered no later than June 31, 2023.

10 Q. Were any other changes made to the Project?

11 A. No other changes were made to the Project.

12 Q. Does this complete your testimony?

13 A. Yes, it does.

## Energy Server™ 5

Always On, Clean Energy  
Using Patented Solid Oxide  
Fuel Cell Technology



*The Energy Server 5 provides combustion-free electric power with these benefits*



### Clean

Our systems produce near zero criteria pollutants (NOx, SOx, and particulate matter) and far fewer carbon emissions than legacy technologies.



### Reliable

Bloom Energy Servers are designed around a modular architecture of simple repeating elements. This enables us to generate power 24 x 7 x 365 and can be configured to eliminate the need for traditional backup power equipment.



### Resilient

Our system operates at very high availability due to its fault-tolerant design and use of the robust natural gas pipeline system. Bloom Energy Servers have survived extreme weather events and other incidences and have continued providing power to our customers.



### Simple Installation and Maintenance

Our Energy Servers are 'plug and play' and have been designed in compliance with a variety of safety standards. Bloom Energy manages all aspects of installation, operation and maintenance of the systems.



Energy Server 5	Technical Highlights (ES5-EA2AAN)
<b>Outputs</b>	
Nameplate power output (net AC)	250 kW
Load output (net AC)	250 kW
Electrical connection	480V, 3-phase, 60 Hz
<b>Inputs</b>	
Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water	None during normal operation
<b>Efficiency</b>	
Cumulative electrical efficiency (LHV net AC) <sup>1</sup>	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh
<b>Emissions<sup>2</sup></b>	
NOx	0.0017 lbs/MWh
SOx	Negligible
CO	0.034 lbs/MWh
VOCs	0.0159 lbs/MWh
CO <sub>2</sub> @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas
<b>Physical Attributes and Environment</b>	
Weight	13.6 tons
Dimensions (variable layouts)	14'9" x 8'8" x 7'0" or 29'4" x 4'5" x 7'5"
Temperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Noise	< 70 dBA @ 6 feet
<b>Codes and Standards</b>	
Complies with Rule 21 interconnection and IEEE1547 standards	
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards	
An Energy Server is a Stationary Fuel Cell Power System. It is Listed by Underwriters Laboratories, Inc. (UL) as a 'Stationary Fuel Cell Power System' to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102.	
<b>Additional Notes</b>	
Access to a secure website to monitor system performance & environmental benefits	
Remotely managed and monitored by Bloom Energy	
Capable of emergency stop based on input from the site	

<sup>1</sup> 65% LHV efficiency verified by ASME PTC 50 Fuel Cell Power Systems Performance Test

<sup>2</sup> NOx and CO measured per CARB Method 100, VOCs measured as hexane by SCAQMD Method 25.3

## About Bloom Energy

Bloom Energy's mission is to make reliable, clean energy affordable for everyone in the world. The company's product, the Bloom Energy Server, delivers highly reliable and resilient, Always On electric power that is clean and sustainable. Bloom's customers include twenty-five of the Fortune 100 companies and leaders in cloud services and data centers, healthcare, retail, financial services, utilities and many other industries.

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DOC-1011392, Rev. A.

Energy Server 5		Technical Highlights (ES5-YA8AAN)	
<b>Outputs</b>			
Nameplate power output (net AC)	300 kW		
Load output (net AC)	300 kW		
Electrical connection	480V, 3-phase, 60 Hz		
<b>Inputs</b>			
Fuels	Natural gas, directed biogas		
Input fuel pressure	10-18 psig (15 psig nominal)		
Water	None during normal operation		
<b>Efficiency</b>			
Cumulative electrical efficiency (LHV net AC) <sup>1</sup>	65-53%		
Heat rate (HHV)	5,811-7,127 Btu/kWh		
<b>Emissions<sup>2</sup></b>			
NOx	0.0017 lbs/MWh		
SOx	Negligible		
CO	0.034 lbs/MWh		
VOCs	0.0159 lbs/MWh		
CO <sub>2</sub> @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas		
<b>Physical Attributes and Environment</b>			
Weight	15.8 tons		
Dimensions (variable layouts)	17'11" x 8'8" x 6'9" or 32'3" x 4'4" x 7'2"		
Temperature range	-20° to 45° C		
Humidity	0% - 100%		
Seismic vibration	IBC site class D		
Location	Outdoor		
Noise	< 70 dBA @ 6 feet		
<b>Codes and Standards</b>			
Complies with Rule 21 interconnection and IEEE1547 standards			
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards			
An Energy Server is a Stationary Fuel Cell Power System. It is Listed by Underwriters Laboratories, Inc. (UL) as a 'Stationary Fuel Cell Power System' to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102.			
<b>Additional Notes</b>			
Access to a secure website to monitor system performance & environmental benefits			
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<sup>1</sup> 65% LHV efficiency verified by ASME PTC 50 Fuel Cell Power Systems Performance Test			
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**CSC PERMIT SET**

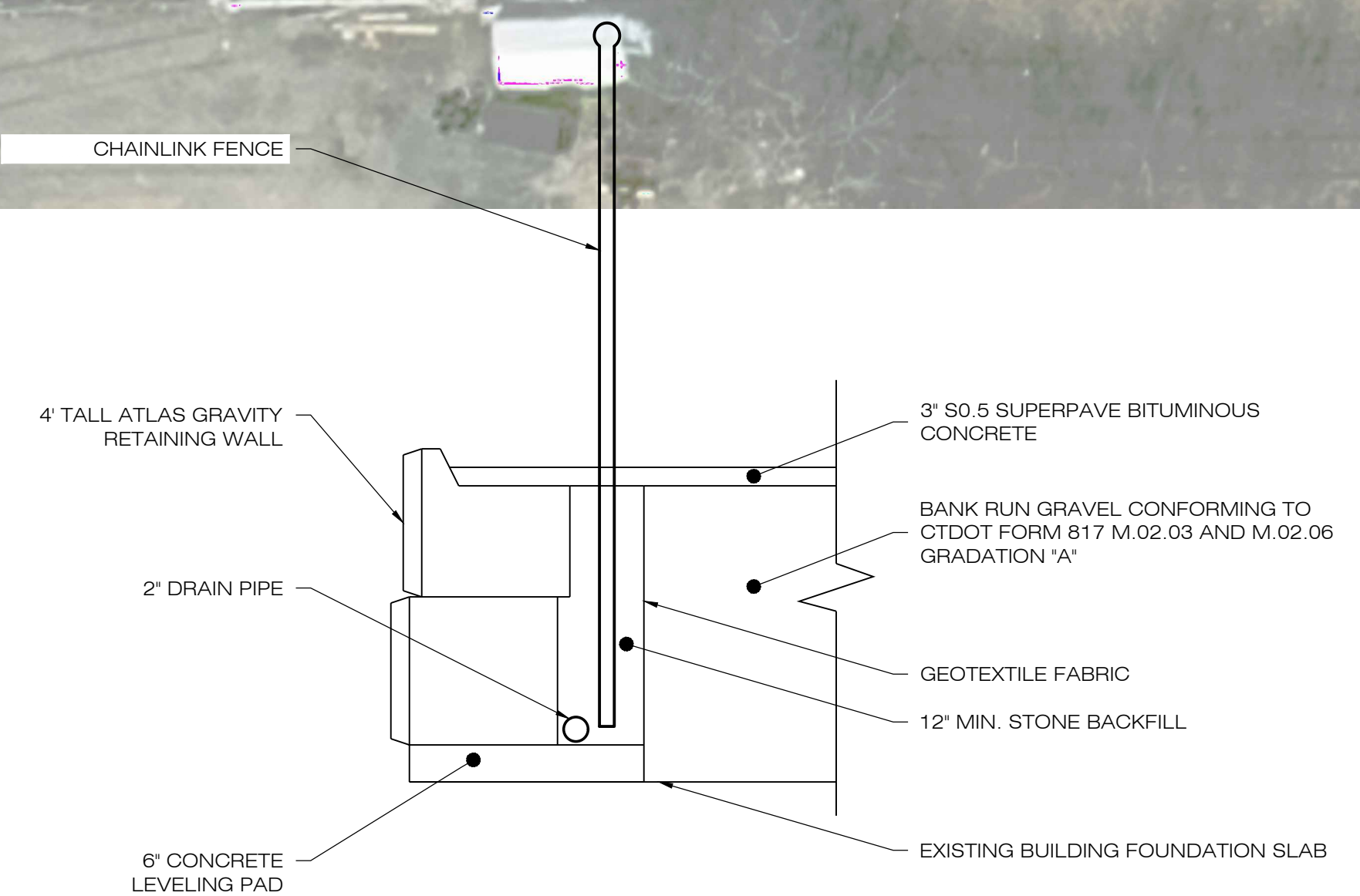
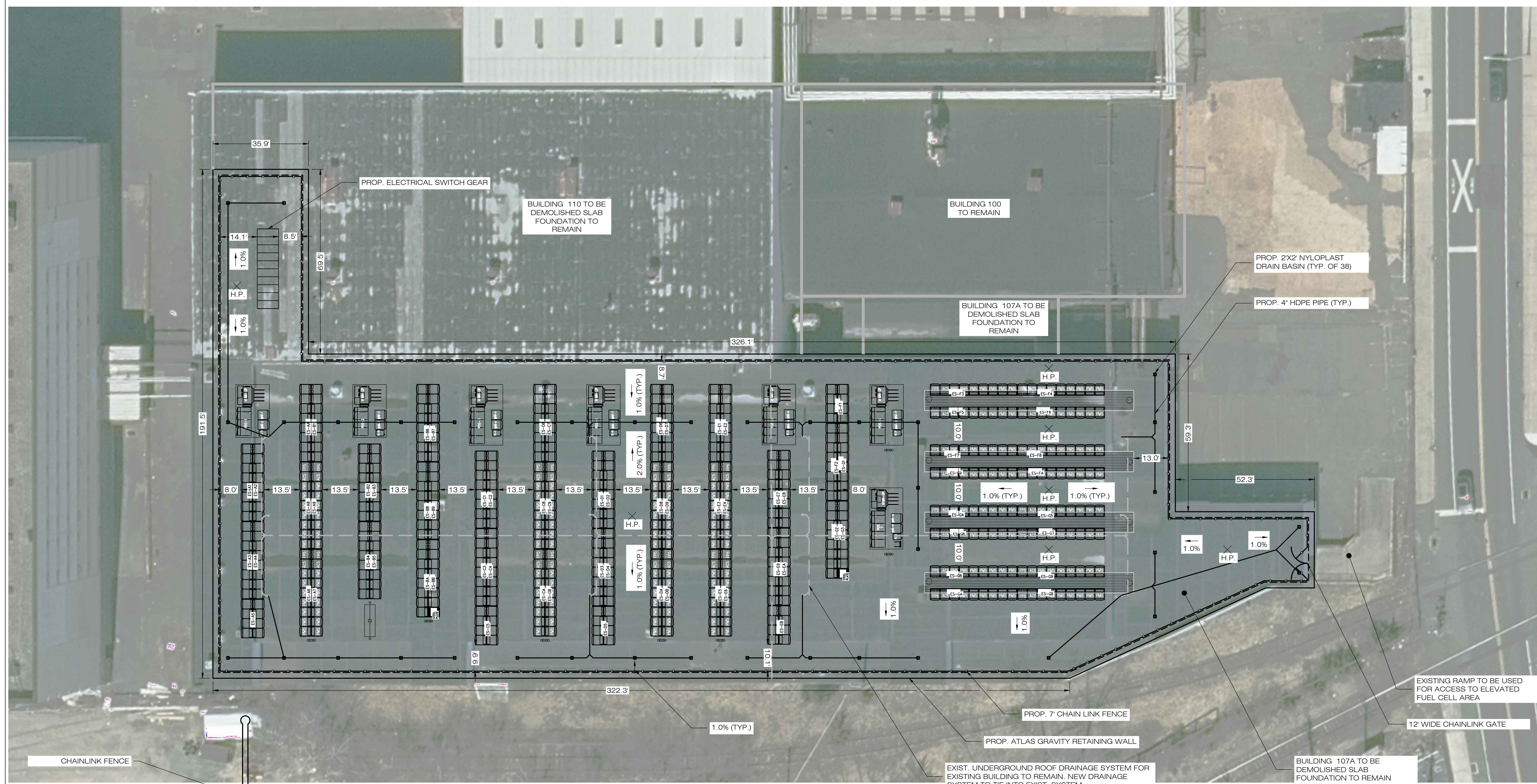
NO	DATE	REVISION
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**DESIGN PROFESSIONAL OF RECORD**  
 PROF: BRADLEY J. PARSONS, P.E.  
 COMP: ALL-POINTS TECHNOLOGY CORPORATION  
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311  
 WATERFORD, CT 06385  
 OWNER: STANLEY BLACK + DECKER INC  
 ADDRESS: 600 MYRTLE STREET  
 NEW BRITAIN, CT 06052

**NEW BRITAIN FUEL CELL**  
 SITE: 100 CURTIS STREET  
 ADDRESS: NEW BRITAIN, CT 06052  
 APT FILING NUMBER: CT680100  
 DRAWN BY: BJP  
 DATE: 04/02/21 CHECKED BY: BJP

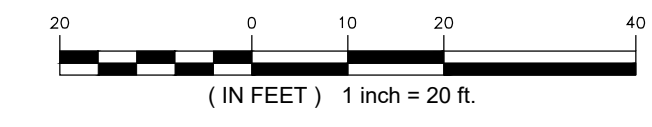
**SHEET TITLE:**  
**GENERAL ARRANGEMENT PLAN**

**SHEET NUMBER:**  
**SP-1**



**TYPICAL RETAINING WALL & FILL SECTION**

**1 GENERAL ARRANGEMENT PLAN**  
 SCALE: 1" = 20'-0"





March 11, 2021

**O&G Industries, Inc.**  
112 Wall Street  
Torrington, Connecticut 06790

Attention: **Richard E. Audette, PE | Director, Power and Energy**

Subject: **100 Curtis Street, New Britain, Connecticut  
Property Line Noise Analysis  
Veneklasen Project No. 4631-016**

Dear Richard:

Veneklasen Associates, Inc. (Veneklasen) was contracted to evaluate noise impact of the proposed fuel cells for the 100 Curtis Street project located in New Britain, Connecticut. This report includes the predicted noise levels at the adjacent property lines and an evaluation of necessary mitigation, if warranted, to comply with the local noise ordinance in the surrounding community. This report documents our findings.

#### Noise Criteria

The City of New Britain Noise Ordinance document, Section 16-105 “Noise Standards” provides the following noise level thresholds for various property types. These are summarized in Table 1 below. Note that noise zone classes are as follows: Class A is residential land, Class B is commercial land, and Class C is industrial land.

**Table 1. New Britain Noise Thresholds**

Emitter Noise Zone	Receptor Noise Zone Class			
	C	B	A-Day	A-Night
Class C Industrial	70 dBA	66 dBA	61 dBA	51 dBA
Class B Commercial	62 dBA	62 dBA	55 dBA	45 dBA
Class A Residential	62 dBA	55 dBA	55 dBA	45 dBA

The city zoning map indicates the proposed project site as General Industry; therefore, the emitter noise zone is a Class C, or industrial, emitter. The nearby receptors are a mix of all three noise zone classes.

Additionally, Section 22a-69-3.6 of the Connecticut Environmental Protection title also includes the following noise requirements:

*In those individual cases where the background noise levels caused by sources not subject to these Regulations exceed the standards contained herein, a source shall be considered to cause excessive noise if the noise emitted by such source exceeds the background noise level by 5 dBA, provided that no source subject to the provisions of Section 3 shall emit noise in excess of 80 dBA at any time, and provided that this Section does not decrease the permissible levels of the other Sections of this Regulation.*

It is assumed that the proposed fuel cells will run 24-hours per day. Therefore, Veneklasen will utilize the nighttime noise limits for residential properties in the following analysis.

#### Existing Ambient Noise Analysis

To determine the existing ambient noise levels at the site due to existing traffic sources, Veneklasen has utilized the Traffic Noise Model computer software program developed by the FHWA (Federal Highway Administration TNM 2.5)

in order to predict vehicular noise levels at the various sensitive receptor locations. Traffic counts for the adjacent roadways were provided by the Connecticut Department of Transportation (CTDOT) Traffic Data Viewer website. The ADT on Myrtle Street in 2018 was 6,500 and the ADT of CT-72 in 2015 was 68,500.

The FHWA software calculates noise levels in terms of Day-Night Level (LDN), which is the 24-hour equivalent (average) sound level in which nighttime (10pm – 7 am) noise is weighted by adding 10 dB to the hourly level. This single-number metric does not describe how noise levels change between daytime and nighttime. Therefore, Veneklasen utilized traffic contour data to estimate the average daytime and nighttime noise levels based on the calculated LDN value. Levels were determined using methods and analysis techniques described in LoVerde, Dong, Rawlings, *Noise prediction of traffic on freeways and arterials from measured sound data*. Noise-Con. Noise-Con 2014 (Fort Lauderdale). *Noise-Con Proceedings*. Paper nc14\_015, 2014. The results of these calculations are summarized below in Table 2.

**Table 2. Ambient Noise Analysis Summary**

Sensitive Receptor	FHWA Calculated Noise Level, LDN	Calculated Daytime Average, dBA	Calculated Nighttime Average, dBA
335 Myrtle St	66	64	58
407 Myrtle St	66	64	58
435 Myrtle St	66	64	58
467 Myrtle St	66	64	58
70 Grove Hill	68	64	61
387 W Main St	78	74	71
66 Curtis St	63	59	56
55 Curtis St	68	63	61

### Property Line Noise Analysis

Drawings dated February 8, 2021 indicate the proposed fuel cells will be installed on the southern portion of the lot. Veneklasen understands that the existing building in this location will be demolished as well as the two buildings directly north.

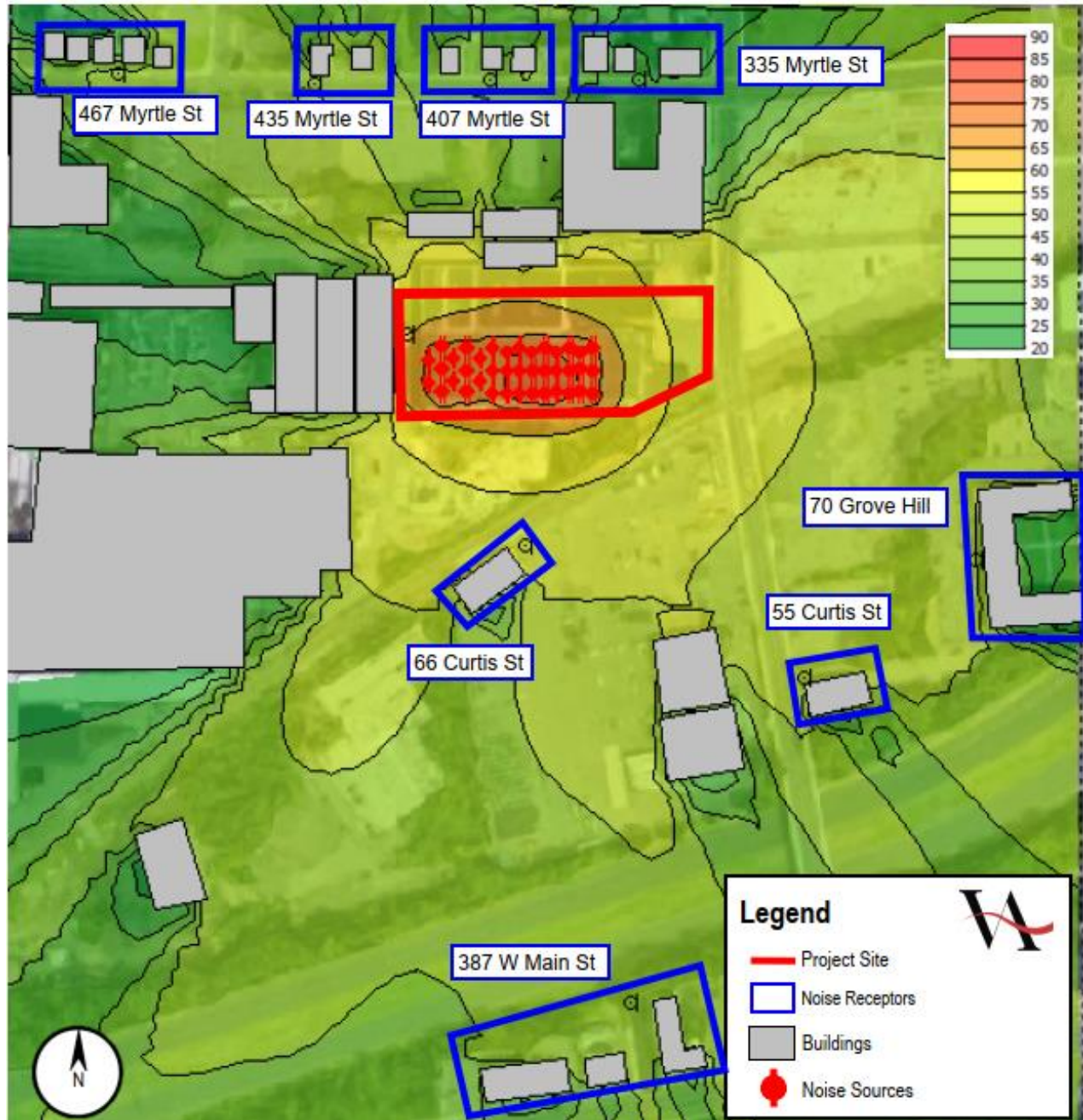
Veneklasen understands that the current fuel cell installation method includes a foam dampening material that is installed at the doors and exhaust to the fuel cells. Measurement data of these units when compared to units without foam indicate that the foam compound reduces noise levels produced by the fuel cells by approximately 5 decibels. See APPENDIX A below for individual fuel cell sound power data and foam compound reduction data used in the following analysis.

Using the sound power data for individual fuel cells described above, Veneklasen calculated noise from the proposed fuel cells to several adjacent sensitive receptors. Acoustical modelling was completed using Bruel & Kjaer's Predictor V2021 computer software program. See Figure 1 for a noise level contour map of the project site without mitigation and Table 3 for numeric noise level results for each sensitive receptor as compared to the calculated ambient level from the previous section and the city requirements.

**Table 3. Fuel Cell Property Line Noise Levels: No Mitigation**

Sensitive Receptor	Property Type (Class)	Ambient Noise Level, dBA (Time)	Calculated Fuel Cells Noise Level, dBA	Allowable Receptor Noise Level, dBA	Noise Code Compliant?
335 Myrtle St	Residential (A)	58 (Night)	27	51 (Night)	Yes
407 Myrtle St	Residential (A)	58 (Night)	35	51 (Night)	Yes
435 Myrtle St	Residential (A)	58 (Night)	44	51 (Night)	Yes
467 Myrtle St	Residential (A)	58 (Night)	43	51 (Night)	Yes
70 Grove Hill	Residential (A)	61 (Night)	46	51 (Night)	Yes
387 W Main St	Commercial (B)	74 (Day)	42	66	Yes
66 Curtis St	Industrial (C)	59 (Day)	52	70	Yes
55 Curtis St	Residential (A)	61 (Night)	47	51 (Night)	Yes

**Figure 1. Noise Level Contour Map: No Mitigation**



The results in Table 3 show that the noise levels at the various adjacent property lines are all compliant with city requirements as modeled above. Additionally, none of the modeled fuel cell noise levels exceeded the calculated ambient noise levels as per the state requirements. Therefore, no noise mitigation is required.

**Summary**

Veneklasen has reviewed the subject project site proposed fuel cell property line noise levels as they pertain to the applicable New Britain Municipal Code and Connecticut Noise Codes. All property line noise levels are in compliance with the Noise Codes as designed meaning no additional noise mitigation is required.

If you have any questions, please do not hesitate to call.

Sincerely,  
**Veneklasen Associates, Inc.**



Kevin Patterson  
Associate



John LoVerde, FASA  
Principal

## Appendix A – Sound Power Levels

Sound power data was taken from the Mei Wu Acoustics (MWA) Report titled “Bloom Energy – ES5 Linear Sound Power Measurement”, dated June 21, 2016. These reported levels were measured without the sound dampening foam described above.

**Table 4. Fuel Cell Measured Sound Power Level**

Dampening Product Installed?	Measured Sound Power Level [dB] – 1/1 Octave Bands							LwA
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
No	77.9	80.9	84.1	82.3	80.5	76.9	69.4	84.9
Yes	77.9	80.9	81.0	77.9	73.7	67.2	64.8	79.3

In a study conducted at an existing installation of the fuel cell systems, measurements were taken of the fuel cell banks with and without the dampening product. The Noise Reduction (NR) of the dampening product was calculated by taking the difference of these measured values at octave band frequencies. Note that no significant reduction was shown at the 63Hz and 125Hz bands. The modified sound levels for the fuel cells that were utilized in calculations shown in this report are shown in Table 4.

**Table 5. Measured Sound Dampening Foam Mitigation**

Condition	Measured Sound Pressure Level [dB] @10ft – 1/1 Octave Bands				
	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
No Foam	70.8	66.8	65.5	62.4	53.6
Foam	67.8	62.5	58.7	52.8	49.0
Difference (NR)	3.1	4.4	6.8	9.7	4.6





## *Energy Server<sup>®</sup>*

### *General Safety*

### *Operating & Emergency Planning/Preparedness*

### *Quick Reference Manual*

This manual applies to all Energy Servers

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# 1 Compliance

Applicable Compliance Standard:

- Bloom Energy Servers comply with ANSI and CSA provide Guidance for fuel cell system design in the United States. That standard is ANSI/CSA FC 1-2014.
- Bloom Energy server sub-systems or components, integrated as part of a fuel cell system also comply with subordinate standards set forth in ANSI/CSA FC 1-2014
- Each generation of the Bloom Energy *Energy Server* has been UL listed as a “Stationary Fuel Cell Power System”.
- Each generation of the Bloom Energy *Energy components* have been UL listed as a “Stationary Fuel Cell Power System: Component”.
- It is UL Listed under UL Category IRGZ and UL File Number IRGZMH45102 and IRGZ2MH45102.

<a href="#">IRGZ.MH45102</a>	BLOOM ENERGY CORP	STATIONARY FUEL CELL POWER SYSTEMS
<a href="#">IRGZ2.MH45102</a>	BLOOM ENERGY CORP	STATIONARY FUEL CELL POWER SYSTEMS - COMPONENT

- The UL compliance certificate is included as the following page.
- Fed-OSHA 1910 Subchapter A-Z. General Industry Standards (1910.10-1910.1450)
- Fed-OSHA 1926 Subchapter A-CC. Construction Safety Standards (1926.1- 1926.1442)
- Fuel cell systems intended for emergency system use additionally meet the criteria outlined in ANSI/NFPA 101, "Life Safety Code," and are determined to be suitable for the Type, Class and Level of emergency power supply system as defined in ANSI/NFPA 110, "Emergency and Standby Power Systems,"
- NYC CHAPTER 4 EMERGENCY PLANNING AND PREPAREDNESS SECTION FC 401 (GENERAL)
  - 401.3 Emergency preparedness plans. The emergency preparedness plans required to assure that procedures are in place that can be timely implemented in the event of a fire or non-fire emergency to provide the information, guidance, direction and assistance needed to protect the safety of building occupants, including, if necessary, effecting their evacuation, relocation or sheltering in place.

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# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20190710-MH45102  
**Report Reference** MH45102-20160826  
**Issue Date** 2019-JULY-10

**Issued to:** Bloom Energy Corp  
 4353 N First St  
 San Jose, CA 95134

**This certificate confirms that representative samples of** STATIONARY FUEL CELL POWER SYSTEMS  
 See Addendum Page

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

**Standard(s) for Safety:** Standard American National Standard For Fuel Cell Power Systems, ANSI/CSA America FC1-2014/ IEC 62282-3-100:2012

**Additional Information:** See the UL Online Certifications Directory at <https://ig.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product

Listed – Stationary Fuel Cell Power System, Model ES5-XXXXXX Fuel Cell Module AC5-12X, X may be A, B, C, D, E, F, G, M, U, or Y.

ES5-AA1AAA, ES5-AA2AAA, ES5-AA2AAB, ES5-AA2AAU, ES5-AS2AAU, ES5-AA8AAA, ES5-AA8AAA, ES5-AACAAA, ES5-AACAAB, ES5-AC2AAU, ES5-BABAAA, ES5-BABAAB, ES5-BABAAU, ES5-B88AAU, ES5-BADAAA, ES5-BADAAB, ES5-BA2AAA, ES5-BC8AAA, ES5-BC8AAB, ES5-CA1AAA, ES5-CA4AAA, ES5-CA4AAB, ES5-CA4AAU, ES5-DA2AAA, ES5-DABAAA, ES5-DACAAA, ES5-EA1AAA, ES5-EA2AAA, ES5-EA2AAU, ES5-EA2AKA, ES5-EA8AAA, ES5-EACAAA, ES5-FABAAA, ES5-FABAAB, ES5-FABAAU, ES5-FADAAA, ES5-FADAAB, ES5-FA2AAA, ES5-GA5AAA, ES5-GASAAB, ES5-MA4AAA, ES5-MA4AAB, ES5-UABAAB, ES5-YA1AAA, ES5-YA7AAA, ES5-YA8AAA, ES5-YA8AAU, ES5-YA8AKA


*B. Mallis*



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# General Safety and Operating precautions for Fuel Cell Systems

## 2 OPERATING PRECAUTIONS AND WARNING SIGNAGE

**WARNING:**  
**FIRE OR EXPLOSION HAZARD**  
Failure to follow safety warnings exactly could result in serious injury, death or property damage.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in the area.
  - Leave the area immediately.
  - Immediately call your gas supplier. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

For safe maintenance of the system, the following safety rules must be observed:

1. You must notify Bloom if you are planning any work at the site that affects **water**, **power**, **internet**, or **gas** to the Energy Server. These elements affect the performance of the fuel cell and lack of notification may cause irreversible damage to the modules.
2. Pay attention to the hazard labeling and warnings and observe all precautionary statements
3. Only Bloom Energy-approved Field Service providers are permitted access to the inside of the system enclosure.

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4. Keep the equipment free of surrounding debris. No boxes, crates, vehicles, etc. should be present within 7 feet of the Energy Server in any direction.
5. Field Service providers will periodically clean the equipment; if you wish to clean your system, do not spray with a pressurized hose.
6. Check local fire marshal requirements for code requiring an ABC-type fire extinguisher, well- marked, within sight of the system.
7. Obey all applicable local, state, and national codes and regulations.
8. The area around the Energy Server must be kept clear and free of combustible materials, gasoline, and other flammable vapors and liquids.
9. Do not block or obstruct air openings on the equipment or the surrounding 7 feet around the Energy Server that provides clearances to secure and discharge required air. This equipment requires air flow in order to operate.
10. Do not use this equipment if any part has been under water. Flood-damaged equipment is potentially dangerous. Attempts to use it can result in fire or explosion. A qualified service agency should be contacted to inspect the site and to replace all gas controls, control system parts, and electrical parts that have been wet.

Please contact Bloom Energy's **Remote Monitoring Control Center (RMCC)** at **(408) 543-1678 / 9** no less than 24 hours prior to any work which will be performed onsite which may affect your Energy Server including but not limited to power supply outages or surges and/or interruption of gas supply, water supply, and/or internet connection. Bloom operators can assess the situation and take the necessary actions to mitigate impact on the fuel cells during work and enable them come back online smoothly and efficiently when work is completed.

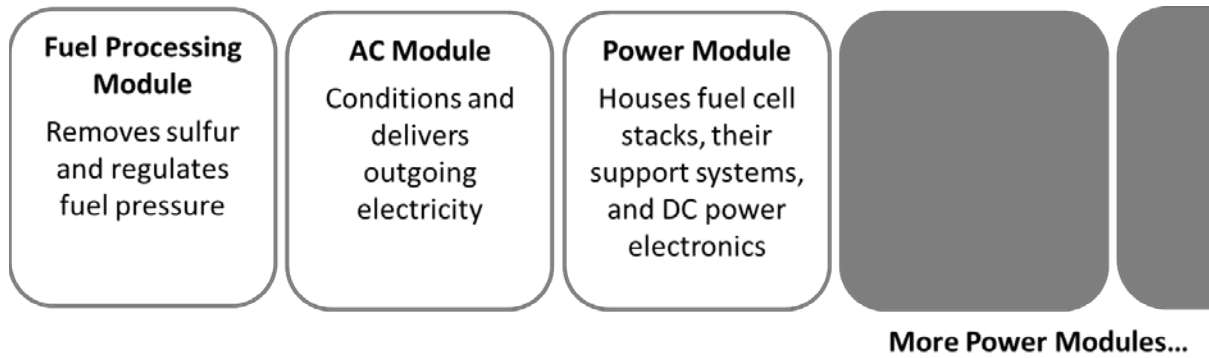
**Failure to notify RMCC may cause an invalidation of warranty on the Energy Servers and interruption of service to your site.**

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### 3 System Modules and Functions

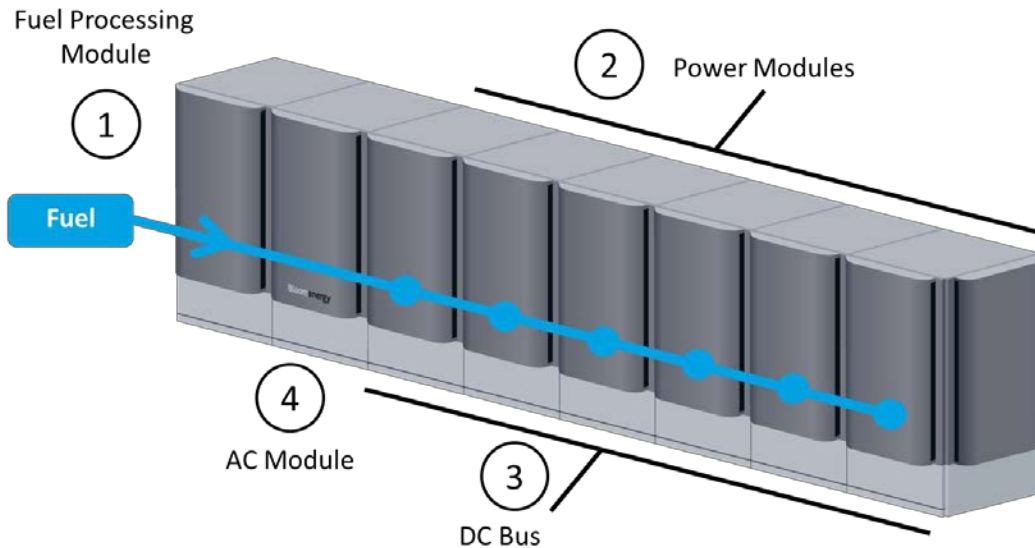
Each Energy Server has three types of modules: one Fuel Processing Module, one AC Module and several identical Power Modules. ( Figure 1)

**Figure 1 – System Modules**



The function of each module can be understood by tracing the fuel through its conversion to electricity (see below).

## Fuel Cell Inputs and Outputs



1. Fuel from the facility enters the Energy Server at the Fuel Processing Module. This module regulates fuel pressure and removes trace components, such as sulfur, which can harm the fuel cells.
2. Once processed, the fuel flows to each of the Power Modules. Each Power Module contains stacks of fuel cells, the necessary support components for handling air, heat, water, exhaust, monitoring, and safety, and DC power electronics. Processed fuel enters the fuel cell, reacts with O<sub>2</sub> (from ambient air), and is electrochemically converted into DC electricity.
3. The ensuing DC power is collected by the DC bus and fed to the AC Module.
4. The AC Module converts the DC power to AC power and exports the power to the facility.

This modular architecture allows for maximum availability and power production. If any part of a Power Module needs to be replaced or repaired, the remaining Power Modules can remain operational during service.

Additionally, Energy Server 5 is capable of being installed in a number of different configurations: linear (shown in Figures 1 and 2), compact, and corner.



### System Design Specifications

Inputs	
Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water (connection required at all times)	None during normal operation
Outputs	
Electrical connection	480 V, 3-phase, 60 Hz
Efficiency	
Cumulative electrical efficiency (LHV net AC)*	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh
Emissions	
NOx	0.0017 lbs/MWh
SOx	Negligible
CO	0.034 lbs/MWh
VOCs	0.0159 lbs/MWh
CO2 @ specified efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas
Physical Attributes and Environment	
Temperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Noise	< 70 dBA @ 6 feet
Codes and Standards	
Complies with Rule 21 interconnection and IEEE1547 standards	
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards	
An Energy Server is a Stationary Fuel Cell Power System. It is Listed by Underwriters Laboratories, Inc. (UL) as a 'Stationary Fuel Cell Power System' to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102.	
Additional Notes	
Access to a secure website to monitor system performance & environmental benefits	
Remotely managed and monitored by Bloom Energy	
Capable of emergency stop based on input from the site	

\* 65% LHV efficiency verified by ASME PTC 50 Fuel Cell Power Systems Performance Test

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## 4 External Modules and Ancillary Equipment

### 4.1 Water Distribution Module

The Water Distribution Module (WDM) is responsible for purifying water from the utility to a level required for optimal function of the fuel cells. The module takes water from the facility, purifies it using a pair of de-ionization beds, and delivers the purified water to the Energy Server. The WDM is installed on the ancillary pad with the PDS and Telemetry cabinet.

### 4.2 Power Distribution System / Electrical Distribution Module

The Power Distribution System (PDS) or Electrical Distribution Module (EDM) houses the electrical power connections from the facility, surge protection device, and any required power meters. The PDS is installed on an ancillary pad along with the WDM.

### 4.3 Telemetry Cabinet

The Telemetry Cabinet houses the communications components that allow Bloom Energy's Remote Monitoring Control Center (RMCC) to constantly monitor the Energy Servers. All reported data from the systems is continuously transmitted to live operators and recorded in our database for data analysis and predictive action. The RMCC operators will communicate any alarms to Field Service personnel if onsite action is required.

## 5 Safety Features and General Safety and Operating precautions

Every Energy Server has redundant safety features and in-system checks to ensure personnel safety. While the actual fuel cells operate at high temperatures, these components do not move and are contained within many layers of insulation. It is safe to stand adjacent to the equipment as all moving parts and hot surfaces are protected by the outer panels. However, do not attempt to open the doors of the Energy Server or climb on top of it. Parts of the Energy Server, including the exhaust vents at the peak of the roof, are hot during operation. Also, as with any device using flammable fuel, never smoke or create sparks near the equipment.

Bloom Energy Servers are controlled remotely and have internal sensors that continuously monitor system operation. If safety circuits detect a condition outside normal operating parameters, the fuel supply is stopped and individual system components are automatically shut down. A Bloom Energy RMCC operator can also remotely initiate any emergency sequence. An Emergency Stop alarm initiates an automatic shutdown sequence that puts the system into “safe mode” and causes it to stop exporting power. If a full shutdown is warranted, the system can return to ambient temperature within 18 hours. If you have questions about any of these safety features, please contact Bloom Energy at [CustomerCare@bloomenergy.com](mailto:CustomerCare@bloomenergy.com).

- **Manual controls:**
  - A clearly marked Emergency Power Off button located at site to stop the export of power
  - Manual gas valve located within 50 feet of Energy Server location to control gas inflow
- **Fire hazard mitigation:**
  - Energy Server is plumbed directly to utility-provided natural gas
  - If input gas pressure is compromised, an internal pressure switch triggers an emergency system shutdown and fuel input is isolated through double solenoid isolation valves
  - Equipment contains virtually no stored fuel (internal capacity is < 5 scf)
- **Electrical hazard and mitigation:**
  - System operates at 480 V<sub>AC</sub>
  - System inverter prevents backfeed to the grid during a power outage
- **Mechanical hazards and mitigation:**
  - All moving parts are located behind secured doors
- **Hazardous material mitigation:**
  - Desulfurizer beds (to remove fuel impurities) are fully enclosed and are only serviced by licensed vendors

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## 6 Emergency Shut Down Procedures

### Emergency Actions

Emergency		
Scenario	Y	Bloom Energy
<b>System Fire</b>	<ol style="list-style-type: none"> <li>1. Ensure personal safety</li> <li>2. Call 911 and Bloom Energy RMCC</li> <li>3. Hit Emergency Power Off button</li> <li>4. Shut gas isolation valve</li> <li>5. Open electrical disconnect</li> </ol>	<ol style="list-style-type: none"> <li>1. Remote shutdown</li> <li>2. Dispatch Field Service team (if safe and necessary)</li> <li>3. Notify your site contact</li> </ol>
<b>Fire in System Vicinity</b>	<ol style="list-style-type: none"> <li>1. Ensure personal safety</li> <li>2. Call Bloom Energy RMCC</li> </ol>	
<b>Natural Gas Leak</b>		
<b>Major Seismic Event</b>	<ol style="list-style-type: none"> <li>1. Ensure personal safety</li> <li>2. Call Bloom Energy RMCC</li> <li>3. Cut off fuel and electricity (if absolutely necessary)</li> </ol>	

If you have to shut down your system right away—for example, in case of a building fire or electrical hazard—three shutoff controls are installed at your facility external to the system. The locations of these three controls should be known to your facilities manager before operation and should be noted on the site diagram that you created with your Bloom Energy account manager. The three shutoffs are: (1) **EPO button**, (2) the **electrical disconnect switch**, and (3) the **manual natural gas shutoff valve**.

The fuel cell system has redundant safety features and in-system checks to ensure that the system will not harm certified technicians or bystanders near the unit. While the actual fuel cells operate at high temperatures, these components do not move, and are contained within many layers of insulation. During normal operation, the unit is cool to the touch and operates quietly.

The fuel cell system is controlled electronically and has internal sensors that continuously measure system operation. If safety circuits detect a condition outside normal operating parameters, the fuel supply is stopped and individual system components are automatically shut down. A Bloom Energy Remote Monitoring and Control Center (RMCC) operator can also remotely initiate any emergency sequence. An Emergency Stop alarm condition initiates an automatic shutdown sequence that puts the fuel cell system into —safe mode and causes it to stop exporting power. If you have questions about any of these safety features, please contact Bloom Energy.

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If you have to shut down your fuel cell system right away—for example, in case of a building fire or electrical hazard—three shutoff controls are installed at your facility external to the system. The locations of these three controls should be known to your facilities manager before operation, and should be noted on your facility diagram that you created with your Bloom Energy account manager. The three shutoffs are: **1) the EPO buttons, 2) the electrical disconnect, and 3) the natural gas shutoff valve.**

- 1) EPO Button: An Emergency Power Off (EPO) Button cuts all power to all systems and stops them from exporting power to your building. All natural gas flow is also stopped within the systems. (The EPO button is on the front/side of the EDM, if an EDM is installed.) Lift the protective cover and break the glass seal that covers the button with the attached hammer. After the glass seal is broken, the shutdown sequence will automatically begin.



Emergency Power Off Button

Telemetry Emergency Power Off (EPO) button if your system is equipped with (see below) opens each Energy Server's output contactor to stop sending power to the facility. All natural gas flow is also stopped, as cutting power closes two fail-closed natural gas valves inside the system. The EPO button is located on the side of the Telemetry Cabinet. It has a protective plastic cover on it, as well as protective glass that must be broken with its attached hammer before pressing the button. Use this if you want to stop exporting power in the case of an emergency.

- 2) **Manual Gas Shut off Valve:** The manual natural gas valve shuts off all natural gas at a point upstream of the Energy Server. Removing the gas source will completely shut down the Energy Server. If the valve handle is perpendicular to the pipe, the valve is shut. If the valve handle is parallel with the pipe (as shown below), the valve is open.

### Manual Natural Gas Valve



<b>Note</b>	<b>Some gas shutoff valves are installed without a permanent handle to prevent unauthorized operation. Use an adjustable wrench to operate a valve without a handle.</b>
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- 3) **Electrical Disconnect switch:** The electrical disconnect switch manually disconnects power to everything downstream of it. The disconnect switch is typically located near the point where the wires from the Energy Server installation meet the facility’s electrical framework. This might be next to the Energy Server or in the site’s facility room. The location is shown on your site map. The switch is labeled “[Name of Electrical Utility] Lockable Visible Generator Disconnect Switch.” Use this if you need to cut power in the line to the EDM/PDS, the EDM/PDS itself, and the electrical connection leading to the Energy Server (see section External Modules for further definitions). Note that opening the electrical disconnect switch places the Energy Server in a Balance of Plant (BOP) state where it does not export power but is still processing fuel. Operating the electrical disconnect should be done to electrically isolate the system, but not to shut it down completely.

### Electrical Disconnect Switch

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Each site is designed for International Code Council (ICC) Seismic Site Class D. Seismic Zone 4 may also be mentioned for older building codes. Seismic Site Class D is equivalent to Seismic Zone 4 and 1 G lateral acceleration for our design calculations.

**Site map:**

An overhead site map showing the location of all safety features will be posted throughout the fuel cell installation is provided below:

TO BE PROVIDED UPON FINAL UTILITY LOCATIONS

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## **EMERGENCY NOTIFICATION PLANNING & PROCEDURES**

### **Life-Threatening Emergencies**

To report life-threatening emergencies, immediately call:

**Fire: 911**  
**Ambulance: 911**  
**Police: 911**

Conditions that require automatic emergency notification include:

- Unconscious Victim
- Seizure
- Major Trauma
- Chest Pains
- Difficulty Breathing
- Flames

### **Non-Life-Threatening Emergencies**

For non-life-threatening emergencies, report the incident to the local safety control center.

When you report an emergency, give the following information:

- Exact nature of the emergency (describe as clearly and accurately as possible).
- Exact location (i.e., address, building, floor, area, department, etc.).
- Telephone number from which you are calling.
- Your full name.

## **FIRE OR SMOKE PROCEDURES**

This section describes the procedures involving a fire or smoke. A major fire is one that requires the use of more than one fire extinguisher or takes more than one minute to extinguish.

If you discover a fire or smoke:

- 1) Activate the nearest fire alarm if not activated already.
- 2) Activate the fuel cell Emergency Stop if possible.
- 3) Shut off the fuel cell installation natural gas line if possible.
- 4) If the fire is small and does not pose an immediate risk to personal safety, you may

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attempt to extinguish it with a portable fire extinguisher only if trained to do so.

- 5) Avoid using water on electrical fires.
- 6) Report every fire, regardless of size, immediately. Smoke or the smell of smoke should be reported.
  - a. From a safe location dial **911**.
  - b. Report the incident to the local security safety center.

## **MEDICAL EMERGENCY PROCEDURES**

This section describes the necessary procedures for injuries or illnesses that may occur under extreme conditions.

A serious injury can be life-threatening and will require immediate medical attention. Injuries can include head injuries, spine injuries, broken bones, heart attack, stroke, loss of consciousness, excessive bleeding, chemical exposure, etc.

A non-serious injury is not immediately life-threatening but may still require the attention of a medical doctor. These can include headaches, nausea, itching, cuts, burns, etc.

### **Life-Threatening Medical Emergency**

- Remain calm.
- Immediately dial 911.
- Report the incident to local security safety center.
- Do not move the victim unless it is absolutely necessary.
- Call out for personnel trained in first aid and/or CPR which may include Building Evacuation or Emergency Response team members.
- Ask someone to bring the area first aid kit and Automated External Defibrillator.
- Assist if capable or asked to do so.

### **Non-Life-Threatening Medical Emergency**

- Remain calm.
- Report the incident to the local security safety center.
- Do not move the victim unless it is absolutely necessary.
- Call out for personnel trained in first aid.
- Ask someone to bring the area first aid kit.
- If the victim requires further medical attention, then direct them to the nearest approved

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<p>FOR ANY EMERGENCY OR SHUTDOWN NOTIFICATION, PLEASE CONTACT <b>THE REMOTE MONITORING CONTROL CENTER</b> <b>(408) 543-1678</b></p>
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medical clinic or hospital – Contact Security or Human Resources for assistance if needed.

- The injured employee’s supervisor/manager is responsible for ensuring injury forms are properly filled out. Complete the forms within 24 hours of incident and submit to the injury reporting system for follow-up. Follow company protocols.

## **MATERIALS RELEASE PROCEDURES**

The fuel cell system does not pose a hazard to health or environment. However, some internal materials when released, may pose a irritation risk to people and a possible risk of fire if not properly handled. This section was designed to address potential material release events:

In case of a material release that poses a direct threat to health, safety, or the environment:

- Report the incident to local safety/security office.
- If extremely life-threatening immediately dial **911** followed with a call to Security.
- Contain the spill.
- Evacuate the area or building if the material release is determined to be life-threatening.

In the event of an unknown indoor smell or odor, report the incident to authorities responsible for HAZMAT and spills.

## **NATURAL DISASTERS AND SEVERE WEATHER**

### **Earthquake**

This section provides information and procedures for earthquake emergencies.

The fuel cell system is designed to automatically shut off if the natural gas supply is compromised.

The natural gas supply line has an external, manual shut-off valve that should be activated if it is safe to do so. This valve will be labeled, “Notice – Fuel Cell Gas Shut Off”. The natural gas line will be labeled with the word “gas” on a yellow background with an arrow pointing in the direction of flow.

The nearby Emergency Stop can be activated to stop the flow of fuel and power to/from the fuel cell system.

A Bloom Energy Field Engineer will validate site safety and system operation during/after severe weather as necessary.

### **Flood**

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The fuel cell system support pad is designed to divert water flow. However, if flooding conditions exist, or threaten to exist due to heavy rainfall, creek bank overflows, or pipe breakage, then immediately report the incident to the local safety/security office.

Do not use the fuel cell power system if any part has been under water. If it is safe to reach the Emergency Power Off button for the site without entering the water, stop all systems until a Bloom Energy representative can assess the site.

Precautions to follow after a flood:

- Stay out of flooded areas. Flooded areas remain unsafe. Entering a flooded area places you at risk.
- Notify Bloom Energy. A Bloom Energy Field Engineer will validate site safety and system operation during/after severe weather as necessary

## **UTILITY OUTAGE**

The fuel cell system is operated in “Grid-Parallel” mode. If utility provided power is lost for any reason, the fuel cell system will go “off-line”. The fuel cell system will remain in stand-by mode until it automatically senses the utility grid has been restored. If utility gas is shut down, the fuel cell system will begin to shut down completely.

The Bloom Energy Remote Monitoring Control Centers monitor the fuel cells 24 hours per day and will be alerted to utility grid interruptions via its controls software. A Field Service Engineer will be dispatched to restart the fuel cell system if necessary. Customer personnel should NOT attempt to start up or operate the fuel cell system.

### **Before a Planned Outage**

1. Notify the Bloom Energy Remote Monitoring Control Center at 1-408-543-1678 at least 24 hours before planned outage.
2. Bloom Energy Remote Monitoring Engineers will reduce power generated by the fuel cell system and take the fuel cell off-line.
3. Abrupt fuel cell system shutdowns may cause significant system damage.

### **During a Utility Power Loss**

1. The fuel cell system will automatically go off-line.
2. The Bloom Energy Remote Monitoring Control Centers will monitor the fuel cell system.
3. Bloom Energy Field Service will be dispatched to start up the fuel cell system as necessary.
4. If the fuel cell system has been automatically shut down and utility power is restored,

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**(408) 543-1678**

there will be no impact to building power delivery: primary power will come from the utility rather than the fuel cells.

## Good Housekeeping

Although extremely unlikely, to minimize the risk of fire and any incidents, Facility Managers should take the following precautions around the fuel cell installation:

- What to do if you smell gas:
  - Do not try to light any appliance
  - Do not touch any electrical switch; do not use any phone in the area
  - Leave the area immediately
  - Immediately call your gas supplier. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department
- Notify Bloom Energy Remote Monitoring Control Center at 1-408-543-1678 of any condition that would impair the safety of the fuel cell installation so that mitigation measures could be determined and placed into effect.
- Prohibit smoking within the area of the fuel cell installation. Bloom Energy will furnish No Smoking signs for the area.
- Ensure only Bloom Energy Service Providers are permitted access inside the system.
- Keep the area around the fuel cell installation clear for ten feet in all directions, for safety and ease of maintenance.
- Keep the area around the fuel cell power system clear and free of combustible materials, gasoline, and other flammable vapors and liquids.
- Shut the system down and call Bloom Energy immediately if you suspect a fuel line rupture.
- **Never enclose an operating system** in a tarp, tent, shed, or other structure that would allow air to become trapped. This system runs on natural gas, and produces trace amounts of CO and CO<sub>2</sub>. The amounts of these gases are safe for normal outdoor operation but could gather in an enclosed place.
- Do not block or obstruct air openings on the fuel cell power system. This system requires air flow in order to operate.
- Do not use this fuel cell power system if any part has been under water. Immediately call qualified service personnel to inspect the fuel cell power system and to replace any functional part which has been under water.
- Please contact Bloom Energy at 408-543-1678 with as much advance notice as possible if you plan, detect, or suspect a prolonged Internet outage.
- The Bloom Energy Field Service team will periodically clean the equipment; do not spray

with pressurized hoses.

## Maintenance

Your site has specific Field Service personnel assigned to it for both routine maintenance and troubleshooting. Your site project manager will introduce you to the designated Bloom Energy Field Service team assigned to your site prior to operation.

Bloom Energy Field Service personnel are trained in state Safety Law. They are trained in all the procedures required for the fuel cell installation, and their toolkit includes all the safety equipment required to work around the fuel components and high voltage in our system (480VAC).

Bloom Energy also requires its employees to follow all necessary safety precautions, including:

- Every time a Field Service technician arrives at a site for the first time and opens a service panel, the technician will use a leak detector to determine whether there is any gas buildup in the system and determine that it is safe to work on it.
- Whenever a Field Service technician is removing and replacing a component on a fuel or exhaust line, the technician must keep a CO detector nearby to make sure that no CO is present in the line even after the system has been shut down.

The Field Service team expects to conduct quarterly and yearly preventative maintenance for certain types of consumable or cleanable components such as replacement of air filters, water filters, and desulfurizer beds. Other maintenance will be performed as required. During such times, inspections for any hazards will be conducted including quarterly fire extinguisher inspection (if applicable).

## **INCIDENT TRAINING**

Refer to above sections: Operating precautions, Emergency response plan, Safety and warning signage, Emergency shut down procedure, for training of first responders. The training should be provided initially and annually thereafter.

Prior to system startup, a Bloom Energy representative upon customer request will provide training on the above information to include the location and operation of safety features as well as actions to take during emergencies. We desire this training to provide lasting value and are more than happy to work with you to customize the experience to suit your needs.





**EXISTING**

PHOTO

1

**OBLIQUE AERIAL PHOTO  
SOURCE: PICTOMETRY 10/25/2019**





**PROPOSED**

PHOTO

**OBLIQUE AERIAL PHOTO  
SOURCE: PICTOMETRY 10/25/2019**





**EXISTING**

PHOTO

2

LOCATION  
**CURTIS STREET**

ORIENTATION  
**WEST**





**PROPOSED**

PHOTO

2

LOCATION  
**CURTIS STREET**

ORIENTATION  
**WEST**