engineering architecture project management construction management permitting development services



December 11, 2015

Via Fed Ex

Attn: Robert Stein, Chairman

**Connecticut Siting Council** 

10 Franklin Square New Britain, CT 06051

RE: Petition of Bloom Energy Corporation, as agent for LeGrand, for a Declaratory Ruling for the Location and

Construction of a 500 kW Fuel Cell Customer-Side Distributed Resource at 60 Woodlawn St, West Hartford, CT

06110.

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 LeGrand, requests the Connecticut Siting Council approve the location and construction of a 500 kilowatt fuel cell and associated equipment (the "Facility"). The Facility will be located on the site of the Legrand Wiremold Facility at 60 Woodlawn St, West Harford, 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 do not hesitate to contact me at 908-462-9939.

Sincerely,

**Core States Group** 

Michael D. Sousa

msousa@core-eng.com

(908) 462-9939

## STATE OF CONNECTICUT CONNECTICUT SITING COUNCIL

PETITION OF BLOOM ENERGY : PETITION NO.

CORPORATION AS AGENT FOR LEGRAND,

S.A. FOR A DECLARATORY RULING FOR

THE LOCATION AND CONSTRUCTION OF A :

500-KILOWATT FUEL CELL CUSTOMER-SIDE

DISTRIBUTED RESOURCE AT 60 : December 11, 2015

WOODLAWN STREET, WEST HARTFORD,

CONNECTICUT

## PETITION OF BLOOM ENERGY CORPORTATION AS AGENT FOR LEGRAND, S.A. 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 Legrand, S.A. ("Legrand"), requests that the Connecticut Siting Council ("Council") approve by declaratory ruling the location and construction of a customer-side distributed resources project comprised of a 500-kilowatt ("kW") (net) Bloom solid oxide fuel cell Energy Server facility and associated equipment (the "Facility"), located on the site of the Legrand Wiremold Facility at 60 Woodlawn Street, West Hartford, Connecticut (the "Site"). See Exhibit 1. The Facility will be installed by Bloom and owned and operated by 2015 Project Company, LLC, a wholly owned subsidiary of Bloom under agreement with Legrand.

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 Projection."

As discussed fully in this petition, in addition to being a fuel cell facility, the Facility will be a customer-side distributed resources facility under 65 megawatts ("MW") that complies with the air and water quality standards of the Connecticut Department of Energy and Environmental Protection ("DEEP"). Additionally, the Facility will not have a substantial adverse environmental effect in the State of Connecticut.

#### I. COMMUNICATIONS

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

Adam Mueller, P.E. Core States Group 58 Mount Bethel Road Suite 301

Warren, NJ 07059 Telephone: (908) 462-9914

Fax: (908) 548-0875

Email: amueller@core-eng.com

Joseph Udinskey

**Bloom Energy Corporation** 

1299 Orleans Drive Sunnyvale, CA 94089

Telephone: (302) 836-3527

Fax: (408) 543-1501

Email: Joseph. Udinskey@bloomenergy.com

#### II. DISCUSSION

#### A. Background

The Facility will be a 500kW customer-side distributed resources facility consisting of two state-of-the-art Bloom Energy Servers and associated equipment. The Facility will be interconnected to the existing switchgear located inside the electrical room, located within the middle of buildings 3 and 4 of the Legrand Wiremold facility (the "Building"). *See* Exhibit 2. Electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the grid.

The Facility will be a "customer-side distributed resources" project because it will be "a unit with a rating of not more than sixty-five megawatts [and is located] on the premises of a 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.

#### B. Description of the Site and the Facility

#### 1. The Site

The Facility will be installed within the Legrand property located at 60 Woodlawn Street, West Hartford, Connecticut. Specifically, the Facility will be constructed on the 13.15-acre property ("the Site") that surrounds the Legrand buildings. The Site is zoned "General Industrial District" ("IG") under the zoning regulations of the Town of West Hartford (the "Town").

The majority of the surrounding areas to the east and south are industrial uses located within industrial districts. The areas north and west of the property are industrial and residential uses located within industrial and multifamily districts. The nearest structure is a residence that lies approximately 200 feet west of the facility.

The facility will be located within an existing asphalt parking area within an alleyway to the building. The portion of the Site that will be used for the Facility is shown in Exhibit 2.

Prior to filing this petition, representative from Core States Group, Bloom's engineering consultant, discussed the proposed Facility with the City's Planning and Zoning Department Planner, Todd Dumais. To date no comments have been provided from the City. See Exhibit 4.

#### 2. The Facility

The Facility will consist of two Bloom solid oxide fuel cell Energy Server and associated equipment. The dimensions of the Facility is approximately 30'-8" long, 8'-6" wide and 6'-9" high. The Energy Server module is enclosed, factory-assembled and tested prior to installation on the Site. *See* Exhibit 5.

The Facility will be capable of producing 500 kW of continuous, reliable 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 Eversource's net metering tariff. The interconnection to Eversource will be provided from the existing switchgear located inside the electrical room within the middle of buildings 3 and 4. At the time this petition was filled, the Eversource interconnection application for the Facility is being prepared.

The Energy Server will be fueled by natural gas supplied by Connecticut Natural Gas ("CNG"). Gas service will be delivered to the Energy Server via a new CNG gas meter assembly located adjacent to the existing building meter. A regulator set assembly is being provided adjacent to the facility. The new service line will branch off of the existing CNG line within the asphalt area near the west face of the Building, building 4.

The Bloom Energy Server will have extensive hardware, software and operator safety control systems, designed into the system in accordance with ANSI/CSA America FC 1-2004,

the American National Standards Institute and Canadian Standards Association standard for Stationary Fuel Cell Power Systems. The Facility is 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. Two manual fuel 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 compliance with all applicable building, plumbing, electrical, fire and other codes.

The risk of fire related to the operation of the Energy Server is very low. In the Bloom fuel cell, 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. As stated above, any variation in heat outside of the operational parameters will trigger an automatic shutdown of the energy server.

## C. The Facility Complies with DEEP's Air and Water Quality Standards and Will Not Have a Substantial Adverse Environmental Effect

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.

Construction-related impacts will be minimal. The Facility will be located within an existing asphalt area behind the Building. The facility will not extend beyond the limits of the existing asphalt area. All utilities will be installed within the asphalt area and along the rear face of the Building. All utility trenches will be restored in-kind.

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) <sup>1</sup>	Bloom Energy Server (lbs/MW-hr)
Oxides of Nitrogen (NO <sub>x</sub> )	0.15	< 0.01
Carbon Monoxide (CO)	1	< 0.10
Carbon Dioxide (CO <sub>2</sub> )	1,650	724-832

With respect to water discharges, the Energy Servers are designed to operate without water discharge under normal operating conditions. During construction, appropriate soil erosion prevention techniques will be incorporated around the disturbed areas to minimize soil erosion. 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 will not affect drainage patterns or stormwater discharge.

The proposed Facility will be located in an existing paved area on a lot that was previously developed and disturbed during construction of the Building. Therefore, the construction and operation of the Facility will not have any adverse effects on endangered species, historical resources or surrounding areas.

6

<sup>&</sup>lt;sup>1</sup> Conn. Agencies Regs. § 22a-174-42, Table 42-2.

The acoustical impact of the Facility will be minimal, and the Facility will meet the applicable requirements for off-site noise receptors. As discussed above, the proposed Facility will be approximately 200 feet to the west of a residential property.

#### III. NOTICE

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).<sup>2</sup> A copy of the notice letter and a service list is attached as Exhibit 6.

#### 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 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 air and

<sup>&</sup>lt;sup>2</sup> 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 16-50*l* of the Connecticut General Statutes]."

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 Legrand, respectfully requests that the Council approve the location and construction of the Facility by declaratory ruling.

Respectfully submitted,

BE 2015 W LLC

Glen Griffiths

Bloom Energy Corporation

1299 Orleans Drive Sunnyvale, CA 94089

Telephone: (408) 338-7452

Email: glen.griffiths@bloomenergy.com

#### **EXHIBITS**

Exhibit 1: Site Location Map

Exhibit 2: Site Plan

Exhibit 3: Final Decision, PURA Docket No. 12-02-09, *Petition of Bloom Energy* 

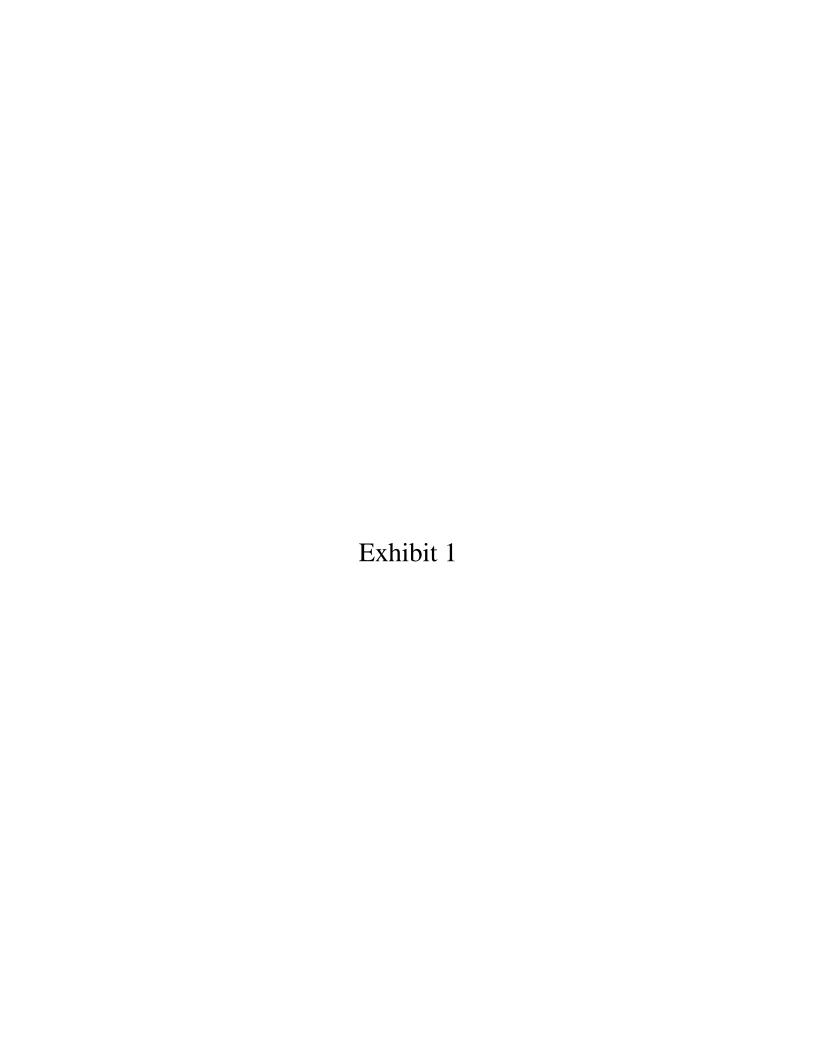
Corporation for a Declaratory Ruling that Its Solid Oxide Fuel Cell Energy Server Will Qualify as a Class I Renewable Energy Source (Sept. 12, 2012)

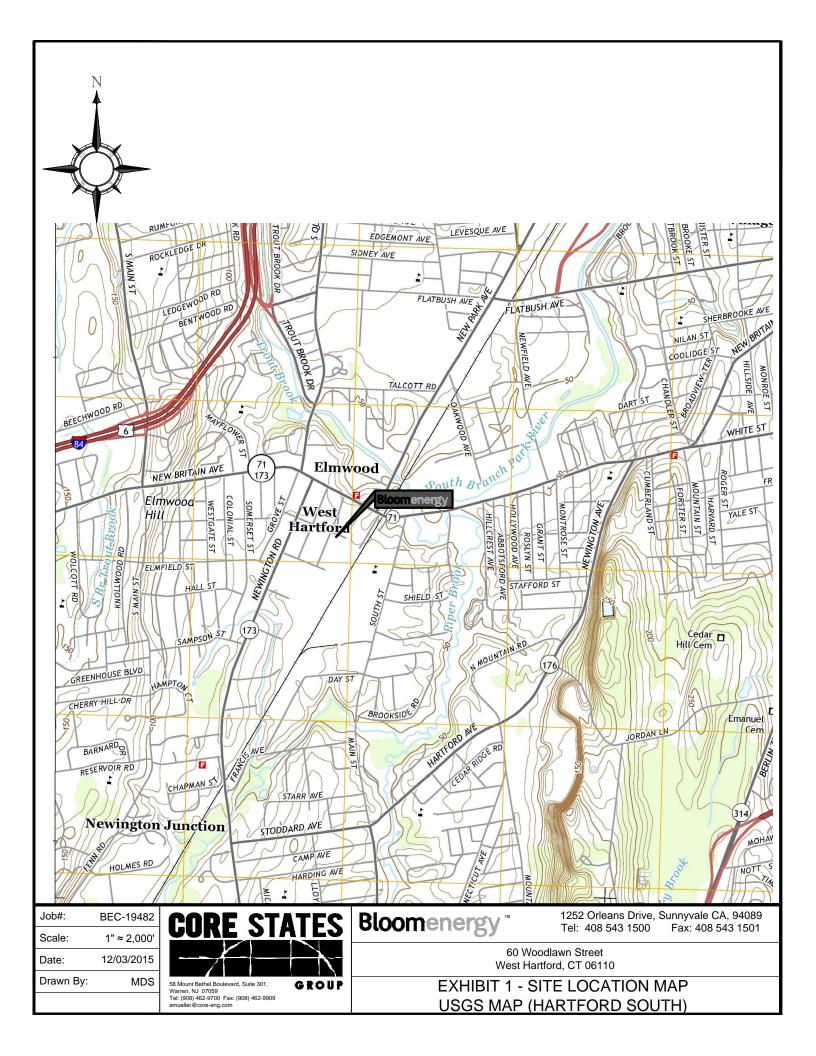
Exhibit 4: Correspondence with the Town

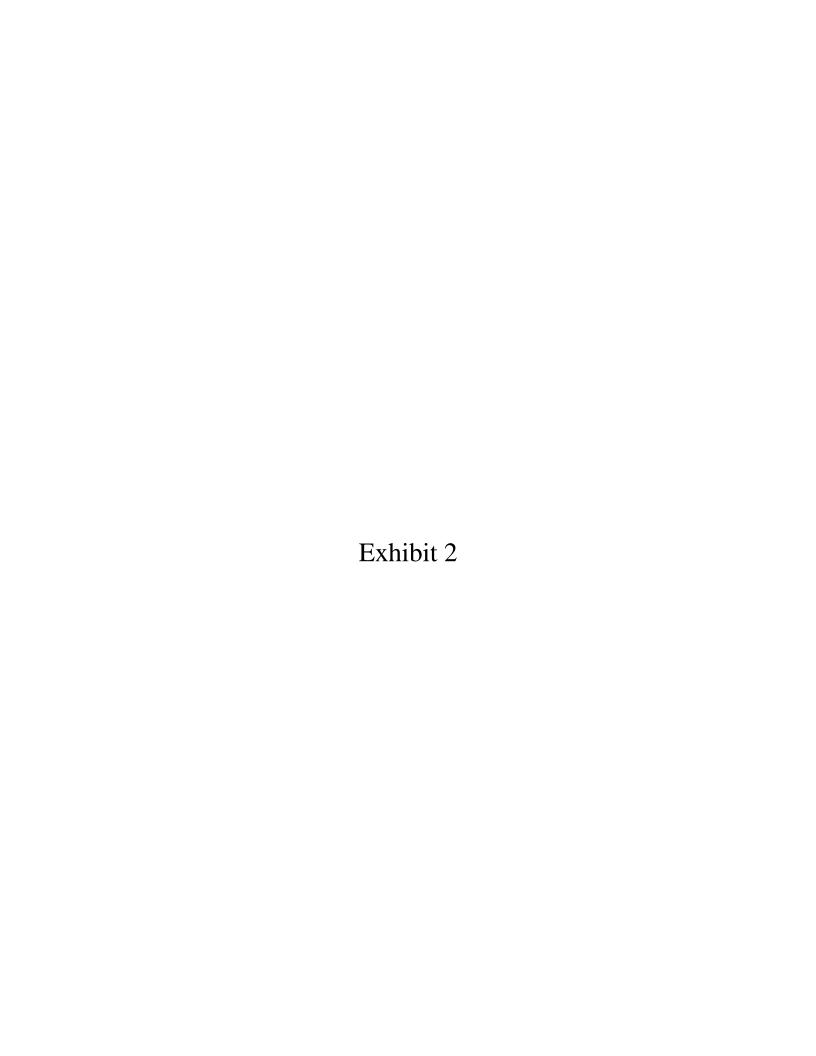
Exhibit 5: Bloom Energy Server Product Datasheet and General Installation Overview

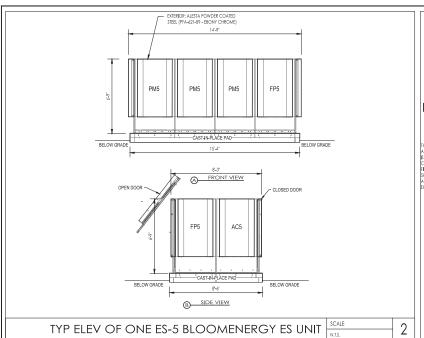
Exhibit 6: Notice Pursuant to Conn. Agencies Regs. § 16-50j-40(a)

Exhibit 7: Abutters Map



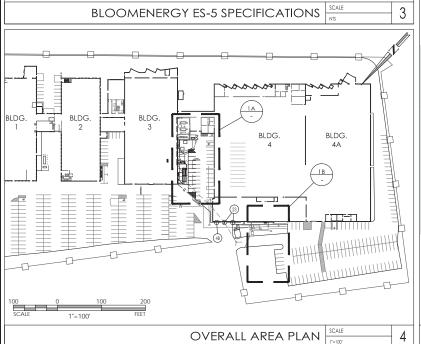


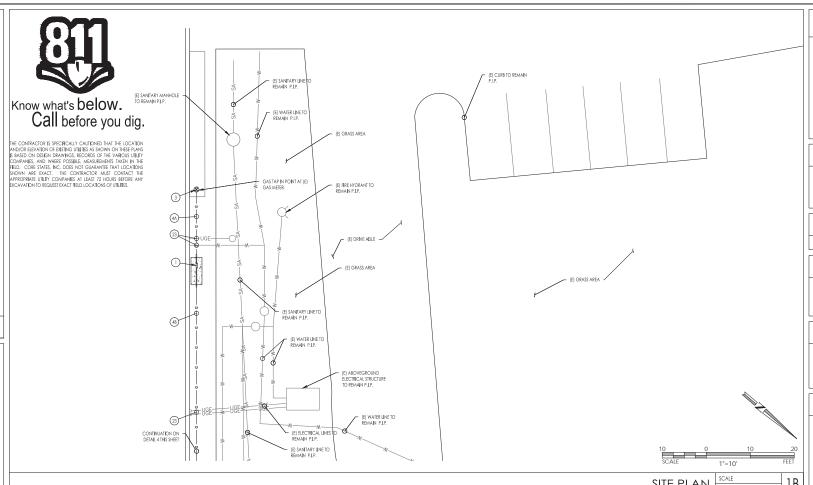


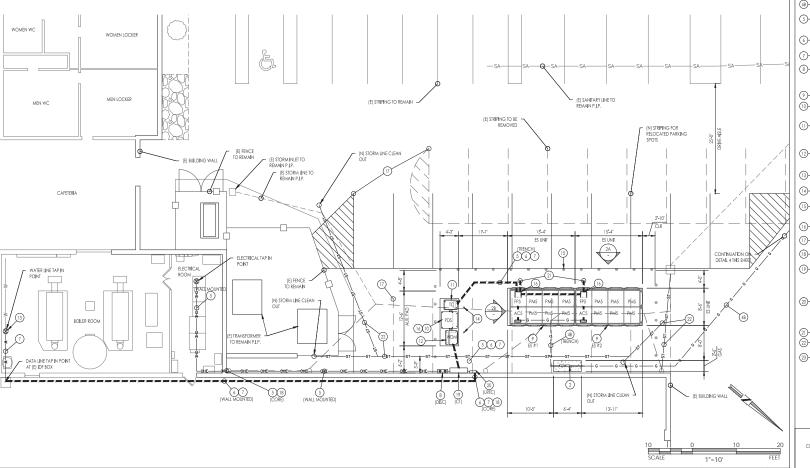


	S	SYSTEM	
Output Power	262.5 kW	Total System Weight (Less Pad)	27,192 lbs
Voltage	480 VAC	Weight - YPM x 6	3,577 lbs
Maximum Output Current	316 Amps	Weight - YAC x 1	3,161 lbs
Frequency	60 Hz	Weight - YFP x 1	2,569 lbs
		Weight - Pad	38,235 lbs
	FUEL RI	EQUIREMENTS	,
Connection	FUEL RI	EQUIREMENTS Pressure	15 (+3/-1) PSIG
Connection Fuel Type			15 (+3/-1) PSIG 2.3MMBtu/hr
	1" FNPT Natural Gas	Pressure Max Consumption Rate (60F, 1atm)	15 (+3/-1) PSIG 2.3MMBtu/hr
	1" FNPT Natural Gas	Pressure	- ( - /
Fuel Type	1" FNPT Natural Gas	Pressure Max Consumption Rate (60F, 1atm)	- ( - /
	1" FNPT Natural Gas WATER F	Pressure Max Consumption Rate (60F, 1atm)  REQUIREMENTS	2.3MMBtu/hr

#### BLOOMENERGY ES-5 SPECIFICATION







#### RESPONSIBILITY NOTES

- CONNECTIONS:

   POWER DISTRIBUTION SECTION (PDS)

   TELEMETRY CABINET (TC)

   WATER DEJONIZATION MODULE (WDM)
- THE FOLLOWING EQUIPMENT SHOWN ON THESE PLANS WILL BE PROVIDED, DELIVERED AND MOUNTED BY BLOOM ENERGY, APPLICABLE TRADES TO MAKE RINAL CONNECTIONS:

   CLEAN ENERGY SERVER
   PRECAST SUPPORT FAILS
- 3. CONTRACTOR TO REFER TO ELECTRICAL PLANS FOR ASSOCIATED WORK

#### SITE KIT NOTES

- . BLOOMENERGY TO PROVIDE AND DELIVER THE SITE KIT. . ELECTRICAL AND PLUMBING CONTRACTOR TO INSTALL SITE KITS, CONSISTING OF PA PLUMBING AND BUS BARS, ON THE PRECAST CONCRETE PAD PER MANUFACTURE SPECIFICATIONS.

  PWM DEFLECTORS ARE NOT REQUIRED AT THIS SITE.

#### UTILITIES

GAS: CONNECTICUT NATURAL GAS (CN ELECTRIC: EVERSOURCE

#### **CONDUIT & PIPE LENGTHS**

TIPE TOTAL DISTANCE FROM IJEAN TO FURTHERMOST ES UNIT (LINEAR)
GAS PIPE
GAS PIPE
GEORGAL CABLE (TOTLP.)
120
DATA CONDUIT
110
water Pipe
150

#### LEGEND OF UTILITY LINES

DATA INE SANTARY INE SANTARY INE STORM THE STO

#### KEYNOTES

- NUTILITY GAS METER SET ASSEMULY INSA ) FOR CLEAN EMERGY SERVER.
  COORDINATE LOCATION & INSTALLATION REQUIREMENTS WITH UILITY COMPANY
  PROSE TO INSTALLATION. MARKIN NAMIMUS 307 CLEARANCE FROM ALL IGNITION
  SOURCES. CONTRACTOR TO PROVIDE CASSIANHAGE COOKCREE PAD.

  IN PRIVATE CAS REGULATOR SESSIMENT (PASA IF OCCEAN EMERGY SERVER
  WITH SUIT-OFF VALVE. MANTAIN MINIMUM 3-07 CLEARANCE FROM ALL IGNITION
  SOURCES A WITH UILITIES.

  SOURCES AS WITH UILITIES.

  ON THE SET OF THE SE
- Net utilities.
   Net of the period of the period of the period of the coordinate with utility company, exact location to be coordinate with utility, size(s) a trenching requirements per utility company.
- (A)—(N) GAS PIPE FROM (N) GAS TAP TO TERMINATE AT (N) UTILITY MSA INSTALLED BY UTILITY COMPANY. SIZE(S) & TRENCHING REQUIREMENTS PER UTILITY COMPANY. (48)—(N) GAS PIPE, DATA CONDUIT & CABLE (WHERE NEEDED) FROM (N) UTILITY GAS MSA TO TERMINATE AT (N) ES UNIT INSTALLED BY CONTRACTOR.
- (S)—(N) ELECTRICAL CONDUIT & WIRES FROM (N) ES UNTITO (N) POS TO (N)
  DISCONNECTTO (N) CT CABINENT TO (N) LREC METER WITH FINAL TERMINATION /
  (E) SWITCHGEAR.
- (6)—(N) DATA CONDUIT & CABLE FROM (N) LREC METER TO TERMINATE AT (E) DATA DEMARC LOCATION.
- (7)—(N) WATER PIPE FROM BUILDING DOMESTIC WATER SYSTEM TO (N) WDM. CO TO NEAREST AVAILABLE LOCATION.
- [8] IN IDECONNECT SWITCH & NEWA 2R ENCLOSURE: MOUNT TO THEBUILDING WAL PER MANUFACTURER SPECIFICATIONS, ENSURE LOCATION MEETS ALL REQUIRED N.E.C. CLEARANCES, PROVIDE MODEL NUMBER ON THE OUTSIDE OF THE FRONT PANEL.
- (9)—(N) BLOOMENERGY ES-5 ENERGY SERVER.
- (ID—(N) POWER DISTRIBUTION SECTION (PDS), CAST-IN-PLACE PAD AND MOUNTING SPECHICATIONS PER GRADING PLAN. CONDUIT STUB-UP LOCATIONS PER ELECTRICAL CONDUIT PLAN.
- ELECTRICAL COMMUNITORS.

  (1) N) TELEMENT CARRIET (CI) WITH FACTORY WIRED CLEAN ENERGY SERVER ENERGIST OF POWER-OFF SWITCH (EPO), CAST-RP-RIACE PAD AND MOUNTING SPECEDIATIONS PER GRADON FLAN. CONDUIT STUB-UP LOCATIONS PER ELECTRICAL CONDUIT DEFALS.
- (12) ((1) WATER DELONIZATION MODULE (WDM), CAST-N-PLACE PAD AND MOUNTING SPECIFICATIONS PER GRADING PLAN, FIPE & CONDUIT STUB-UP LOCATIONS PER PPE PLAN & DETAILS & ELECTRICAL CONDUIT DETAILS.
- (N) 10-0" COPPER GROUNDING RODS 6-0" APART. SPECIFICATIONS PER ONE LINE DIAGRAM.
- (15)—(N) BOLLARD (179). TYPE, SIZE AND LOCATION PER IMPACT PROTECTION PLAN.
  ENSURE SLEEVE IS FLUSH WITH GRADE AND NO ANGLES OR HOOKS EXIST THAT
  IMPEDE FORKLIFT ACCESS.
- (6)—(N) PROVIDE SECURITY BOXES OF CONDUIT & WIRE AT ALL ELECTRICAL STUB UP LOCATIONS.
- (17)—(E) PARKING TO BE REMOVED AND RESTRIPED PER HEREON.
- (1B)—CORE CONDUIT AND/OR PIPE THROUGH WALL SCAN WALL PRIOR TO CORING.
- (B)— IN UTLITY APPROVED CT CABINET IN NEMA 3R ENCLOSURES, SPECHECATIONS PER ONE LINE ELACAM, INSEET 61), MOUNT TO THE BULDING WALL PER MAUNACTURES PECCHCATIONS. BUSINED COLORIUM MEETS ALL REQUIRED IN C.C. CLEARANCES, PROVIDE MODEL VIJUNGER ON THE OUTSICE OF THE FONT PAINEL. COMPLETE SPECHECATION SPECIALISTICS.
- (20)—(N) UIITH APPROVED ISEC METE. SPECIFICATIONS PER ONE LINE DIAGRAM (SHEET A.1), MOUNT TO BUILDING WAIL, IPER MANUFACTURES PSECIFICATIONS. DISUBLE LOCATION METERS LINE REQUISED NOT. CLEARNICES, PROVUE MODE NUMBER ON THE OUTSIEGO FT HIE PROVID FAMEL, COMPLETE SPECIFICATION FER ELECTRICAS SPECIFICATION FOR
- (21)—INSTALL CONDUITS IN JOINT UTILITY TRENCH FOR FUTURE EXPANSION.
- 22—REMOVE EXISTING STORM LINE AND REPLACE WITH (N) STORM LINE AND CLEAN OUTS TO BE RE ROUTED AROUND ES UNIT.
- (33)—CONTRACTOR TO INSTALL (N) UTILITIES WITHOUT DAMAGING [E] UTILITIES. (N)
  UTILITIES ARE TO BE INSTALLED MAINTAINING MINIMUM CLEARANCES TO (E) UTILITIES
  AS IDENTIFIED IN TRENCHING DETAILS. HAND DIG ALL CONFLICT AREAS.

CLIENT APPROVAL:	
	DATE
BLOOMENERGY APPROVAL:	

Bloomeness

122 Oreans Dive, Sunnyvale CA, 94089
122 Oreans Dive, Sunnyvale CA, 94089
124 GB 518 1501
www.bloomenessys.com
PROPRIETARY & CONFIDENTIAL

LT legrand

NEW CONSTRUCTION OF

CLEAN ENERGY SERVER

60 WOODLAWN STREET

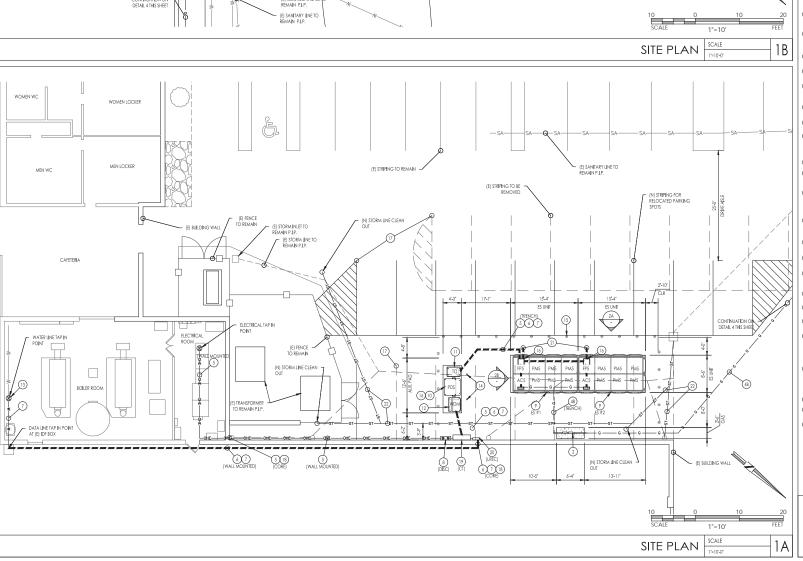
WEST HARTFORD, CT 06110

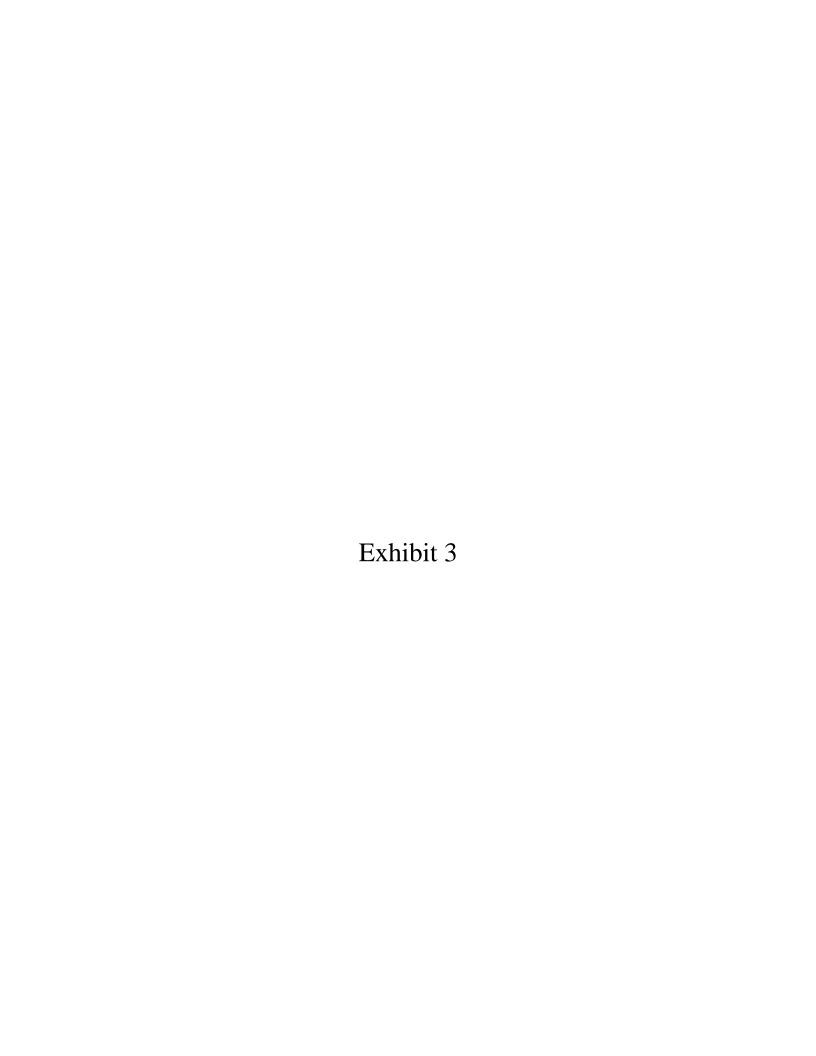
STATES COR

(2) ES-5 - 500KW

SITE PLAN

2.0





#### 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. <u>Id.</u>, 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 reformate 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. <u>Id</u>.

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. <u>Id</u>.

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. <u>Id.</u>, pp. 3 and 4.

Bloom Energy Servers deliver significant environmental benefits over conventional base load technologies. In addition to significant CO<sub>2</sub> reductions due to its high efficiency, the energy server emits virtually no NO<sub>x</sub>, SO<sub>x</sub>, 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 <a href="http://www.ct.gov/pura">http://www.ct.gov/pura</a>. 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.

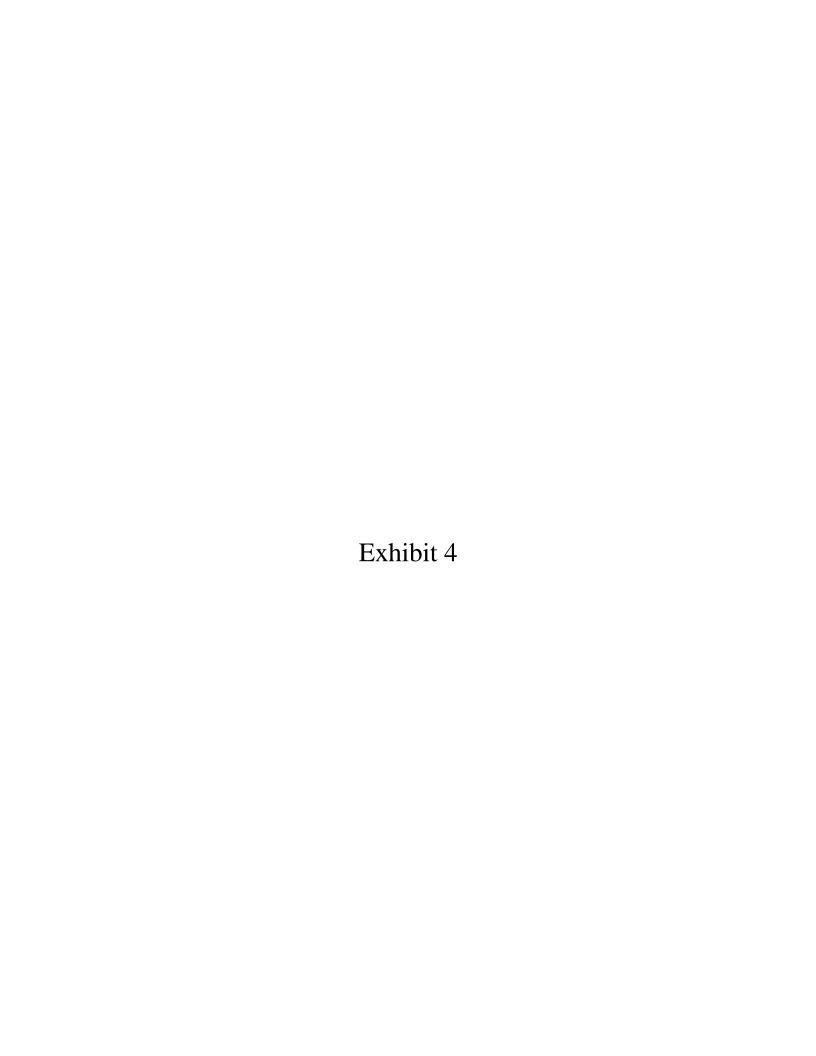
K. Santopietro

September 12, 2012

Date

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

60906902 V1-WORKSITEUS-029819/0002



engineering architecture program management development services construction services



December 11, 2015

Via certified mail
Town Hall
50 South Main Street – Room 214
West Hartford, CT 06107

Attn: Todd Dumais

RE: Bloom Energy Clean Energy Server Installation

Legrand Wiremold Facility - 60 Woodlawn Street

Mr. Dumais,

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 Legrand Wiremold Facility, 60 Woodlawn Street.

This project proposes to install two (2) new ES-5 Bloom Energy Servers; a new class of distributed power generator which produces clean, reliable and affordable electricity at the customer site. Bloom Energy Server contains solid oxide fuel cells which provide 500 kW of power, utilizing a non-combustive chemical process. The Clean Energy Servers are mounted onto two (2) 30'8" x 8'6" precast concrete pads. Placement of the Clean Energy Server equipment is proposed to be installed within an alleyway to the building.

The ES-5 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.

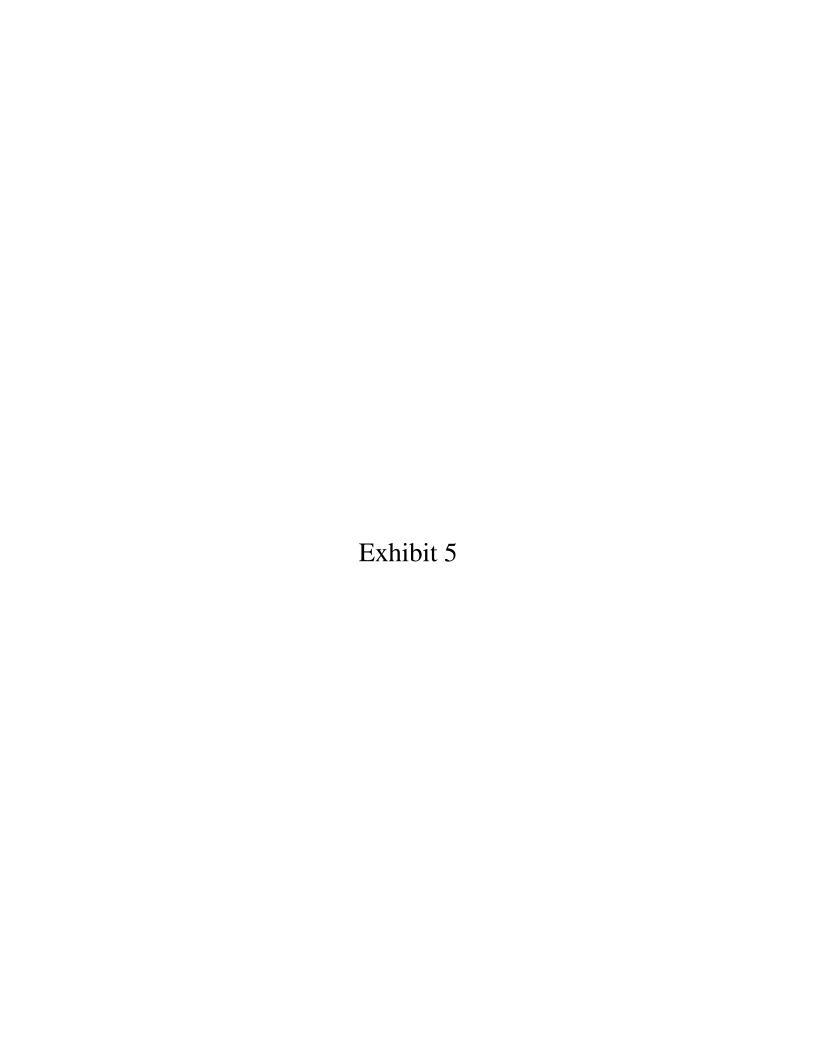
Please note that the energy server is monitored 24 hours a day, 7 days a week by Bloom Energy's communications network in Sunnyvale, CA. In the unlikely event the system will require attention, the system can be remotely shut off by Bloom. Additionally, the equipment will have several means to shut down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

We are submitting to the Connecticut Siting Council in the near future and want to give you an opportunity to review the proposed site plans to your office. Per your recent communication with our office we will wait for Siting Council approval before we submit plans. We would be happy to discuss any comments you may have either by phone or in person. If you have any questions or need further information, please feel free to call at (908) 462-9919.

Thank you,

**Core States Group** 

Matthew S. DeWitt, P.E. Senior Project Manager



## **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  $\mathrm{CO}_2$  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**

Outputs	
Nameplate power output (net AC)	262.5 kW
Base load output (net AC)	250 kW
Electrical connection	480 V, 3-phase, 60 Hz
nputs	
- uels	Natural gas, directed biogas
nput fuel pressure	10-18 psig (15 psig nominal)
Nater	None during normal operation
Efficiency	
Cumulative electrical efficiency (LHV net AC)	53-60%
Heat rate (HHV)	6,295-7,127 Btu/kW
Emissions	
NOx	< 0.01 lbs/MWh
60x	Negligible
00	< 0.10 lbs/MWh
/0Cs	< 0.02 lbs/MWh
CO <sub>2</sub> @ stated efficiency	735-832 lbs/MWh on natural gas;
	carbon neutral on directed biogas
Physical Attributes and Environment	
Veight	13.7 tons
Dimensions (variable layouts)	15'8" x 8' 9" x 6' 10" or 30' 4" x 4' 5" x 6' 10"
「emperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Voise	< 70 dBA @ 6 feet
Codes and Standards	
Complies with Rule 21 interconnection and IEEE154	7 standards
Exempt from CA Air District permitting; meets string	ent CARB 2007 emissions standards
Designed to ANSI/CSA America FC 1-2014	
Additional Notes	
Access to a secure website to monitor system perfor	rmance & environmental benefits

## **Bloomenergy**°

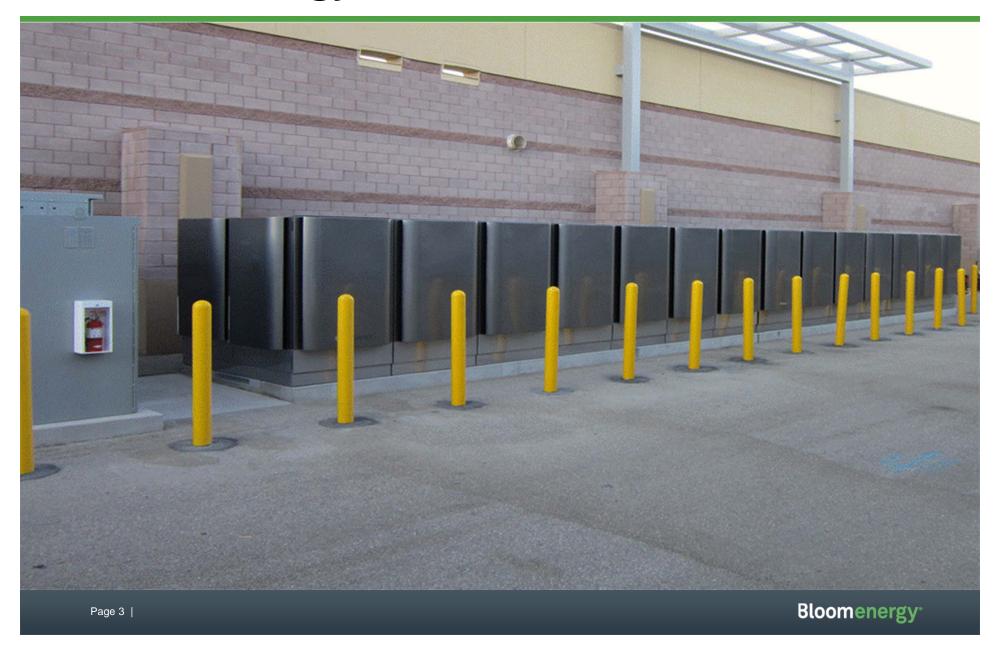
Bloom Energy Corporation 1299 Orleans Drive Sunnyvale CA 94089 T 408 543 1500 www.bloomenergy.com

# **Bloom Energy Server**





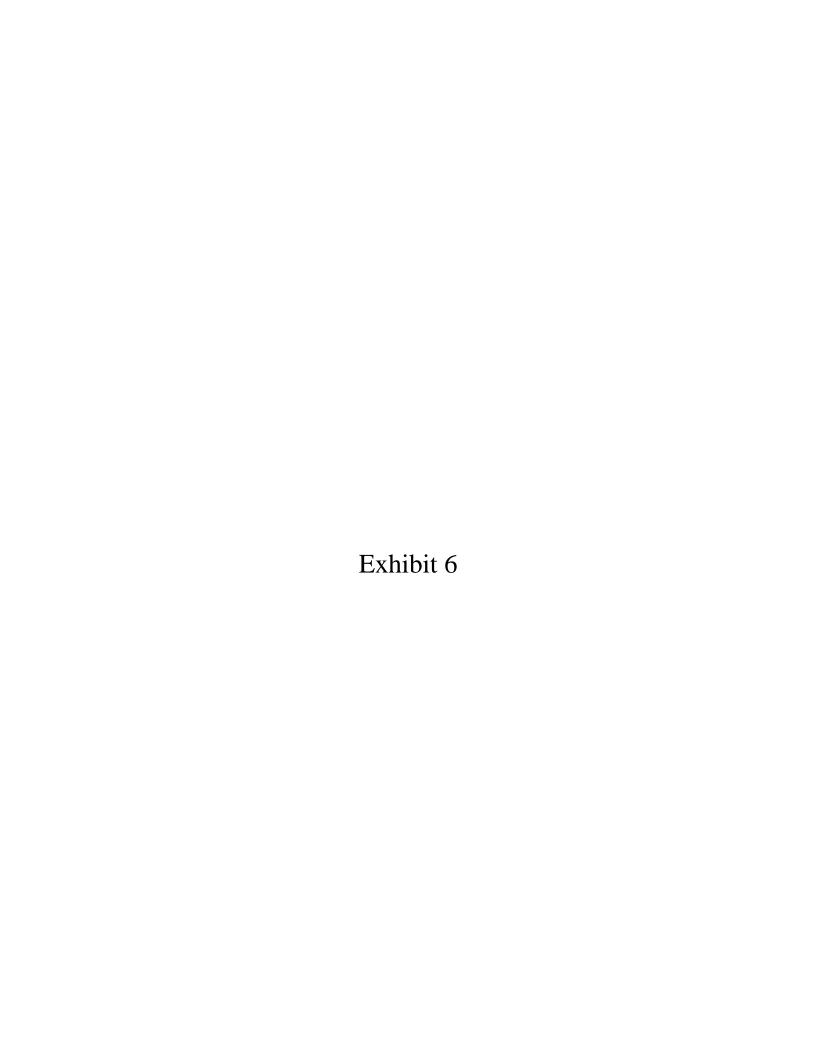
# **Bloom Energy Server Installation**



## **Representative Installations**



**Bloomenergy**<sup>®</sup>



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December 11, 2015

VIA FIRST CLASS MAIL

RE: Application for Core States Group, as Agent for Legrand, for the construction of a 500 kW Fuel Cell Customer-Side Distributed Resource at 60 Woodlawn Street – West Hartford, Connecticut.

Dear Ladies and Gentlemen:

Pursuant to Section 16-50j-40 of the Connecticut Siting Council's (the "Council") regulations, we are notifying you that Legrand intends to file on or shortly after December 11, 2015, a petition for declaratory ruling with the Council. The petition will request the Council's approval of the location and construction of an approximately 500 kilowatt Bloom Energy Corporation fuel cell facility and associated equipment (the "Facility"), located at the site of the Legrand Wiremold facility at 60 Woodlawn Street – West Hartford, 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 facility will be located within a parking area along the southern face of Legrand's building 3. The fuel cells are approximately 30'-6" long, 8'-6" wide, and 6'-9" high.

If you have any questions regarding the proposed Facility, please contact the undersigned or the Council.

Respectfully,

Michael D. Sousa

msousa@core-eng.com

(908) 462-9939

I:\Bloom Energy\BEC-19482 Legrand, W. Hartford, CT\Project Manager\08 Calcs and Reports\Connecticut Siting Council\2015.12.05\_Legrand (West Harford, CT)\_Resident Notice.docx

Municipal Official/Agency	Name/Address
West Hartford Mayor	Scott Slifka Town Hall, Mayor 50 South Main Street West Hartford, CT 06107
West Hartford Planning & Zoning Department	Todd Dumais Town Hall, Room 214 50 South Main Street West Hartford, CT 06107
West Hartford Conservation Commission	Dallas C. Dodge Town Hall, Conservation Commission 50 South Main Street West Hartford, CT 06107
Conneticut U.S. Senator	Richard Blumental 702 Hart Senate Office Building Washington, D.C. 20510
Conneticut U.S. Senator	Chris Murphy B40A Dirksen Senate Office Building Washington, D.C. 20510
Conneticut U.S. Representative	John Larson Congressman District 1 1501 Longworth House Office Building Washington, D.C. 20515
Conneticut State Senator	Beth Bye Legislative Office Building Room 3100 Hartford, CT 06106

West Hartford	Andrew M. Fleischmann
State Representative	District 18
State hepresentative	Legislative Office Building
	Room 3101
	Hartford, CT 06106
West Hartford	Brian Becker
State Representative	District 19
·	Legislative Office Building
	Room 4009
	Hartford, CT 06106
West Hartford	Joe Verrengia
State Representative	District 20
	Legislative Office Building
	Room 4048
	Hartford, CT 06106
Connecticut Attorney General	George Jesen
	Attorney General
	55 Elm Street
	Hartford, CT 06106
State Development of Energy and	Rob Klee
Environmental Protection	Commissioner
	79 Elm Street
	Hartford, CT 06106
State Department of Public Utility	Arthur House
Regulatory Authority	Chairman
	10 Franklin Square
	New Britain, CT 061051

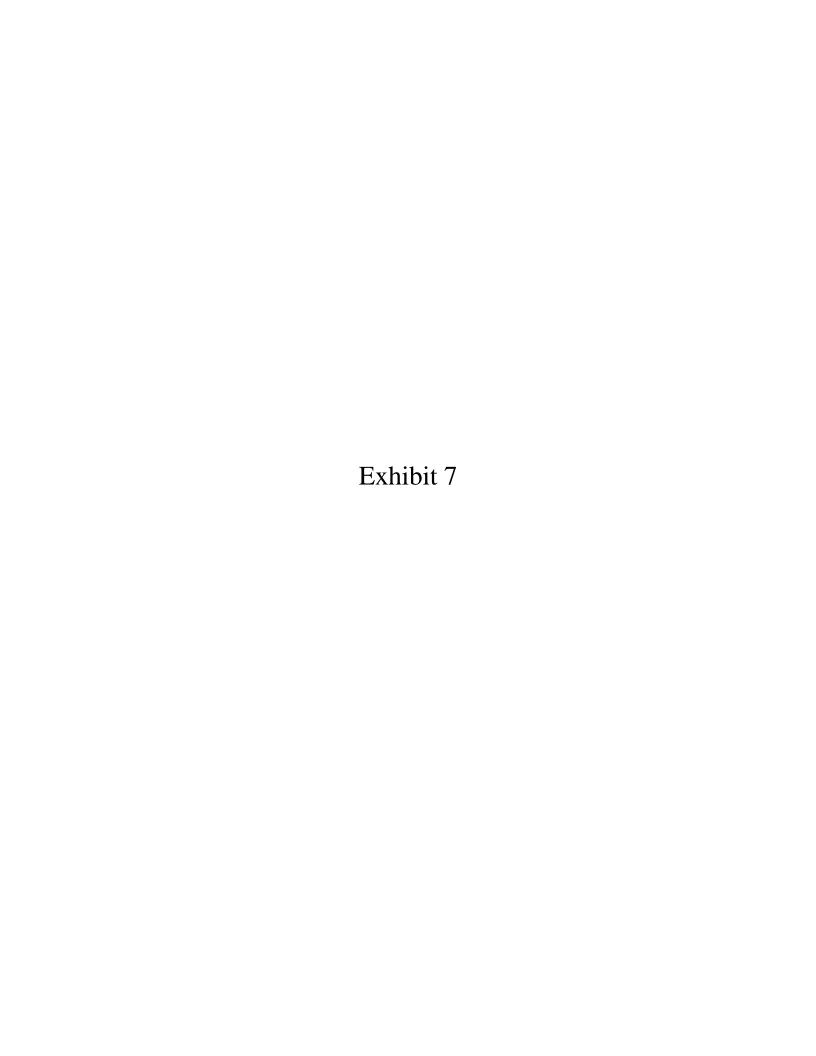
State Department of Public Health	Dr. Jewel Mullen Commissioner 410 Capital Avenue Hartford, CT 06134
State Council on Environmental Quality	Susan D. Merrow Chair 79 Elm Street Hartford, CT 06106
State Department of Agriculture	Steven K. Reviczky Commissioner 165 Capital Avenue Hartford, CT 06106
Office of Policy & Management	Benjamin Barnes Secretary of OPM 450 Capital Avenue Hartford, CT 06106
State Department of Economic & Community Development	Catherine Smith Commissioner 505 Hudson Street Hartford, CT 06106
State Department of Transportation	James P. Redeker Commissioner 2800 Berlin Turnpike Newington, CT 06111

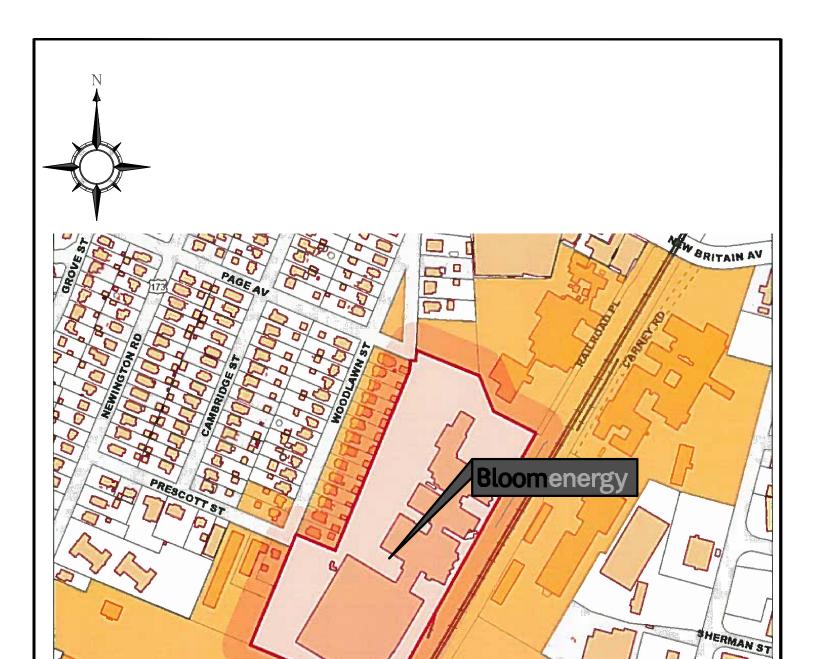
Abutter Property	Abutter Name/Mailing Address
1 Carney Road	United Tool & Die Company West Hartford, CT 06110
24 Cedar Street	Wh-Elm LLC New Britain, CT 06052
1037 New Britain Avenue	Conn Light And Power Co Hartford, CT 06141-0270
176 Newington Road	West Hartford Grocery Center Dst Oak Brook, IL 60523
54 Richmond Lane	B & P Realty Partnership LLP West Hartford, CT 06117
51 Prescott Street	Prescott Associates LLC East Hartford, CT 06138-0842
59 Prescott Street	Layug Elenita P West Hartford, CT 06110

ACCAL CONTRACTOR	N. 11
400 No Capitol St Nw	National Railroad Passenger, Corporation
	Washington, DC 20001
19 Railroad Place	Abbott Ball Company
13 Namoad Flace	
	West Hartford, CT 06110
38 Trumbull Street	Bk South LLC
	New Haven, CT 06510
56 Woodlawn Street	Abbott Ball Company West Hartford, CT 06110
30 Woodlawii Street	Abbott ball company west narriord, CT 00110
66-70 Woodlawn Street	Nelson M Martinez
	West Hartford, CT 06110
	vest nationa, et ours
47 Colonial Chester Drive	Taeik Min
., colonial chester brive	
	Wethersfield, CT 06109
78 Woodlawn Street	Arunas F Simanskis
	West Hartford, CT 06110

OC Milete A	D. I. M
86 White Avenue	Dat Nguyen
	West Hartford, CT 06119
86 Woodlawn Street	Richard R & Mary A Spillane
80 Woodiawii Street	
	West Hartford, CT 06110
205 Bobby Lane	Zbigniew & Anna Cwikla
200 Booky Laric	
	Manchester, CT 06040
94 Woodlawn Street	Joaquim M & Maria Linhares
	West Hartford, CT 06110
	West Hartiora, Cr 00110
96 Woodlawn Street	Francy N & Silvio Martinez Lopez
	West Hartford, CT 06110
	West Hartista, 61 30220
106 Woodlawn Street	Sergio Santilli
	West Hartford, CT 06110
110 Woodlawn Street	Vincent & Carol Dinatale
	West Hartford, CT 06110
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114 Woodlawn Street	James M & Kathleen Barletta West Hartford, CT 06110
117 Woodlawn Street	Hai Zhen Huang West Hartford, CT 06110
48 Sisson Avenue 2nd Floor	Jose Canga Hartford, CT 06106
121 Woodlawn St	Nancy Ann Fournier Mccabe West Hartford, CT 06110
122 Woodlawn St	The Wiremold Company West Hartford, CT 06110





 Job#:
 BEC-19482

 Scale:
 N.T.S.

 Date:
 12/05/2015

JACOBS RD

Drawn By: MDS



## **Bloomenergy**

1252 Orleans Drive, Sunnyvale CA, 94089 Tel: 408 543 1500 Fax: 408 543 1501

SHIELDST

60 Woodlawn Street West Hartford, CT 06110

EXHIBIT 7 - ABUTTERS MAP WEST HARTFORD GIS

## STATE OF CONNECTICUT



CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051 Phone: (860) 827-2935 Fax: (860) 827-2950 E-Mail: siting.council@ct.gov www.ct.gov/csc

December 15, 2015

Joseph Udinskey Bloom Energy Corporation 1299 Orleans Drive Sunnyvale, CA 94089

RE: PETITION NO. 1204 – Bloom Energy Corporation, as an agent for Legrand, S.A., 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 500-Kilowatt Fuel Cell Facility to be located at Legrand Wiremold, 60 Woodlawn Street, West Hartford, Connecticut.

Dear Mr. Udinskey:

The Connecticut Siting Council (Council) received the petition for the above-referenced facility on December 14, 2015.

According to Section 16-50j-39a of the Regulations of Connecticut State Agencies, "no declaratory ruling shall be issued to any person until a complete petition containing all information relevant by the Council has been filed."

Staff has reviewed this petition for completeness and has identified a deficiency in notice to the Town of Newington, which is within 2,500 feet of the proposed facility, and lack of a clearly labeled abutters' map that identifies the parcels corresponding to the abutters on the list. Pursuant to Section 16-50j-40 of the Regulations of Connecticut State Agencies, "Prior 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 as 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. Proof of such notice shall be submitted with the petition for declaratory ruling."

Therefore, the petition is incomplete at this time. The Council recommends that the petitioner provide proof of service of a copy of the petition for a declaratory ruling on appropriate municipal officials of the Town of Newington and a clearly labeled abutters' map that identifies the parcels corresponding to the abutters on the list on or before December 22, 2015.

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie A. Bachman

Acting Executive Director/Staff Attorney

c: Adam Mueller, P.E., Core States Group Council Members



engineering architecture project management construction management permitting development services



December 15, 2015

## Via Fed Ex

Attn: Robert Stein, Chairman

Connecticut Siting Council 10 Franklin Square New Britain, CT 06051

RE: Supplemental Filing for Petition No. 1204 – Bloom Energy Corporation, as agent for Legrand, for a Declaratory

Ruling for the Location and Construction of a 500 kW Fuel Cell Customer-Side Distributed Resource at 60

Woodlawn St, West Hartford, CT 06110.

Dear Chairman Stein:

We are submitting an original and fifteen (15) copies of supplement the above-captioned Petition. Revised Exhibits 6, Notice Pursuant to Conn. Agencies Regs. § 16-50j-40(a), and Exhibit 7, Abutters Map have been included within this package.

Per comments received on December 15, 2015 from the Connecticut Siting Council we have revised the abutters list with the addition of the following:

- Newington Mayor Roy Zartarian
- Newington Planner Craig Minor
- Newington Conservation Commission Chairman Jeffrey Zelek
- State Senator Paul R. Doyle
- State Representative Rick Lopes
- State Representative Gary Byron
- State Representative Antonio Guerrera

Should you have any questions, concerns, or require additional information, please do not hesitate to contact me at 908-462-9939.

Sincerely,

**Core States Group** 

Michael D. Sousa <u>msousa@core-eng.com</u> (908) 462-9939

engineering architecture project management construction management permitting development services



December 11, 2015

VIA FIRST CLASS MAIL

RE: Application for Core States Group, as Agent for Legrand, for the construction of a 500 kW Fuel Cell Customer-Side Distributed Resource at 60 Woodlawn Street – West Hartford, Connecticut.

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Respectfully,

Michael D. Sousa

msousa@core-eng.com

(908) 462-9939

I:\Bloom Energy\BEC-19482 Legrand, W. Hartford, CT\Project Manager\08 Calcs and Reports\Connecticut Siting Council\2015.12.05\_Legrand (West Harford, CT)\_Resident Notice.docx

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Newington Planning & Zoning Department	Craig Minor Town Hall, Planner 131 Cedar Street Newington, CT 06111
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Conneticut	Richard Blumental
U.S. Senator	702 Hart Senate Office Building
	Washington, D.C. 20510
Conneticut	Chris Murphy
U.S. Senator	B40A Dirksen Senate Office Building
	Washington, D.C. 20510
Conneticut	John Larson
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	Washington, D.C. 20515
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State Representative	District 19
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	Hartford, CT 06106
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West Hartford	Joe Verrengia
State Representative	District 20
	Legislative Office Building
	Room 4048
	Hartford, CT 06106
Newington	Rick Lopes
State Representative	District 24
	Legislative Office Building
	Room 4014
	Hartford, CT 06106
	,
Newington	Gary Byron
State Representative	District 27
	Legislative Office Building
	Room 4200
	Hartford, CT 06106
	That tiora, 61 00100
Newington	Antonio Guerrera
State Representative	District 29
'	Legislative Office Building
	Room 2301
	Hartford, CT 06106
	That tiord, C1 00100
Connecticut Attorney General	George Jesen
	Attorney General
	55 Elm Street
	Hartford, CT 06106
State Development of Energy and Environmental	Rob Klee
Protection	Commissioner
	79 Elm Street
	Hartford, CT 06106
State Department of Public Utility Regulatory	Arthur House
Authority	Chairman
	10 Franklin Square
	New Britain, CT 061051

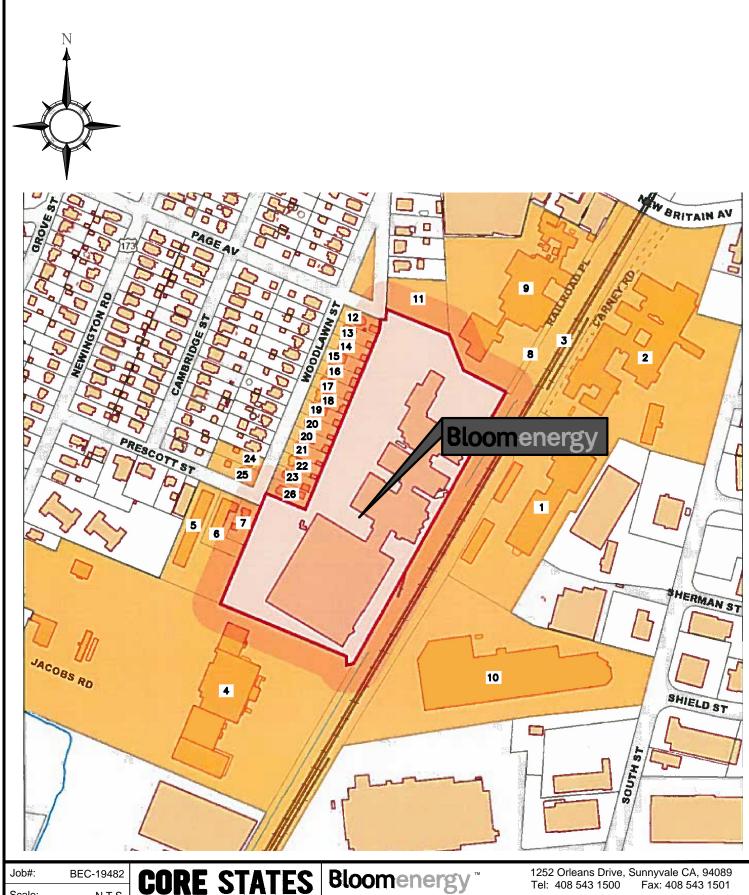
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13	47 Colonial Chester Drive	Taeik Min Wethersfield, CT 06109
14	78 Woodlawn Street	Arunas F Simanskis West Hartford, CT 06110

15	86 White Avenue	Dat Mauyon
15	86 White Avenue	Dat Nguyen
		West Hartford, CT 06119
16	86 Woodlawn Street	Richard R & Mary A Spillane
10	80 Woodiawii Street	
		West Hartford, CT 06110
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	,	Manchester, CT 06040
		Widnester, er 00040
-		
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		West Hartford, CT 06110
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19	96 Woodiawii Street	Francy N & Silvio Martinez Lopez
		West Hartford, CT 06110
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		West Hartford, CT 06110
		West Haitioid, CT 00110
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		West Hartford, CT 06110

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23	117 Woodlawn Street	Hai Zhen Huang West Hartford, CT 06110
24	48 Sisson Avenue 2nd Floor	Jose Canga Hartford, CT 06106
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26	122 Woodlawn St	The Wiremold Company West Hartford, CT 06110



 Job#:
 BEC-19482

 Scale:
 N.T.S.

 Date:
 12/05/2015

 Drawn By:
 MDS



60 Woodlawn Street West Hartford, CT 06110

EXHIBIT 7 - ABUTTERS MAP WEST HARTFORD GIS