Bloomenergy

January 10, 2017

Justin Adams
Bloom Energy Corporation
1299 Orleans Drive
Sunnyvale, CA 94089

RE: **PETITION NO. 1275 -** Bloom Energy Corporation, as an agent for Stanley Black & Decker, petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, operation and maintenance of a Customer-Side 200- Kilowatt Fuel Cell Facility to be located at the Stanley Access Technologies building, 65 Scott Swamp Road, Farmington, Connecticut.

Dear Ms. Bachman,

We are submitting an original and fifteen (15) copies of the interrogatories response for Petition NO. 1275.

Sincerely

Justin Adams
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(860) 839-8373

Bloomenergy

Petition No. 1275
Bloom Energy Corporation
65 Scott Swamp Road, Farmington, Connecticut
Interrogatories

1. The scanned receipts have been provided to the Council via email to reduce the paper usage required to provide 16 copies of the receipts.

2. No, the Facility would be used to supply 200 kilowatts (kW). An updated Specifications Sheet has been provided as a revised Exhibit 6.

3. The operational life is for the life of the contract, Bloom expects 20+ years. The solid oxide media in the fuel cells is exchanged at approximately 5 year intervals.

4. The nearest property boundary with a Class B noise zone[1] that could possibly be impacted is an office building located to the north on the opposite side of Scott Swamp Road, approximately 550 linear feet from the proposed location. This boundary was selected because the noise produced from the proposed Facility would be higher than the other locations. The nearest Class A residential property is located 750 linear feet to the west and on the opposite side of the building. Any sound generated from the facility will be shielded by the building. The results of the sound model predicting noise levels at the property boundary located 550 feet to the north are provided as Exhibit 11. The proposed Facility would be defined as "Scenario 1" in the model. Scenario 1 models noise for a Bloom Energy Server installed close to a building or tall wall which reflects the noise produced to the opposite side of the Energy Server and increases the noise levels. The results of the Scenario 1 sound model at 550 feet are 36.9dBA, which is in compliance with noise criteria set forth in Connecticut regulations for the Control of Noise[2] and the Farmington Code of Ordinances for Noise[3].

5. The 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 locked outer panels. With respect to access, the energy server would be located approximately 400' into the site without clear visibility from the public roadway and near the main entrance to the building. Therefore Bloom does not have safety or security concerns.

6. The Pequabuck River is located approximately 700 feet to the west of the proposed location. According to CTDEEP data, inland wetland soils ("Poorly Drained and/or Very Poorly Drained Soils") are located approximately 480 feet to the west of the proposed location. See Exhibit 12.

[1] Sec. 22a-69-2.3. Noise zone standards
[2] Sec. 22a-69-3.5. Noise zone standards
[3] Chapter 135-10: A-Scale Limits

7. No, according to CTDEEP GIS data, the nearest Aquifer Protection Area is located approximately 0.25-miles to the southwest of the proposed location.

8. The proposed facility will displace less efficient fossil fueled marginal generation on the NE ISO system. Based upon US EPA "eGrid" data the proposed facility is expected to reduce carbon emissions by more than 25% while essentially eliminating local air pollutants like NOx, SOx, and particulate matter.

9. Please refer to the datasheet, as it provides a range of emissions specific to the type of fuel cell for the proposed Facility. We have revised Table 2 to match the information provided in the datasheet.

Revised Table 2: Connecticut Thresholds for Greenhouse Gases

Emission Type	Bloom Output	LERC allowance
Nitrous Oxides (NOx)	<0.01 lbs/MWh	0.07 lbs/MWh
Carbon Monoxide (CO)	<0.05 lbs/MWh	0.10 lbs/MWh
Sulfur Oxides (SOx)	Negligible	Not Listed
Volatile Organic Compounds (VOCs)	<0.02 lbs/MWh	0.02 lbs/MWh
Carbon Dioxide (CO2)[4]	679-833 lbs/MWh	Not Listed

10. No gaseous substances are released or vented at any point during the desulfurization process.

11. Farmington allows does not allow noise generated from commercial construction, demolition, excavation and building operations between 7:00 a.m. and 9:00 p.m., Monday through Saturday; and the hours between 9:00 a.m. and 8:00 p.m. on Sunday and legal holidays.

    Bloom anticipates work hours to only occur during allowable hours Monday – Friday, but may need to work Saturdays or Sundays if an expedited schedule is required.

    Bloom anticipates construction to start in the spring or early summer of 2017 with 8-10 weeks of total construction time (2 weeks of site prep, 2 weeks of installation, 2 weeks of commissioning and 2 weeks to mobilize).

12. The options at the conclusion of the 20 year contract between Bloom and Stanley Black (SBD) and Decker includes;

    i. SBD renews the contract,

[4] Carbon Dioxide is measured at Bloom's stated lifetime efficiency level of 53-60%

ii. SBD returns the Facility at no cost, or
iii. SBD buys the Facility at a fair market value.

If the Facility is to be removed at the end of the contract or if there is a default in the contract;

i. the Energy Servers, associated equipment and components will be dismantled and removed,
ii. the concrete pads will remain unless requested to be removed, and
iii. the site will be restored as nearly as practicable to its effective original condition.

13. No, the proposed Energy Server is UL Listed as a "Stationary Fuel Cell Power System" to ANSI/CSA FC 1-2014. It is UL Listed under UL Category IRGZ and UL File Number MH45102.

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Revised Exhibit 6

Bloomenergy®

Energy Server 5

Clean, Reliable, Affordable Energy

CLEAN, RELIABLE POWER ON DEMAND

Bloom Energy's 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 and maintained 24 hours per day, 365 days per year.

INNOVATIVE TECHNOLOGY

Utilizing patented solid oxide fuel cell (SOFC) technology, the Energy Server 5 produces combustion-free power at unprecedented efficiencies, meaning it consumes less fuel and produces less CO_2 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 compact footprint and sleek design, the Energy Server 5 is the most deployable fuel cell 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, 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-BA2AA0)	
Outputs	
Nameplate power output (net AC)	210 kW
Base load output (net AC)	200 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	
NOx	< 0.01 lbs/MWh
SOx	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	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
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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Exhibit 11

Calculation of **Yuma** Sound Pressure Based On Distance

By Bob Hintz 1/16

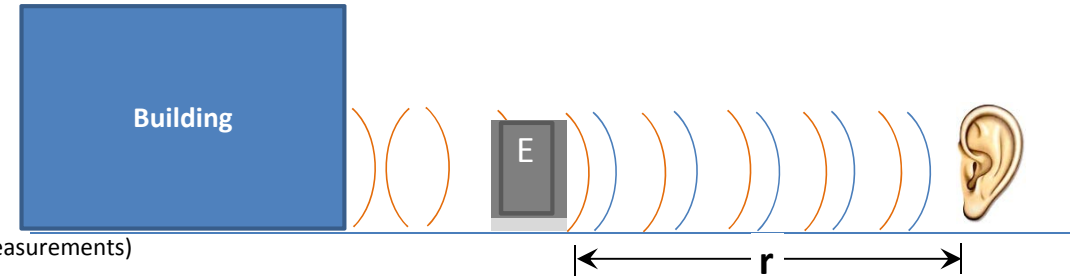
All calculations are based on the following formula for sound pressure level (L_P):

$$L_p = L_W - |10 \cdot \log\left(\frac{Q}{4\pi \cdot r^2}\right)|$$

Sound power value (L_W) attained from V1 Yuma linear in DE reported on Feb. 4, 2015 by Mei Wu.

Scenario 1

ES is installed close to a building or tall wall so noise from the ES is reflected off of the structure and added to the noise from the other side of the ES making it sound louder than normal. This is represented by a directivity factor Q = 4



L_P = 36.9 dB

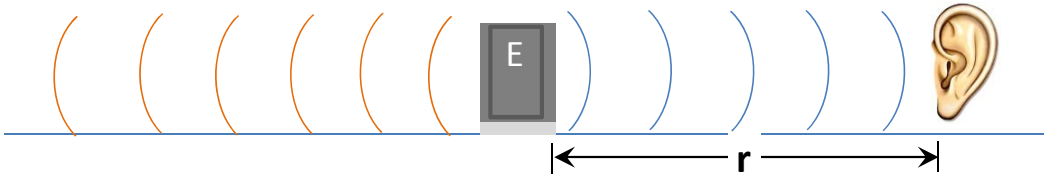
Where:

L_W =	86.4 dB	ES sound power (Calc. from measurements)
Q =	4	Directivity factor
r =	550 Feet	**Enter value here for both Scenarios**

Input verious values for r to approximate the percieved sound pressure at that distance from the ES door

Scenario 2

ES is installed with no structures behind it to reflect sound from either side. This is represented by a directivity factor Q = 2



L_P = 33.9 dB

Where:

L_W =	86.4 dB	ES sound power (Calc.)
Q =	2	Directivity factor
r =	550 Feet	

Input verious values for r to approximate the percieved sound pressure at that distance from the ES door

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Exhibit 12

Map

Waterbody Line 7

Water

Dam

Waterbody Poly 7

Water

Inland Wetland Soils

Poorly Drained and Very Poorly Drained Soils

Alluvial and Floodplain Soils