



Attn: Robert Stein, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Petition of Bloom Energy Corporation, as agent for Frontier Communications Corporation, for a Declaratory Ruling for the Location and Construction of a 200 kW Fuel Cell Customer Side Distributed Resource at 39 West Street, Danbury, CT 06810

Dear Chairman Stein:

We are submitting an original and fifteen (15) copies of the above-captioned Petition, together with the filing fee of \$625.

In the Petition, Bloom Energy Corporation ("Bloom"), as agent for Frontier Communications Corporation ("Frontier"), request the Connecticut Siting Council approve the location and construction of a 200 kilowatt fuel cell and associated equipment (the "Facility"). The Facility will be located on the site of the Frontier building at 39 West Street, Danbury, CT (the "Site"). Electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the electric grid. The Facility will be fueled by natural gas.

Should you have any questions, concerns, or require additional information, please contact me at (860) 839-8373.

Sincerely,
Bloom Energy

Justin Adams
justin.adams@bloomenergy.com
(860) 839-8373

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

PETITION OF BLOOM ENERGY	:	PETITION NO. ____
CORPORATION AS AGENT FOR FRONTIER	:	
COMMUNICATIONS CORP FOR A	:	
DECLARATORY RULING FOR THE	:	
LOCATION AND CONSTRUCTION OF A 1.4-	:	
MEGAWATT FUEL CELL CUSTOMER-SIDE	:	November 11, 2016
DISTRIBUTED RESOURCE AT 39 WEST	:	
STREET, DANBURY, CONNECTICUT	:	

PETITION OF BLOOM ENERGY CORPORATION AS AGENT FOR IKEA FOR A
DECLARATORY RULING

Pursuant to Conn. Gen. Stat. §§ 4-176 and 16-50k(a) and Conn. Agencies Regs. § 16-50j-38 et seq., Bloom Energy Corporation (“Bloom”), as agent for Frontier Communications Corp. (“Frontier”), requests that the Connecticut Siting Council (“Council”) approve by declaratory ruling the location and construction of a customer-side distributed resources project comprised of one (1) new ES-5 Bloom Energy Servers solid oxide fuel cells and associated equipment (the “Facility”), providing 200-kiloawatts (“kW”) (net) of power to the Frontier building located at 39 West Street, Danbury, Connecticut (the “Site”). *See* Exhibit 1. The Facility will be installed, maintained and operated by Bloom and owned by Key Equipment Finance, a third party financing source of Bloom under an agreement with Frontier.

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

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



The proposed Facility will be a customer-side distributed resource facility under 65MW that complies with the air and water quality standards of the Connecticut Department of Energy and Environmental Protection (“DEEP”). Bloom submits that no Certificate is required because the proposed modifications would not have a substantial adverse environmental effect in the immediate vicinity of the Facility as well as in the State of Connecticut.

I. COMMUNICATIONS

Correspondence and other communication regarding this petition should be directed to the following parties:

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II. DISCUSSION

A. Project Description and Purpose

The proposed Facility would be a 200kW customer-side distributed resource consisting of a state-of-the-art Bloom Energy Server and associated equipment. It will be interconnected to switchgear located inside the electrical room of the Frontier Communication Corp. building (“Building”). *See* Exhibit 2.

The Facility will be a “customer-side distributed resource(s)” project because it will be “a unit with a rating of not more than sixty-five megawatts [and is located] on the premises of an industrial end user within the transmission and distribution system including, but not limited to,

fuel cells” Conn. Gen. Stat. § 16-1(a)(40)(A). Further, in its Final Decision in Docket No. 12-02-09, dated September 12, 2012, the Connecticut Public Utilities Regulatory Authority (“PURA”) determined that Bloom’s Energy Server qualifies as a Class I renewable energy source fuel cell as defined in Conn. Gen. Stat. §16-1(a)(26)(A). *See* Exhibit 3.

The purpose of the proposed Facility is to replace the average baseload of the Building with a Class I renewable energy source, achieve sustainability goals, and improve reliability of electrical systems and equipment. The meter interval data analysis conducted in 2016 (Exhibit 4) determined the average baseload for the Building to be 186kW, approximately equivalent to the proposed 200kW Facility. Therefore, electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the grid.

B. The Facility

i. The Facility

The Facility will consist of a Bloom solid oxide fuel cell Energy Server and associated equipment. The Energy Server is approximately 26 feet long, 4 feet wide and 7 feet tall. The location and arrangement for the fuel cells and equipment at the rear of the Building is shown in Exhibit 2. The Energy Server module is enclosed, factory-assembled and tested prior to installation. *See* Exhibit 5.

The Facility will be capable of producing 200kW of clean, reliable and continuous electric power. The Facility will interconnect to the Site’s distribution system and operate in parallel with the grid to provide the Site’s electrical requirements. Any electricity generated in excess of the Site’s requirement will be exported to the grid under an Eversource net metering tariff. This site will not have an uninterruptible power module (“UPM”) and thus will not have

any means to output power in a grid independent capacity at any time. The interconnection to Eversource will be provided from switchgear located inside the electrical room. The Eversource interconnection application for the Facility was submitted and is currently under review. The Facility will be fueled by natural gas supplied by Eversource.

The Facility, and more specifically the inverters within, are UL1741/IEEE1547 compliant and thus will not operate without a stable utility voltage. In the event of an outage, the Facility will not shut down, they will automatically enter a state of stand-by awaiting the return of a stable utility voltage. When in a state of complete shut down the Energy Server requires a combination of remote and on-site coordination to start up the systems. This work is performed by Bloom employed, trained and certified personnel only, Frontier does not control the operation of the system directly. In accordance with Public Act 11-101¹, an Emergency Response Plan (Exhibit 6) and associated training is provided to Frontier and select employees.

The Facility includes extensive hardware, software and operator safety control systems, designed in accordance with the American National Standards Institute (ANSI) / Canadian Standards Association (CSA) America FC 1-2004 standard for “Stationary Fuel Cell Power System(s)”. The Facility will be remotely monitored by Bloom Energy 24 hours a day, seven days a week. If software or hardware safety circuits detect an unsafe condition, variation in temperature or gas pressure outside of operational parameters, fuel supply is automatically stopped and the system is shut down. A Bloom Energy trained service technician will visit the site to determine the cause of the shutdown before starting the system back up. Two manual fuel

¹ An Act Adopting Certain Safety Recommendations of the Thomas Commission

shut-off valves are provided at each installation site, and two normally closed, safety shut-off rated isolation valves are installed within the system.

The Facility will be installed in accordance with NFPA 853². This standard provides fire prevention and fire protection requirements for safeguarding life and physical property associated with buildings or facilities that employ stationary fuel cell systems of all sizes. The risk of fire related to the operation of this Facility is therefore very low. Furthermore, in the Energy Server, natural gas is not burned; it is used in a chemical reaction to generate electricity. The natural gas is digested almost immediately upon entering the unit and is no longer combustible. In accordance with Public Act 11-101³, the fuel line (pipe) cleaning procedure is to purge for 60 seconds with 10 blasts of on off prior to connecting to the Facility. In addition to these safety features, the Facility will also be installed in compliance with all applicable building, plumbing, electrical, and fire codes to ensure local standards and procedures are addressed.

C. Existing Environment

i. The Site

The Facility would be installed within the Frontier property located at 39 West Street, Danbury. The Building and the surrounding parking, driveways and grounds occupy four parcels that are owned by Frontier and combine to equal 1.19-acres (“the Site”). The Facility will be constructed at the rear of the Building in proximity to existing mechanical equipment. The Site is within the “Downtown Revitalization Overlay Zone” and is zoned as “Light Commercial” (“CL-10”) under the zoning regulations of the City of Danbury (the “City”). The surrounding

² Standard for the Installation of Stationary Fuel Cell Power Systems, 2015 Edition

³ Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission,

areas are zoned as CL-10 and High Rise Residential (RH-3). The abutting properties of the proposed location include churches, business services, law offices, an apartment building, and Danbury City Hall.

The Facility would be located on a concrete pad within an existing paved driveway and parking area at the rear of the Building. Existing parking for the building is not established and the parking spaces are not delineated for the site. A parking plan and proposed rear drive aisle (Exhibit 2) were submitted to Danbury's City Planning and Fire Marshal representatives for their review. As shown in Exhibit 2, parking would be limited to the western side of the Building which provides an adequate number of spaces so the Building would be over parked at the conclusion of the project. In addition, the rear of the Building would be a dedicated drive aisle with sufficient width to allow the safe passage of emergency vehicles. Bloom will continue to work closely with the City to ensure necessary requirements are met.

The location of Facility was strategically placed in proximity to the existing mechanical equipment, at the rear of the Building to reduce visual impacts to the City and abutters. Photos of the proposed location and adjacent areas are provided in Exhibit 7.

ii. Wildlife, Habitat and Cultural Resources

A review of the publically available Natural Diversity Database (NDDDB) has shown no known occurrences of state-listed species within the proposed Facility location. Furthermore, the proposed Facility will be located on a driveway and parking area that were previously developed and disturbed during construction of the Building. Therefore, the construction and operation of the Facility will not have a substantial adverse effect on wetlands, state-listed species, and cultural (archaeological and historical) resources.

iii. Flood Zones

A review of the flood hazard mapping data from Federal Emergency Management Agency's ("FEMA") National Flood Insurance Program ("NFIP") has shown the Facility would be located within an unshaded FEMA Zone X, an area determined to be outside the 500-year flood zone. However, to the northwest and bordering the Site a 100-year flood zone area exists. See Exhibit 8. Site work, such as grading and soil removal, would be limited to areas outside of the 100-year flood zone.

D. Environmental Effects and Mitigation

i. Natural Gas Desulfurization Process

The first step in the production of electricity in the Bloom Energy server is desulfurization – the removal of the sulfur compounds, which have been added to the natural gas as an odorant by the natural gas suppliers. This step occurs in the desulfurization unit – a canister which contains a filter made for this purpose. Sulfur is not “produced” in this process, but is separated from the natural gas in which it was contained. In this process, trace levels of other compounds which are naturally present in the natural gas may also absorb to the filter. Again, these are not “produced” from the process, but are separated from the natural gas in which they were contained. The filter is made up of inert materials.

The desulfurization process takes place entirely within desulfurization canisters. These are made of extruded aluminum or zinc-plated steel that are built to last for the life of the Energy Server and beyond. Because they are built to hold natural gas, their structural integrity is essential. That integrity is assured by around the clock monitoring of the Energy Servers to detect any leak. Were there a leak, the Server (including the desulfurization operation) would

shut down automatically. There has never been a leak from one of the desulfurization canisters. The structural integrity and leak prevention continues after the desulfurization canisters are removed from service. At that point, the entry and exit points for the natural gas automatically seal shut. The desulfurization canister remains sealed and is not opened at the Site, or anywhere in the State of Connecticut.

Within days that a desulfurization canister is taken out of service, it is picked up by a Bloom contractor and taken to a licensed facility outside the State, where the desulfurization unit is opened and the contents are removed. As described above, the desulfurization unit has complete structural integrity. Its safety as a container for transporting has been certified by the Department of Transportation (DOT). This certification assures that the canisters are secure and have the structural integrity to transport the desulfurization materials safely and without risk of a release.

Bloom has been engaged and expects to have further follow up discussion with regulators on the proper management of materials found in all public pipeline natural gas supplied to homes and businesses, which we filter before that fuel is consumed by our product to produce clean, environmentally friendly electric power. Because our technology is relatively new, the 35 year old regulations do not address our situation, but we have been working with the regulators to obtain clarification.

ii. Emissions

The construction and operation of the Facility will comply with DEEP's air and water quality standards and will not have a substantial adverse environmental effect.

With respect to water discharges, the Energy Servers are designed to operate without water discharge under normal operating conditions. Additionally, the Facility would use no water during normal operation beyond a 75-gallon injection at start up.

Conn. Agencies Regs. § 22a-174-42, which governs air emissions from new distributed generators, exempts fuel cells from air permitting requirements. Accordingly, no permits, registrations, or applications are required based on the actual emissions from the Facility. See Conn. Agencies Regs. §§ 22a-174-42(b) and (e). Notwithstanding this exemption, as shown below in Table 1, the Facility meets the Connecticut emissions standards for a new distributed generator.

Table 1: Connecticut Emissions Standards for a New Distributed Generator

Compound	Connecticut Emission Standard (lbs/MW-hr)⁴	Bloom Energy Server (lbs/MW-hr)
Oxides of Nitrogen (NO _x)	0.15	<0.01
Carbon Monoxide (CO)	1	<0.10
Carbon Dioxide (CO ₂)	1,650	735-832

The facility will also meet state criteria thresholds and projected emissions for all greenhouse gases defined in Regulations of Connecticut State Agencies Section 22a-174-1(49) as shown in Table 2. By virtue of the non-combustion process the Energy Servers virtually eliminate NO_x, SO_x, CO, VOCs and particulate matter emissions from the energy production process. Similarly there are no CH₄, SF₆, HFC or PFC emissions. CH₄ is broken down in the reforming process. Reforming is the type of process where if you have sufficient catalyst, the reaction can go all the way to completion. That is the case for the Bloom Energy Server. The fuel is reformed in the hot box – with a very significant excess catalyst for reaction.

⁴ Conn. Agencies Regs. § 22a-174-42, Table 42-2.

Table 2: Connecticut Thresholds for Greenhouse Gases

Emission Type	Bloom Output	LERC allowance
Nitrous Oxides (NO _x)	<0.01 lbs/MWh	0.07 lbs/MWh
Carbon Monoxide (CO)	<0.10 lbs/MWh	0.10 lbs/MWh
Sulfur Oxides (SO _x)	Negligible	Not Listed
Volatile Organic Compounds (VOCs)	<0.02 lbs/MWh	0.02 lbs/MWh
Carbon Dioxide (CO ₂) ⁵	735-832 lbs/MWh	Not Listed

iii. Sound Levels

Bloom contracted Mei Wu Acoustics (MWA) to predict the sound levels produced by the proposed Facility. In addition, MWA conducted 24-hour sound level measurements at the Site to establish the existing ambient environmental sound levels in order to compare predicted noise levels with existing conditions and demonstrate compliance with the requirements. The report is provided in Exhibit 9.

The report indicates that the proposed location would be considered a “high background noise area⁶” according to the DEEP regulations. However, this regulation need not be applied to meet the DEEP requirements. In the proposed configuration the predicted noise levels emitted from the Facility to the Class A (residential) receivers would be less than 45 dBA, and in compliance with noise criteria set forth in Connecticut regulations for the Control of Noise.

iv. Visual Effects

The overall visual effect would be mitigated by the proposed location at the rear of the Building in proximity to existing mechanical equipment.

E. Project Construction and Maintenance

During construction, appropriate erosion and sedimentation (E&S) controls will be installed to protect roof drains and prevent the transport of construction related sediment off-site.

⁵ Carbon Dioxide is measured at Bloom’s stated lifetime efficiency level of 53-60%

⁶ DEEP Sec. 22a-69-3.6.

Temporary E&S control measures will be maintained and inspected throughout construction to ensure their integrity and effectiveness. The temporary E&S control measures will remain in place until the work is complete. Due to the limited disturbance required for the Facility's installation, no construction-related storm water permits will be required. Further, no additional impervious area will be added to the Site and it will not affect drainage patterns or stormwater discharge. Construction-related impacts will be minimal and contained to the roof or within the building.

III. COMMUNITY OUTREACH

Bloom has provided notice of this petition to all persons and appropriate municipal officials and governmental agencies to whom notice is required to be given pursuant to Conn. Agencies Regs. § 16-50j-40(a).⁷ A copy of the notice letter and a service list are provided in Exhibit 10 and the corresponding abutters map is provided in Exhibit 11. Additionally, prior to filing this petition, representatives from Bloom briefly discussed the proposed Facility with the City of Danbury Planning Department. An opportunity to comment on the proposed Site Plan has been provided to the Mayor and City Planner to incorporate any design comments they may have. *See* Exhibit 12.

IV. BASIS FOR GRANTING OF THE PETITION

Under Conn. Gen. Stat. § 16-50k(a), the Council is required to approve by declaratory ruling the construction or location of a customer-side distributed resources project or facility

⁷ Conn. Agencies Regs. § 16-50j-40(a) requires that "[p]rior to submitting a petition for a declaratory ruling to the Council, the petitioner shall, where applicable, provide notice to each person other than the petitioner appearing of record as an owner of property which abuts the proposed primary or alternative sites of the proposed facility, each person appearing of record as an owner of the property or properties on which the primary or alternative proposed facility is to be located, and the appropriate municipal officials and government agencies [listed in Section 16-50l of the Connecticut General Statutes]."



with a capacity of not more than 65 MW, as long as the facility meets DEEP air and water quality standards. The proposed Facility meets each of these criteria. The Facility is a “customer-side distributed resources” project, as defined in Conn. Gen. Stat. § 16-1(a)(40)(A), because the Facility is “a unit with a rating of not more than sixty-five megawatts [and is located] on the premises of a retail end user within the transmission and distribution system including, but not limited to, fuel cells” and, as demonstrated herein, will meet DEEP noise, air and water quality standards. In addition, as demonstrated above, the construction and operation of the Facility will not have a substantial adverse environmental effect in the State of Connecticut.

V. CONCLUSION

For the reasons stated above, Bloom, as agent for Frontier, respectfully requests that the Council approve the location and construction of the Facility by declaratory ruling.

Respectfully submitted,

Bloom Energy Corporation

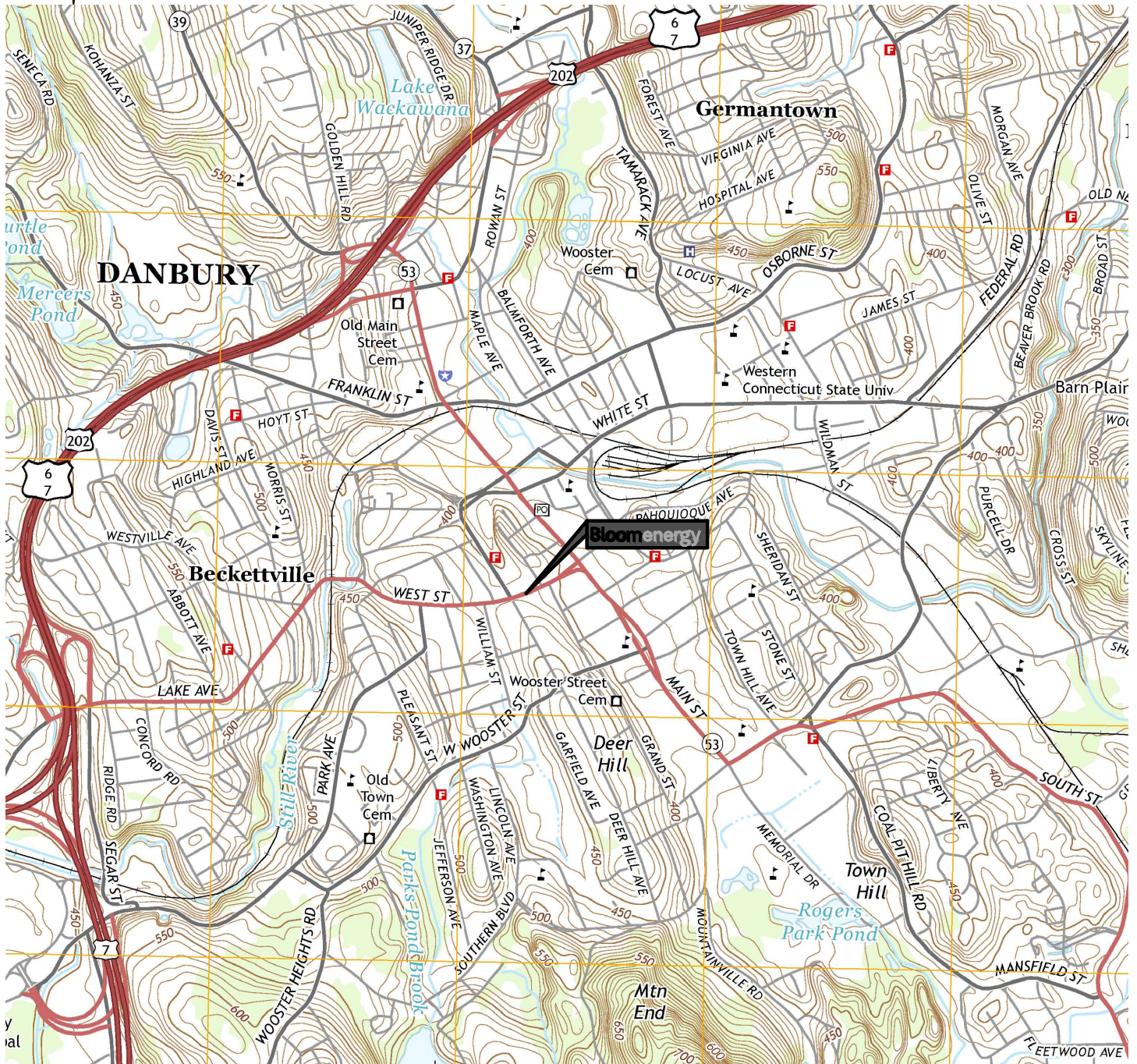
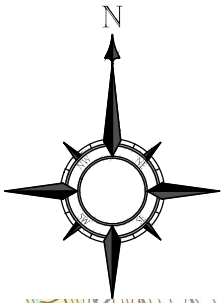
By: _____

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EXHIBITS

- Exhibit 1: Site Location Map
- Exhibit 2: Site Plan
- Exhibit 3: Final Decision, PURA Docket No. 12-02-09, *Petition of Bloom Energy Corporation for a Declaratory Ruling that Its Solid Oxide Fuel Cell Energy Server Will Qualify as a Class I Renewable Energy Source* (Sept. 12, 2012)
- Exhibit 4: Meter interval data analysis conducted in 2016
- Exhibit 5: Bloom Energy Server Product Datasheet and General Installation Overview
- Exhibit 6: Emergency Response Plan
- Exhibit 7: Site Location Photos
- Exhibit 8: FEMA Flood Zone
- Exhibit 9: Mei Wu Acoustics Noise Analysis and Report
- Exhibit 10: Notice Pursuant to Conn. Agencies Regs. § 16-50j-40(a)
- Exhibit 11: Abutters Map
- Exhibit 12: Letter to Mayor and City Planner

Exhibit 1



Job#: BEC-21222

Scale: 1" = 2,000'

Date: 10/11/2016

Drawn By: MDS

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EXHIBIT 1 - SITE LOCATION MAP
USGS MAP (HARTFORD SOUTH)

Exhibit 2

Exhibit 3



STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
PUBLIC UTILITIES REGULATORY AUTHORITY
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06051

**DOCKET NO. 12-02-09 PETITION OF BLOOM ENERGY CORPORATION FOR A
DECLARATORY RULING THAT ITS SOLID OXIDE FUEL
CELL ENERGY SERVER WILL QUALIFY AS A CLASS I
RENEWABLE ENERGY SOURCE**

September 12, 2012

By the following Directors:

Arthur H. House
John W. Betkoski, III

DECISION

I. INTRODUCTION

By Petition dated February 14, 2012, pursuant to Section 4-176 in the General Statutes of Connecticut (Conn. Gen. Stat.) and Section 16-1-113 in the Regulations of Connecticut State Agencies, Bloom Energy Corporation requests that the Public Utilities Regulatory Authority (Authority) issue a declaratory ruling that its solid oxide fuel cell energy server qualifies as a Class I renewable energy source.

II. PETITIONER'S EVIDENCE

Bloom Energy Corporation (Bloom) has commercialized a scalable, modular fuel cell using Bloom's patented solid oxide fuel cell (SOFC) technology. A fuel cell is a device that uses a fuel and oxygen to create electricity by an electrochemical process. A single fuel cell consists of an electrolyte and two catalyst-coated electrodes (an anode cathode). Fuel cells are generally categorized by the type of electrolyte used. Petition, pp. 2 and 3.

Each Bloom Energy Server consists of thousands of Bloom's patented SOFCs. Each fuel cell is a flat, solid ceramic square capable of producing at least 25 watts. In an energy server, Bloom "sandwiches" the SOFCs between metal interconnect plates into a fuel cell "stack." Bloom aggregates multiple fuel cell stacks together into a "power module," and then multiple power modules, along with a common fuel input and electrical output, are assembled as a complete energy server fuel cell. Id., p. 3.

The Bloom Energy Server converts the chemical energy contained in fuel, such as natural gas, into electricity at an efficiency of approximately 50% - 60% (lower heating value net AC) without any combustion or multi-stage conversion loss. Fuel entering the energy server is processed using a proprietary catalytic method to yield a reformat gas stream, and the gaseous product and preheated air are introduced into the fuel cell stacks. Within the stacks, ambient oxygen reacts with the fuel to produce direct current (DC) electricity. The DC power produced by the energy server system is converted into 480-volt AC power using an inverter, and delivered to the host facility's electrical distribution system. Id.

SOFCs operate at very high temperatures, obviating the need for expensive metal catalysts. With low cost ceramic materials, and extremely high electrical efficiencies, SOFCs can deliver attractive economies without relying on combined heat and power. Id.

Bloom Energy Servers are a fraction of the size of a traditional base load power source, with each server occupying a space similar to that of a parking space. This small, low-impact, modular form of base load power does not pose the environmental challenges associated with a traditional base load power plant, significantly reducing environmental impacts. Moreover, Bloom's innovative design requires only an initial input of 120 gallons of water per 100 kW, after which no additional water is consumed during normal operation. Id., pp. 3 and 4.

Bloom Energy Servers deliver significant environmental benefits over conventional base load technologies. In addition to significant CO₂ reductions due to its high efficiency, the energy server emits virtually no NO_x, SO_x, or other smog forming particulates since the conversion of gas to electricity in a Bloom Energy Server is done through an electrochemical reaction rather than combustion. Id., p. 4.

III. AUTHORITY ANALYSIS

Conn. Gen. Stat. §16-1(a)(26) defines a Class I renewable energy source as:

(A) energy derived from solar power; wind power; a fuel cell; methane gas from landfills; ocean thermal power; wave or tidal power; low emission advanced renewable energy conversion technologies; a run-of-the-river hydropower facility provided such facility has a generating capacity of not more than five megawatts, does not cause an appreciable change in the river flow, and began operation after the effective date of this section; or a biomass facility, including, but not limited to, a biomass gasification plant that utilizes land clearing debris, tree stumps or other biomass that regenerates or the use of which will not result in a depletion of resources, provided such biomass is cultivated and harvested in a sustainable manner and the average emission rate for such facility is equal to or less than .075 pounds of nitrogen oxides per million BTU of heat input for the previous calendar quarter, except that energy derived from a biomass facility with a capacity of less than five hundred kilowatts that began construction before July 1, 2003, may be considered a Class I renewable energy source, provided such biomass is cultivated and harvested in a sustainable manner; or (B) any electrical generation, including distributed generation, generated from a Class I renewable energy source.

Based on Bloom's assertions, the Authority finds that its Bloom Energy Server qualifies as a Class I renewable energy source "fuel cell" as defined in Conn. Gen. Stat. §16-1(a)(26)(A).

The Authority has created an electronic application process for generation owners to apply for a Connecticut Renewable Portfolio Standards registration. The application is available on the Authority's website at the web address <http://www.ct.gov/pura>. The application should be submitted electronically along with a single hard-copy filing. While the Authority concludes in this Decision that the Bloom Energy Server would qualify as a Class I renewable energy source pursuant to Conn. Gen. Stat. §16-1(a)(26), Bloom must still apply for registration of the aforementioned system once the facility becomes operational and is registered in the New England Generation Information System.

IV. CONCLUSION

Based upon the project as described herein, the Authority finds that, as proposed, the Bloom Energy Server would qualify as a Class I renewable energy source. However, since the energy server is not yet operational, it should apply for Class I registration once it begins operations.

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to requirements of the Americans with Disabilities Act. Any person with a disability who may need information in an alternative format may contact the agency's ADA Coordinator at 860-424-3194, or at deep.hrmed@ct.gov. Any person with limited proficiency in English, who may need information in another language, may contact the agency's Title VI Coordinator at 860-424-3035, or at deep.aaoffice@ct.gov. Any person with a hearing impairment may call the State of Connecticut relay number – 711. Discrimination complaints may be filed with DEEP's Title VI Coordinator. Requests for accommodations must be made at least two weeks prior to any agency hearing, program or event.

**DOCKET NO. 12-02-09 PETITION OF BLOOM ENERGY CORPORATION FOR A
DECLARATORY RULING THAT ITS SOLID OXIDE FUEL
CELL ENERGY SERVER WILL QUALIFY AS A CLASS I
RENEWABLE ENERGY SOURCE**

This Decision is adopted by the following Directors:

Arthur H. House

John W. Betkoski, III

CERTIFICATE OF SERVICE

The foregoing is a true and correct copy of the Decision issued by the Public Utilities Regulatory Authority, State of Connecticut, and was forwarded by Certified Mail to all parties of record in this proceeding on the date indicated.



Kimberley J. Santopietro
Executive Secretary
Department of Energy and Environmental Protection
Public Utilities Regulatory Authority

September 12, 2012

Date

Exhibit 4

Baseload Analysis: Meter Interval Data Analysis

Absolute Minimum kW	0 kW
Recurring Minimum Base	158 kW
Average Baseload	186 kW
Proposed System Size*	200 kW

SYSTEM DETAILS	
% Exported	2.8%
% of Load Offset	93%
Utility Exports	
Peak Hours	11,756 kWh
Partial Peak Hours	0 kWh
Off-Peak Hours	33,239 kWh
Total kWh Exported	44,967 kWh
CUSTOMER DETAILS	
Total Days of Data	358
Annual Load Factor	96%
Total Customer Usage	1,704,735 kWh
Average Hourly kWh	195 kWh
Daily Avg. Peak Demand	215 kW

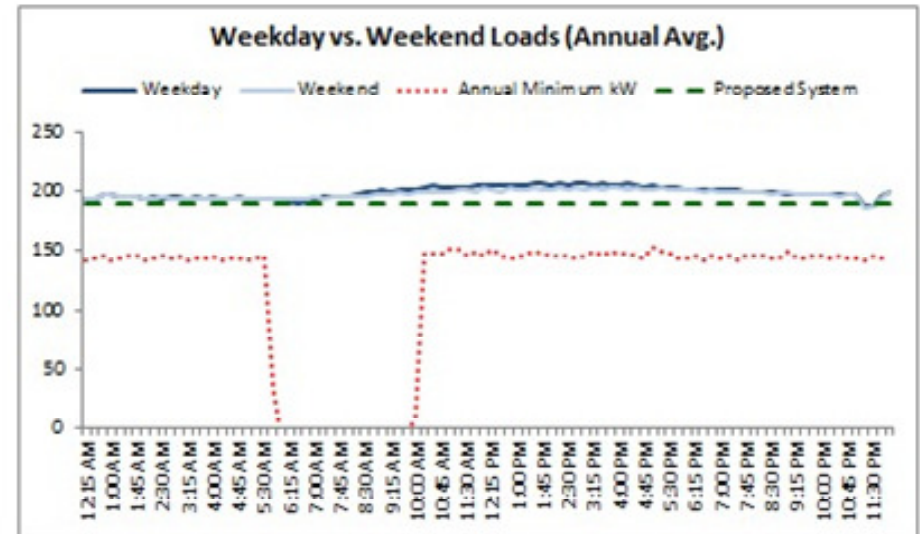
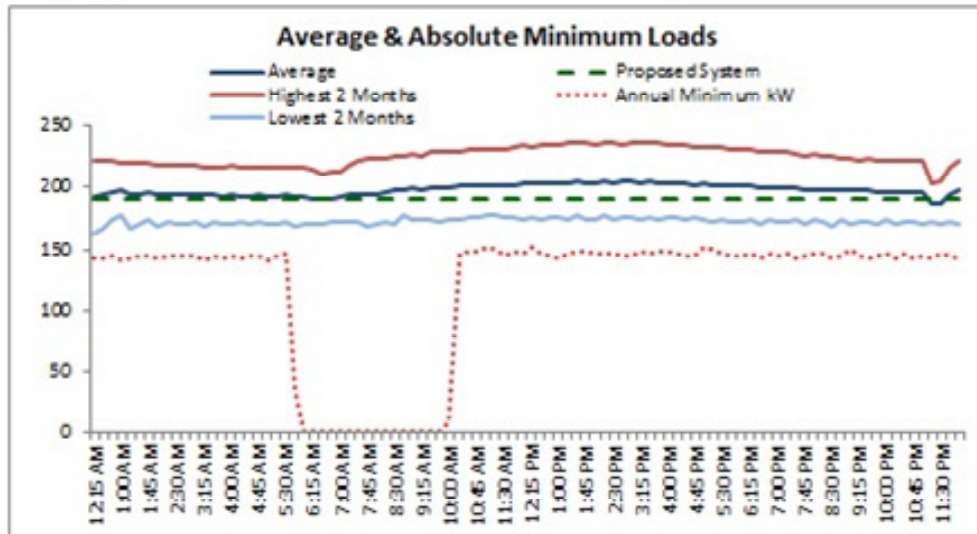


Exhibit 5



Energy Server 5

Clean, Reliable, Affordable Energy



CLEAN, RELIABLE POWER ON DEMAND

The Energy Server 5 delivers clean power that reduces emissions and energy costs. The modular architecture enables the installation to be tailored to the actual electricity demand, with a flexibility to add servers as the load increases. The Energy Server 5 actively communicates with Bloom Energy's network operations centers so system performance can be monitored 24 hours per day, 365 days per year.

INNOVATIVE TECHNOLOGY

Utilizing solid oxide fuel cell (SOFC) technology first developed for NASA's Mars program, the Energy Server 5 produces clean power at unprecedented efficiencies, meaning it consumes less fuel and produces less CO₂ than competing technologies. Additionally, no water is needed under normal operating conditions.

ALL-ELECTRIC POWER

The Energy Server 5, which operates at a very high electrical efficiency, eliminates the need for complicated and costly CHP systems. Combining the standard electrical and fuel connections along with a small footprint and sleek design, the Energy Server 5 is the most deployable fuel cell solution on the market.

CONTROLLED AND PREDICTABLE COST

By providing efficient on-site power generation, the economic and environmental benefits are central to the Energy Server 5 value proposition. Bloom Energy customers can lock in their long term energy costs and mitigate the risk of electricity rate increases. The Energy Server 5 has been designed in compliance with a variety of safety standards and is backed by a comprehensive warranty.

About Bloom Energy

Bloom Energy is making clean, reliable energy affordable. Our unique on-site power generation systems utilize an innovative fuel cell technology with roots in NASA's Mars program. By leveraging breakthrough advances in materials science, Bloom Energy systems are among the most efficient energy generators, providing for significantly reduced operating costs and dramatically lower greenhouse gas emissions. Bloom Energy Servers are currently producing power for many Fortune 500 companies including Apple, Google, NSA, Walmart, AT&T, eBay, Staples, as well as notable non-profit organizations such as Caltech and Kaiser Permanente.

Headquarters:

Sunnyvale, California

For More Information:

www.bloomenergy.com

Energy Server 5

Technical Highlights (ES5-AA1AA0)

Outputs

Nameplate power output (net AC)	262.5 kW
Base load output (net AC)	250 kW
Electrical connection	480 V, 3-phase, 60 Hz

Inputs

Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water	None during normal operation

Efficiency

Cumulative electrical efficiency (LHV net AC)*	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh

Emissions

NO _x	< 0.01 lbs/MWh
SO _x	Negligible
CO	<0.05 lbs/MWh
VOCs	< 0.02 lbs/MWh
CO ₂ @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas

Physical Attributes and Environment

Weight	14.3 tons
Dimensions (variable layouts)	14'9" x 8'9" x 7' or 29'6" 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

Codes and Standards

Complies with Rule 21 interconnection and IEEE1547 standards
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards
Product Listed by Underwriters Laboratories Inc. (UL) to ANSI/CSA FC 1-2014

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

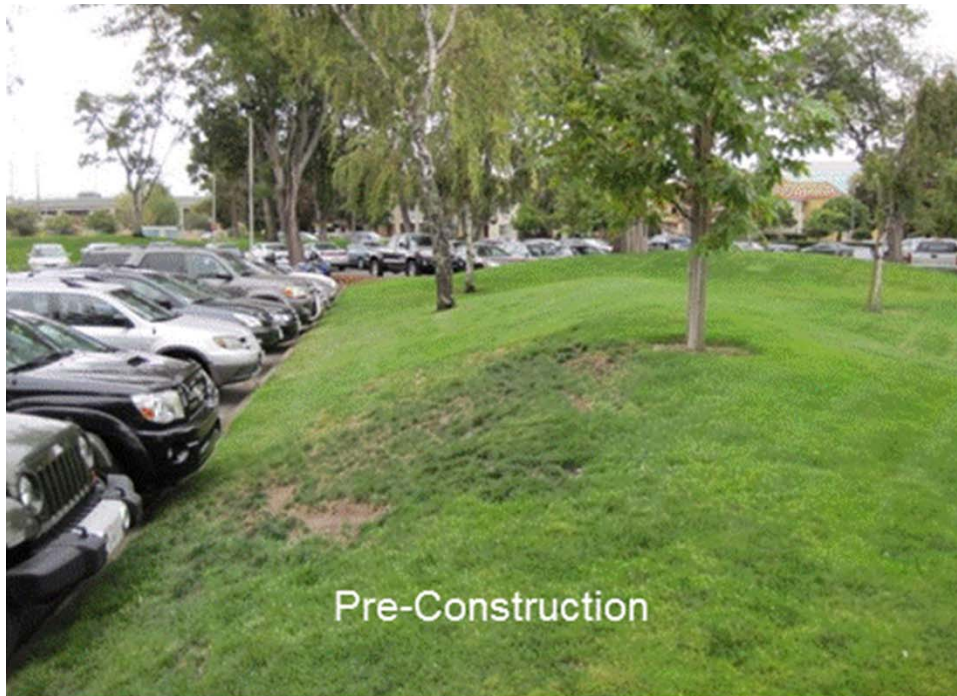
* 65% LHV efficiency verified by ASME PTC 50 Fuel Cell Power Systems Performance Test



Bloom Energy Corporation
1299 Orleans Drive
Sunnyvale CA 94089
T 408 543 1500
www.bloomenergy.com

Bloom Energy Server





Pre-Construction



Install Preparations – Trenching & Underground Utility



Set Pads



Site Completion

Bloom Energy Server Installation



Representative Installations



Exhibit 6



Fire Prevention and Emergency Planning

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Bloom Energy Corporation, 1299 Orleans Drive, Sunnyvale, CA 94089 USA

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1. FIRE PREVENTION AND EMERGENCY PLANNING OVERVIEW

The following document is provided only as a guide to assist you in complying with national and local codes and requirements, as well as to provide other helpful information. It is not intended to supersede the requirements of any standard. You should review the standards for particular requirements that are applicable to your individual situation, and make adjustments to this program that are specific to your company. You will need to add information relevant to your facility in order to develop an effective, comprehensive program.

2. FUEL CELL SYSTEM INSTALLATION SAFETY FEATURES

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.

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 the **EPO button**, the **electrical disconnect**, and the **natural gas shutoff valve**.

- 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.



Figure 1: Emergency Power Off Button

- An **electrical disconnect** manually disconnects systems from the grid if needed. Pressing the EPO button should already stop any power transmission, but it does not hurt the systems to also open this disconnect if you believe it is needed. The location of this disconnect will vary, however it is typically located near the point of interconnection where the wires from the fuel cell installation meet the facility's electrical framework. This may be inside your facility's electrical room, or if the fuel cell installation is near the electrical room, it may be found within the switchgear that Bloom Energy installs. This location of this disconnect is shown on the Site Map (see below) and is labeled "(name of electrical utility) Lockable Visible Generator Disconnect Switch".



Figure 2: Electrical Disconnect

- A **manual natural gas valve** shuts down all natural gas to the system. If the valve operator is perpendicular to the pipe, the valve is shut. If it is parallel with the pipe, the valve is open.



Figure 3: Manual Natural Gas Valve

Site map:

- An overhead site map showing the location of all safety features will be posted throughout the fuel cell installation
- Electronic copies are available to you for use in your site planning

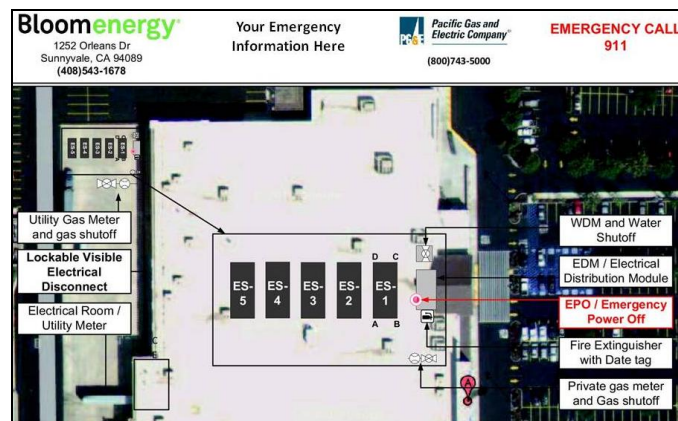


Figure 4: Sample Site Map

Manual controls:

- Clearly marked emergency stop button labeled “Fuel Cell Emergency Shut Down” located at site
- Two manual fuel shutoff valves outside the system, and two isolation valves inside the system

Fire hazard mitigation:

- System is plumbed directly to utility-provided natural gas
- If system input gas pressure is compromised, a pressure switch triggers an emergency system shutdown and fuel input is isolated
- System does not use fuel compressors or pumps
- System has virtually no stored fuel (internal capacity is < 5 scf)

Electrical hazard and mitigation:

- System operates at 480V
- Signs inside the system warn of the risk of electric shock
- System has backfeed protection
- System inverter prevents grid backfeed during a power outage

Mechanical hazard and mitigation:

- Finger/hand guard protection is provided on all fans
- All moving parts are located behind secured doors

Material hazard mitigation:

- Desulfurizer bed (to remove fuel impurities) are fully enclosed
- Maintained and serviced by licensed vendors

3. EMERGENCY NOTIFICATION 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.
- ***Do not hang up***, as additional information may be needed.

To assist in any subsequent investigation or determination of corrective actions, it is recommended to record the following items as close to the incident time as possible:

- Summary of any violation

- Identification of responsible parties
- Identification of victims and witnesses
- Description of evidence
- Description of general conditions
- Description of any vehicles involved
- Narratives from witnesses
- Any photographs

4. 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 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.
 - From a safe location dial **911**.
 - Report the incident to the local security safety center.

5. 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

1. Remain calm.
2. Immediately dial 911.
3. Report the incident to local security safety center.
4. Do not move the victim unless it is absolutely necessary.
5. Call out for personnel trained in first aid and/or CPR which may include Building Evacuation or Emergency Response team members.

6. Ask someone to bring the area first aid kit and Automated External Defibrillator.
7. Assist if capable or asked to do so.

Non-Life-Threatening Medical Emergency

1. Remain calm.
2. Report the incident to the local security safety center.
3. Do not move the victim unless it is absolutely necessary.
4. Call out for personnel trained in first aid.
5. Ask someone to bring the area first aid kit.
6. If the victim requires further medical attention, then direct them to the nearest approved medical clinic or hospital – Contact Security or Human Resources for assistance if needed.
7. 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.

6. 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:

1. Report the incident to local safety/security office.
2. If extremely life-threatening immediately dial **911** followed with a call to Security.
3. Contain the spill.
4. 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.

7. NATURAL DISASTERS AND SEVERE WEATHER

7.1 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.

7.2 Flood

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

8. 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

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

During a Utility Power Loss

- The fuel cell system will automatically go off-line.
- The Bloom Energy Remote Monitoring Control Centers will monitor the fuel cell system.
- Bloom Energy Field Service will be dispatched to start up the fuel cell system as necessary.
- If the fuel cell system has been automatically shut down and utility power is restored, there will be no impact to building power delivery: primary power will come from the utility rather than the fuel cells.

9. GOOD HOUSEKEEPING AND MAINTENANCE

9.1 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 CO₂. 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.

9.2 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).

10. TRAINING

Prior to system startup, a Bloom Energy representative will provide training on the fuel cell installation 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.

Exhibit 7



Facing Proposed Facility Location



Back to Proposed Facility Location



Left of Proposed Facility Location



Right of Proposed Facility Location

Exhibit 8

FEMA Flood Zones
39 West Street
Danbury, Connecticut

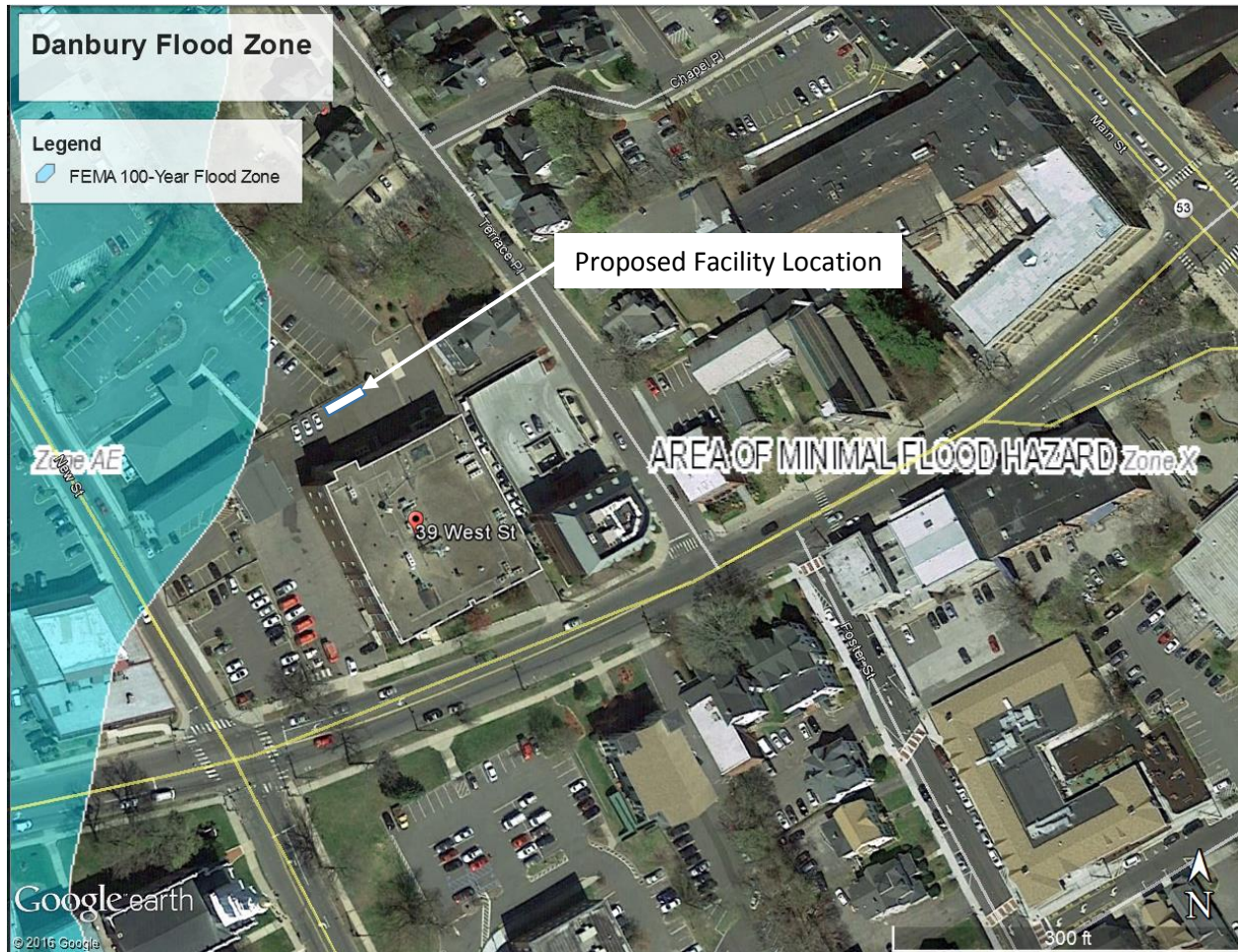


Exhibit 9



Mei Wu Acoustics

Experts in acoustics, noise and vibration

To: Justin Adams, Bloom Energy
From: Joshua Marcley, Mei Wu Acoustics
Tyler Adams, Mei Wu Acoustics
Mei Wu, Mei Wu Acoustics
Date: November 8, 2016
Subject: Bloom Energy – Frontier Communications - Danbury, CT
MWA Project – 16079

justin.adams@bloomenergy.com
josh@mei-wu.com
tyler.adams@mei-wu.com
meiwu@mei-wu.com

Mei Wu Acoustics (MWA) has predicted the sound levels produced by the proposed fuel cell energy server system at 39 West Street, Danbury, CT. In addition, MWA conducted 24-hour sound level measurements at the site to establish the existing ambient environmental sound levels in order to compare predicted noise levels with existing conditions and demonstrate compliance with the code requirements.

1. Project Overview

The proposed equipment will consist of a single (1) ES-5 energy server (also known as ES-5 Linear). The following figure provides a site plan showing the fuel cell's location at the northern edge of the property.



Figure 1: Site plan showing location of fuel-cell (red star) and property outline (yellow outline)

2. Noise Criteria

This section documents the environmental noise criteria and code requirements applicable the project site.

2.1. Danbury Municipal Code

An excerpt of relevant portions of this code is provided here for reference:

Sec. 12-14- Regulation of Noise

(c) Definitions. The following definitions shall apply in the interpretation and enforcement of this section:

(1) *Residential zone.* Single-family residence zones and multifamily residence zones, as defined by the zoning regulations of the city, and all uses associated therewith, either permitted as of right or as specially excepted uses.

(2) *Commercial zone.* General commercial zones, light commercial zones, neighborhood commercial zones, all as defined in the zoning regulations of the city, and all uses associated therewith, either permitted as of right or as specially excepted uses.

(3) *Industrial zone.* Industrial district, as defined by the zoning regulations of the city.

(4) *Impulse noise.* Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.

(5) *Daytime hours.* Hours between 8:00 a.m. and 8:00 p.m., Monday through Saturday, and the hours 10:00 a.m. through 8:00 p.m. on Sundays and holidays.

(6) *Nighttime hours.* The hours between 8:00 p.m. and 8:00 a.m., Sunday evening through Saturday morning, except that "night" shall mean the hours between 8:00 p.m. Saturday and 10:00 a.m. on Sunday and 8:00 p.m. of the day preceding a recognized, national holiday and 10:00 a.m. on said holiday.

(7) *Decibel.* A logarithmic unit of measurement used in measuring magnitudes of sound. The symbol is dB.

(9) *Noise.* Any excessive sound or disturbance, the intensity of which exceeds the standards set forth in subsection (e) of this section.

(10) *Noise level.* The sound pressure level in decibels as measured with a sound level meter using the A-weighting network. The level so read is designated dB(A) or dBA.

(11) *Person.* Any individual, firm, partnership, association, syndicate, company, trust, corporation, agency or administrative subdivision of the state or other legal entity of any kind.

(12) *Premises.* Any building, structure, land or portion thereof, including all appurtenances, and shall include yards, lots, courts, inner yards and real properties without buildings or improvements owned or controlled by a person.

(13) *Property line.* That real or imaginary line along the ground surface and its vertical extension which separates real property owned or controlled by any person from contiguous real property owned or controlled by another person, and separates real property from the public right-of-way.

(14) *Sound.* A transmission of energy through solid, liquid or gaseous media in the form of vibrations which constitute alterations in pressure or position of the particles in the medium and which in air evoke physiological sensations, including, but not limited to, an auditory response when impinging on the ear.

(15) *Sound level meter.* An instrument to take sound level measurements and which should conform, as a minimum, to the operational specifications of the American National Standards Institute for sound level meters.

(d) General prohibition. *It shall be unlawful for any person within the city to make, continue or cause to be made or continued any loud, unnecessary, unusual or excessive noise, or any noise which either annoys, disturbs, injures or endangers the comfort, repose, health, peace or safety of others within the limits of the city as provided in subsection (e) herein.*

The following are acts specifically prohibited under this subsection (d):

(1) *Commercial construction, demolition, excavation and building operations before 7:00 a.m. Monday through Friday, before 8:00 a.m. Saturday, before 10:00 a.m. Sunday, and after 8:00 p.m. any day.*

(2) *Vehicle horns. No person shall at any time sound any horn or other audible signal device of a motor vehicle exceeding the standards set forth in subsection (e) hereof, unless it is necessary as a warning to prevent or avoid a traffic accident.*

(3) The creation within the city of any excessive noise, exceeding the standards set forth in subsection (e) hereof, in the vicinity of any school, institution of learning, church, court, hospital or nursing home while the same is in use which impacts the workings of such institution or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed at or near such building indicating that the same is a school, institution of learning, church, court, hospital or nursing home.

(e) Noise zone standards. This subsection is intended to conform to the regulations of the State of Connecticut applicable to the control of noise, as set forth in Connecticut State Regulations section22a-69-3.5 as amended. It shall be unlawful for any person to emit any noise that is in excess of the standards as follows:

(2) No person in Class B noise zone shall emit noise exceeding the levels state herein and applicable to adjacent noise zones:

	C	B	A-Day	A-Night
	(dBA)	(dBA)	(dBA)	(dBA)
Class B (commercial) emitter to	62	62	55	45

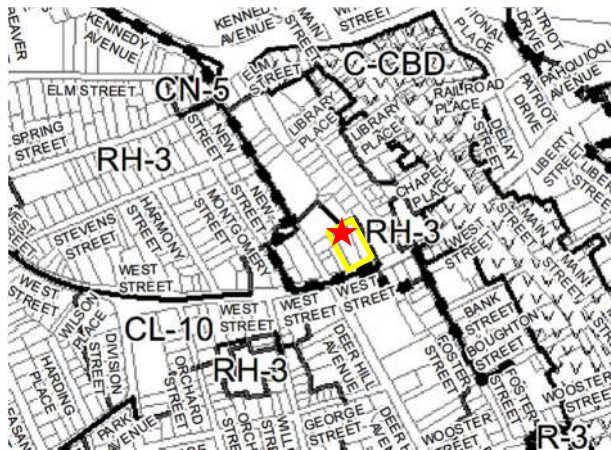
Levels emitted in excess of the values listed above shall be considered excessive noise.

2.2. Danbury City Plan

MWA has reviewed the City of Danbury Plan of Conservation and Development and was not able to locate a “Noise Element” portion of this general plan. The Noise Element typically provides goals and policies to guide compatible land uses and the incorporation of noise attenuation measures for new uses to protect people living and working in the City from an excessive noise environment.

2.3. Danbury Zoning Map

The following figure provides a zoning map of the areas surrounding the project site. As shown, the project site is zoned CL-10 – Light Commercial, however it is also within the Downtown Revitalization Overlay Zone (DRZ) which is indicated in Figure 2 by a thick dashed line. To the north and east is a residential use zone (RH-3), also within the DRZ. However, the properties directly to the east are both commercial uses. The nearest residential use in this RH-3 zone is approximately 150 ft from the proposed location of the fuel cell system. To the west is Light Commercial and DRZ, however the actual use is residential. It is unclear from the zoning map if the area to the south across West Street is CL-10 or RH-3, the uses appear to be a mix of municipal buildings, places of worship, commercial, and residential.



RH-3 – High-Rise Residential
CL-10 – Light Commercial

Figure 2: Danbury Zoning Map – Approximate location of fuel cells indicated by red star.

2.4. Connecticut Department of Energy and Environmental Protection (DEEP)

The Connecticut Siting Council (Council) is an autonomous agency residing within the merged Department of Energy and Environmental Protection (DEEP). The following is an excerpt of their noise requirements:

Sec.22a-69-1 Definitions

(h) daytime means 7:00 a.m. to 10:00 p.m. local time.

(n) nighttime means 10:00 p.m. to 7:00 a.m. local time.

Sec.22a-69-1.2 Acoustic Terminology and definitions

(c) background noise means noise which exists at a point as a result of the combination of many distant sources, individually indistinguishable. In statistical terms, it is the level which is exceeded 90% of the time (L90) in which the measurement is taken.

(f) excessive noise means emitter Noise Zone levels from stationary noise sources exceeding the Standards set forth in Section 3 of these Regulations beyond the boundary of adjacent Noise Zones.

Sec.22a-69-2 Classification of land according to use

Sec. 22a-69-2.1. Basis Noisy Zone classifications shall be based on the actual use of any parcel or tract under single ownership as detailed by the Standard Land Use Classification Manual of Connecticut

Sec. 22a-69-2.2. Multiple uses

Where multiple uses exist within a given Noise Zone, the least restrictive land use category for the Emitter and Receptor shall apply regarding the noise standards specified in Section 3 of these Regulations.

Sec. 22a-69-2.3. Class A noise zone

Lands designated Class A shall generally be residential areas where human beings sleep or areas where serenity and tranquility are essential to the intended use of the land. Class A Land Use Category. The land uses in this category shall include, but not be limited to, single and multiple family homes, hotels, prisons, hospitals, religious facilities, cultural activities, forest preserves, and land intended for residential or special uses requiring such protection

Sec. 22a-69-2.4. Class B noise zone

Lands designated Class B shall generally be commercial in nature, areas where human beings converse and such conversation is essential to the intended use of the land.

Sec. 22a-69-3. Allowable Noise Levels

Sec. 22a-69-3.1. General prohibition

No person shall cause or allow the emission of excessive noise beyond the boundaries of his/her Noise Zone so as to violate any provisions of these Regulation

Sec. 22a-69-3.5. Noise zone standards

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

	Class C Receiver	Class B Receiver	Class A Receiver Day	Class A Receiver Night
Class B Emitter	62 dBA	62 dBA	55 dBA	45 dBA

Levels emitted in excess of the values listed above shall be considered excessive noise.

Sec. 22a-69-3.6. High background noise areas

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

2.5. Summary of Noise Criteria

- The fuel cells produce steady, broadband noise. Therefore tonal, fluctuating, or impulsive penalties will not be applied.
- The project site is zoned business/commercial and is a commercial use. The neighboring uses are residential and commercial, within either CL-10 or RH-3, and the Downtown Revitalization Overlay Zone.
- **DEEP Requirements**
 - According to the Noise Zone Standards, the neighboring receiving uses are Class B in each direction. Therefore, the noise level at neighboring commercial properties should not exceed 62 dBA.
 - The code allows for an exception to the above standard for “high background noise areas”. In which case, the noise level should not exceed 5 dBA above the background noise level (L90).
- **Danbury City Requirements**
 - The Danbury municipal code requirements are similar to the DEEP requirements – refer to summary above.
 - Danbury does not have a Noise Element in their General Plan.
 - The Downtown Revitalization Overlay Zone does not set limits for noise emissions (Sec 7.F of Danbury Zoning Regulations). DEEP limits for residential and commercial receivers will apply to uses which have been identified above to have that particular use.

3. Environmental Ambient Sound Level Measurements

3.1. Site visit details

MWA personnel: Joshua Marcley
Date and time: 9/27/2016 2:00 PM – 9/28/2016 2:00 PM
Equipment used: Cesva SC160, Type II sound level meter

3.2. Measurement procedure

A sound level meter was installed on a tree on the northern edge of the property line. Ambient sounds were comprised primarily of traffic from West and New Streets.

The sound level meter recorded A-weighted L_{eq} , L_1 , L_5 , L_{10} , L_{50} , L_{90} , L_{95} , and L_{99} levels every one (1) minute for the time period described above. The meter was equipped with a windscreen. The measurement duration was 24 hours and 20 minutes.

3.3. Measurement Period Weather Conditions

The following table provides the weather conditions during the measurement period.

Date	9/27/2016	9/28/2016
Mean Temp.	66° F	55° F
Max Temp.	72° F	62° F
Min Temp.	50° F	49° F
Avg. Humidity	80%	84%
Avg. Wind Speed	5 mph [W]	7 mph [NE]
Precipitation	0.42 in	0.00 in

Table 1: Measurement weather conditions

3.4. Measurement Results

The following table provides the hourly average sound level measurements. All measurements indicated are given in dBA (A-weighted). LAeq is the average measured level for the entire 1-hour measurement period. L1/L10/L90/L99 are statistical averages – for example, L10 indicates the level that was present for 10% of the time, whereas L90 indicates the level present for 90% of the measurement period. L99 & L90 are considered representative of the steady background sound levels, whereas L1 & L10 may suggest more infrequent and transient activities in the environment (door slams, car alarms, dog barking, etc.). The quietest 1-Hour L90 was **55.1 dBA**, measured from 1-2AM.

Hour	L1	L10	L90	L99	LAeq
14:00	65.4	62.2	58.2	57.7	60.3
15:00	65.8	62.1	58.4	57.7	60.4
16:00	65.1	62.5	59.0	58.3	60.9
17:00	67.9	62.7	58.8	58.2	61.0
18:00	66.4	62.2	57.7	57.2	60.0
19:00	62.6	60.6	57.0	56.4	58.7
20:00	60.7	59.1	56.6	55.9	57.8
21:00	60.4	58.8	56.0	55.5	57.6
22:00	60.6	58.7	56.0	55.5	57.4
23:00	60.5	58.5	56.1	55.7	57.4
0:00	58.7	57.9	55.9	54.9	57.0
1:00	58.3	57.8	55.1	54.6	56.6
2:00	58.8	58.1	55.3	55.0	56.9
3:00	59.1	58.5	56.2	55.7	57.4
4:00	58.9	58.2	55.7	55.1	57.0
5:00	60.8	59.9	57.2	56.9	58.7
6:00	67.4	63.1	58.1	57.5	60.7
7:00	66.4	61.0	57.5	57.1	59.7
8:00	66.4	61.4	58.1	57.5	60.0
9:00	66.1	62.1	58.2	57.8	60.3
10:00	65.0	61.7	58.3	57.7	60.1
11:00	64.8	60.9	57.9	57.3	59.6
12:00	67.0	61.6	58.2	57.6	60.4
13:00	64.1	61.2	58.1	57.7	59.9
CNEL					64.9

Table 2: Hourly environmental sound level measurements – 9/27 – 9/28/2016 (dBA)

The following figure plots the 1-minute average measurements for the duration of the measurement period, showing the difference between the L01/L99 percentiles and the LAeq average.

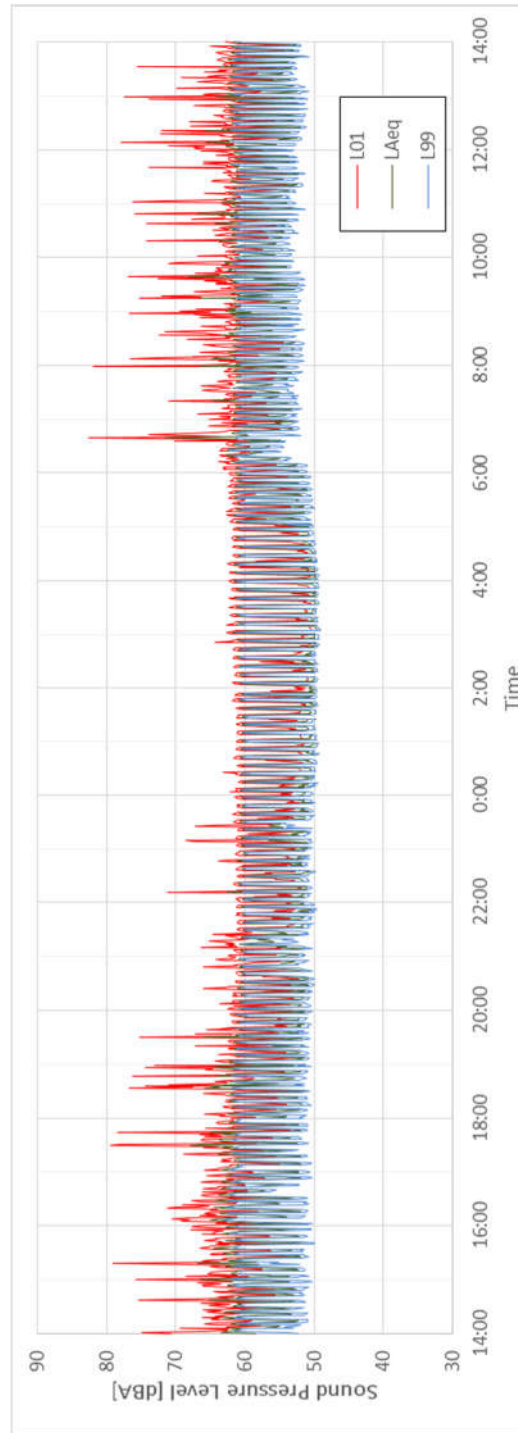


Figure 3: 1-minute average measurements plotted over the measurement period.

The one-minute data in Figure 3 shows signs of a mechanical noise source that turns on and off several times per hour. It cannot be determined from the data how near the source is to the measurement location. However, when the noise source is off the noise floor of the location is approximately **50 dBA** during the night and **53 dBA** during the day. We will use these levels as the ambient for the site for the purposes of code compliance.

4. Calculation and Prediction of Energy Server Noise Impacts to Adjacent Properties

Sound power levels for the energy server were used to calculate sound transmission to adjacent properties. As we understand it, the ES-5 (also referred to as ES-5 Linear) system will be installed. Sound power levels for the ES-5 Linear were provided in a MWA report dated June 21, 2016, and updated on August 30, 2016. The following table provides the total sound power for a single fuel cell. The following table provides the total sound power for a single fuel cell.

	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	LwA
ES-5 Linear	77.9 dB	80.9 dB	84.1 dB	82.3 dB	80.5 dB	76.9 dB	69.4 dB	84.9 dB

Table 3: Sound power levels (dB re 10^{-12} W) for a single ES-5 Linear.

Our calculations considered the sound power of the unit (above), reflections from surrounding buildings and structures, and distance attenuation. Additionally, the fuel cell does not radiate sound uniformly; the sides and rear of the fuel cell are significantly quieter than the top and front intakes. Therefore, the analysis assumes that the rear of the fuel cell is arranged to be facing the rear of the property, thereby minimizing the noise transmission to the nearest property line. The following figures provide the site plan and the predicted sound pressure level at the nearest adjacent properties, based on a site plan dated (11-7-16).

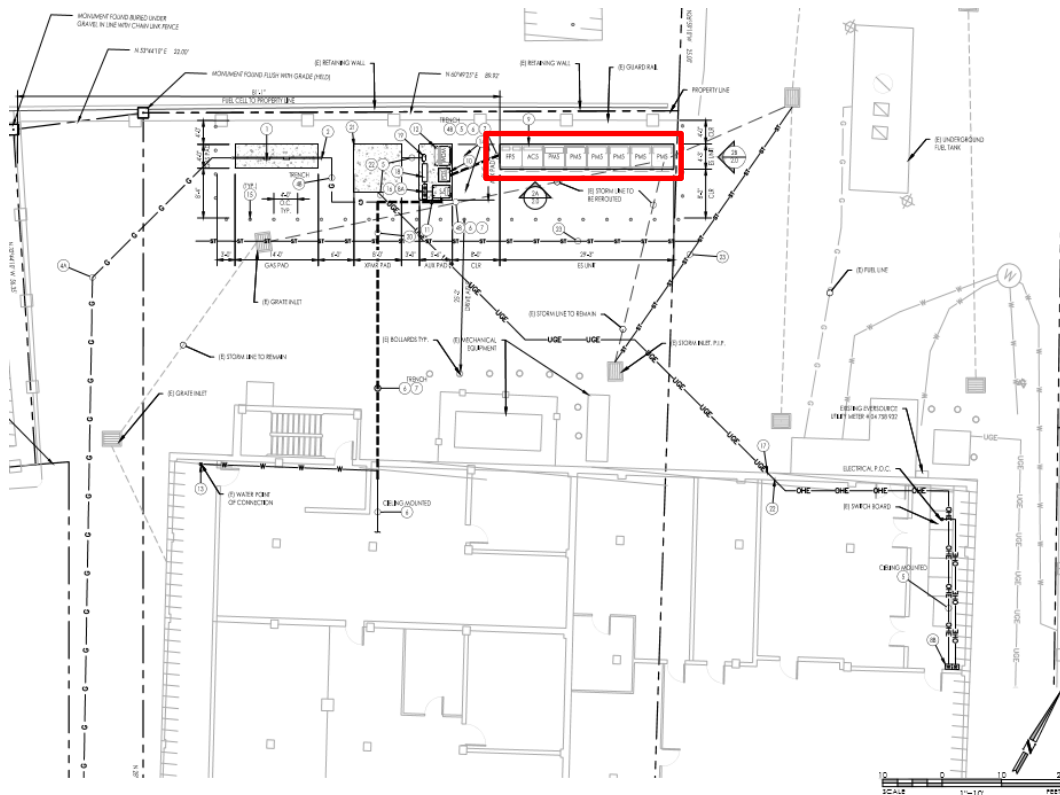


Figure 4: Site plan dated 11/7/16, which confirms the linear configuration of the fuel cell system (red box).

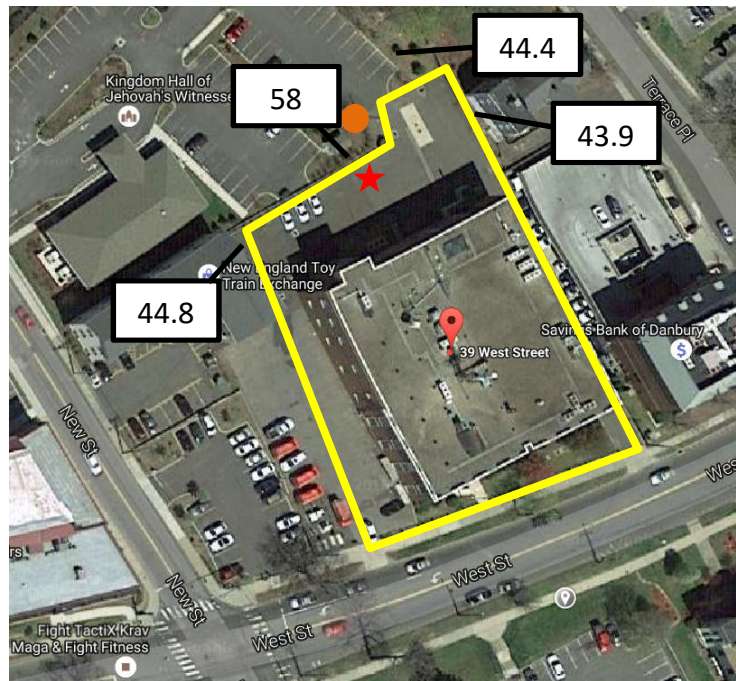


Figure 5: Satellite view of the project site identifying the measurement location (orange); the location of the fuel cell (red). Numbers indicate the predicted sound pressure level due to the fuel cell (in dBA).

The fuel cell is located a sufficient distance away from the neighboring properties such that the noise level at each property line is compliant with the DEEP requirements without the need for further mitigation. There is a small transformer included in the system; the noise impact of the transformer has been included in the above noise level predictions, and was found to have a negligible noise impact.

5. Conclusion

The measurement results indicate that the project site should be considered a “high background noise area” according to the DEEP regulations. However, this regulation need not be applied for the site, as currently configured, to meet the DEEP requirements. The predicted project generated noise levels to Class A (residential) receivers to less than 45 dBA.

This concludes our report. Please contact Mei Wu Acoustics if there are any questions or comments regarding this document.

* * *

Exhibit 10

Notice and Service List Pursuant to Conn. Agencies Regs. § 16-50j-40(a)

Municipal and Elected Officials

Last Name	First Name	Title	Address	City	State	Postal Code
Boughton	Mark	Mayor, City of Danbury	155 Deer Hill Avenue	Dabury	CT	06810
Calitro	Sharon	Director City Planning & Zoning	155 Deer Hill Avenue	Dabury	CT	06810
Blumenthal	Richard	U.S. Senator	702 Hart Senate Office Building	Washington	DC	20510
Murphy	Chris	U.S. Senator	B40A Dirksen Senate Office Building	Washington	DC	20510
Esty	Elizabeth	U.S. Representative	1 Grove Street, Suite 600	New Britain	CT	06053
Carter	Dan	State Representative, 2nd	Legislative Office Building, Room 4200	Hartford	CT	06106
Harding	Stephen	State Representative, 107th	Legislative Office Building, Room 4200	Hartford	CT	06106
Arconti	David	State Representative, 109th	Legislative Office Building, Room 4000	Hartford	CT	06106
Godfrey	Bob	State Representative, 110th	Legislative Office Building, Room 4107	Hartford	CT	06106
Giegler	Janice	State Representative, 138th	Legislative Office Building, Room 4200	Hartford	CT	06106
Smith	Richard	State Representative, 108th	Legislative Office Building, Room 4200	Hartford	CT	06106
McLachlan	Michael	State Senator, 24th	Legislative Office	Hartford	CT	06106

			Building, Room 2203			
Jepsen	George	Connecticut Attorney General	55 Elm Street	Hartford	CT	06106
Klee	Rob	Commissioner, Development of Energy and Environmental Protection	79 Elm Street	Hartford	CT	06106
House	Arthur	Chairman, Department of Public Utility Regulatory Authority	10 Franklin Square	New Britain	CT	06105
Rino	Raul	Commissioner, Department of Public Health Protection	410 Capital Avenue, PO Box 340308	Hartford	CT	06134
Merrow	Susan	Chair, Council on Environmental Quality	79 Elm Street	Hartford	CT	06106
Revicky	Steven	Commissioner, Department of Agriculture	165 Capital Avenue	Hartford	CT	06106
Barnes	Benjamin	Secretary of OPM, Office of Policy and Management	450 Capital Avenue	Hartford	CT	06106
Redeker	James	Commissioner, Department of Transportation	2800 Berlin Turnpike	Newington	CT	06111
Smith	Catherine	DECD Commissioner, Department of Economic and Community Development	501 Hudson Street	Hartford	CT	06106
Shea	Colonel, William	Deputy Commissioner, Department of Emergency Services and Public Protection, Division of Emergency Management and Homeland Security	25 Sigourney Street, 6th Floor	Hartford	CT	06106
Harris	Jonathan	Commissioner, Department of Consumer Protection	165 Capitol Ave # 3	Hartford	CT	06106
Currey	Melody	Commissioner, Department of Administrative Services	165 Capitol Ave # 3	Hartford	CT	06106



VIA FIRST CLASS MAIL

10/18/2016

RE: Application for Bloom Energy, as Agent for Frontier Communications, for the construction of a new ES-5 Bloom Energy Servers solid oxide fuel cell which would provide 200 kilowatts of Customer-Side Distributed Resource at – 39 West Danbury Street, Danbury, CT

Dear Ladies and Gentlemen:

Pursuant to Section §16-50j-40 of the Connecticut Siting Council's (the "Council") regulations, we are notifying you that Frontier Communications Corp. intends to file on or shortly after November 4, 2016, a petition for declaratory ruling with the Council. The petition will request the Council's approval of the location and construction of an approximately 200 kilowatt Bloom Energy Corporation fuel cell facility and associated equipment (the "Facility"), located at the site of the Frontier Communications building at 39 West Danbury Street, Danbury, Connecticut (the "Site"). Electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the electric grid. The Facility will be fueled by natural gas.

The proposed placement of the fuel cells is at the rear of the building where existing mechanical equipment are currently located. The purpose of the proposed Facility is to replace the average baseload of the building with a renewable energy sourceⁱ and improve reliability of electrical systems and equipment.

Keeping the lines of communication open is an important part of our work in your community. If you have questions about this work, please contact the undersigned or the Council.

Respectfully,

A handwritten signature in blue ink, appearing to read "Justin Adams".

Justin Adams
justin.adams@bloomenergy.com

ⁱ Connecticut General Statutes §16-1(a)(26)(A) identifies fuel cells as a "Class I renewable energy source"

Exhibit 11

The map displays the following streets and lot numbers:

- Streets:** CHAPEL PLACE, TERRACE PLACE, NEW STREET, FOSTER STREET, DEER HILL AVENUE, WILLIAM STREET.
- Lot Numbers (Red Text):**
 - Top row: 114150000, 114170000, 1141730000
 - Row 2: 1140360000, 1140370000, 1141560000, 1141720000
 - Row 3: 1140630000, 1140390000, 1141540000, 114150000, 1141740000
 - Row 4: 1140630000, 1140400000, 1141530000, 1141510000, 114175000
 - Row 5: 1140630000, 1140420000, 1141520000, 1141490000, 1141760000
 - Row 6: 1140630000, 1140430000, 1141480000, 1141770000
 - Row 7: 1140630000, 1140440000, 1141470000, 1141780000
 - Row 8: 1140630000, 1140450000, 1141460000, 1141790000
 - Row 9: 1140630000, 1140460000, 1141450000, 114180000
 - Row 10: 1140630000, 1140470000, 1141440000, 1141810000
 - Row 11: 1140630000, 1140480000, 1141430000, 1141820000
 - Row 12: 1140630000, 1140490000, 1141420000, 1141830000
 - Row 13: 1140630000, 1140500000, 1141410000, 1141840000
 - Row 14: 1140630000, 1140510000, 1141400000, 1141850000
 - Row 15: 1140630000, 1140520000, 1141390000, 1141860000
 - Row 16: 1140630000, 1140530000, 1141380000, 1141870000
 - Row 17: 1140630000, 1140540000, 1141370000, 1141880000
 - Row 18: 1140630000, 1140550000, 1141360000, 1141890000
 - Row 19: 1140630000, 1140560000, 1141350000, 114190000
 - Row 20: 1140630000, 1140570000, 1141340000, 1141910000
 - Row 21: 1140630000, 1140580000, 1141330000, 1141920000
 - Row 22: 1140630000, 1140590000, 1141320000, 1141930000
 - Row 23: 1140630000, 1140600000, 1141310000, 1141940000
 - Row 24: 1140630000, 1140610000, 1141300000, 1141950000
 - Row 25: 1140630000, 1140620000, 1141290000, 1141960000
 - Row 26: 1140630000, 1140630000, 1141280000, 1141970000
 - Row 27: 1140630000, 1140640000, 1141270000, 1141980000
 - Row 28: 1140630000, 1140650000, 1141260000, 1141990000
 - Row 29: 1140630000, 1140660000, 1141250000, 1142000000
 - Row 30: 1140630000, 1140670000, 1141240000, 1142010000
 - Row 31: 1140630000, 1140680000, 1141230000, 1142020000
 - Row 32: 1140630000, 1140690000, 1141220000, 1142030000
 - Row 33: 1140630000, 1140700000, 1141210000, 1142040000
 - Row 34: 1140630000, 1140710000, 1141200000, 1142050000
 - Row 35: 1140630000, 1140720000, 1141190000, 1142060000
 - Row 36: 1140630000, 1140730000, 1141180000, 1142070000
 - Row 37: 1140630000, 1140740000, 1141170000, 1142080000
 - Row 38: 1140630000, 1140750000, 1141160000, 1142090000
 - Row 39: 1140630000, 1140760000, 1141150000, 1142100000
 - Row 40: 1140630000, 1140770000, 1141140000, 1142110000
 - Row 41: 1140630000, 1140780000, 1141130000, 1142120000
 - Row 42: 1140630000, 1140790000, 1141120000, 1142130000
 - Row 43: 1140630000, 1140800000, 1141110000, 1142140000
 - Row 44: 1140630000, 1140810000, 1141100000, 1142150000
 - Row 45: 1140630000, 1140820000, 1141090000, 1142160000
 - Row 46: 1140630000, 1140830000, 1141080000, 1142170000
 - Row 47: 1140630000, 1140840000, 1141070000, 1142180000
 - Row 48: 1140630000, 1140850000, 1141060000, 1142190000
 - Row 49: 1140630000, 1140860000, 1141050000, 1142200000
 - Row 50: 1140630000, 1140870000, 1141040000, 1142210000
 - Row 51: 1140630000, 1140880000, 1141030000, 1142220000
 - Row 52: 1140630000, 1140890000, 1141020000, 1142230000
 - Row 53: 1140630000, 1140900000, 1141010000, 1142240000
 - Row 54: 1140630000, 1140910000, 1141000000, 1142250000
 - Row 55: 1140630000, 1140920000, 1140990000, 1142260000
 - Row 56: 1140630000, 1140930000, 1140980000, 1142270000
 - Row 57: 1140630000, 1140940000, 1140970000, 1142280000
 - Row 58: 1140630000, 1140950000, 1140960000, 1142290000
 - Row 59: 1140630000, 1140960000, 1140950000, 1142300000
 - Row 60: 1140630000, 1140970000, 1140940000, 1142310000
 - Row 61: 1140630000, 1140980000, 1140930000, 1142320000
 - Row 62: 1140630000, 1140990000, 1140920000, 1142330000
 - Row 63: 1140630000, 1141000000, 1140910000, 1142340000
 - Row 64: 1140630000, 1141010000, 1140900000, 1142350000
 - Row 65: 1140630000, 1141020000, 1140890000, 1142360000
 - Row 66: 1140630000, 1141030000, 1140880000, 1142370000
 - Row 67: 1140630000, 1141040000, 1140870000, 1142380000
 - Row 68: 1140630000, 1141050000, 1140860000, 11423

Exhibit 12



October 31, 2016

City of Danbury
Office of the Mayor
155 Deer Hill Avenue
Danbury, CT 06810
Attn: Mark Boughton – Mayor of Danbury

RE: Bloom Energy Server Project
39 West Street – Frontier Communication Corp.

Mr. Boughton,

On behalf of Bloom Energy we would like to provide you with information pertaining to the proposed clean energy server installation project located at the 39 West Street, Danbury.

This project proposes to install one (1) new Bloom Energy Server; a new class of distributed power generator which produces clean, reliable and affordable electricity at the customer site. The Bloom Energy Server contains solid oxide fuel cells which provide 200 kW of power, utilizing a non-combustive chemical process. Placement of the Clean Energy Server and related ancillary equipment is being proposed at the rear of the building (please see attached site plan). The purpose of the proposed project is to replace the average baseload of the Frontier facility with a Class I renewable energy source and improve reliability of electrical systems and equipment.

The Bloom equipment has been designed in compliance with Underwriters Laboratories (UL) in addition to various safety standards and requirements. There are no harmful off-gases or byproducts that will be produced by this equipment.

Please note that the energy server is monitored 24 hours a day, 7 days a week by Bloom Energy's communications network in Sunnyvale, CA with a back-up monitoring station in India. In the unlikely event the system will require attention, the system can be remotely shut off by Bloom. Additionally, the equipment will have several means to shut down the energy server locally.

We are submitting to the Connecticut Siting Council within the next two weeks and wanted to give you an opportunity to see the plans in advance. We would be happy to discuss any comments you may have either by phone or in person. Keeping the lines of communication open is an important part of our work in your community. If you have questions about this work, please contact me.

Thank you,
Bloom Energy

Justin Adams
(860) 839-8373
justin.adams@bloomenergy.com



October 31, 2016

City of Danbury
Planning & Zoning Department
155 Deer Hill Avenue
Danbury, CT 06810
Attn: Sharon Calito – Director of Planning and Zoning Department

RE: Bloom Energy Server Project
39 West Street – Frontier Communication Corp.

Ms. Calito,

On behalf of Bloom Energy we would like to provide you with information pertaining to the proposed clean energy server installation project located at the 39 West Street, Danbury.

This project proposes to install one (1) new Bloom Energy Server; a new class of distributed power generator which produces clean, reliable and affordable electricity at the customer site. The Bloom Energy Server contains solid oxide fuel cells which provide 200 kW of power, utilizing a non-combustive chemical process. Placement of the Clean Energy Server and related ancillary equipment is being proposed at the rear of the building (please see attached site plan). The purpose of the proposed project is to replace the average baseload of the Frontier facility with a Class I renewable energy source and improve reliability of electrical systems and equipment.

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Thank you,
Bloom Energy

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(860) 839-8373
justin.adams@bloomenergy.com