

November 10, 2022

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

RE: Petition of Bloom Energy Corporation for a Declaratory Ruling for the Location and Construction of a 600-Kilowatt Fuel Cell Customer-Side Distributed Resource at 41 Brewster Road, Bristol, Connecticut

Dear Attorney Bachman:

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") requests the Connecticut Siting Council approve the construction and operation of a 600-kilowatt fuel cell and associated equipment at Bristol Hospital at 41 Brewster Road in Bristol, Connecticut (the "Facility"). Electricity generated by the Facility will benefit the Hospital's operations, 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 (917) 803-4511.

Sincerely, Bloom Energy

Kristen Grillo

kristen.grillo@bloomenergy.com

(917) 803-4511



## STATE OF CONNECTICUT CONNECTICUT SITING COUNCIL

PETITION OF BLOOM ENERGY CORPORATION : PETITION NO. \_\_\_\_

FOR A DECLARATORY RULING FOR THE

LOCATION AND CONSTRUCTION OF A : 500-KILOWATT FUEL CELL CUSTOMER-SIDE :

DISTRIBUTED RESOURCE AT NEW MILFORD :

HOSPITAL, 21 ELM STREET, NEW MILFORD, CT : NOVEMBER 10, 2022

### PETITION OF BLOOM ENERGY CORPORATION FOR A DECLARATORY RULING

### I. INTRODUCTION

Pursuant to Conn. Gen. Stat. §§ 4-176 and 16-50k(a) and Conn. Agencies Regs. § 16-50j-38 et seq., Bloom Energy Corporation ("Bloom") requests that the Connecticut Siting Council ("Council") approve by declaratory ruling the location and construction of a customer-side distributed resources project at Bristol Hospital (the "Hospital") at 41 Brewster Road, Bristol, Connecticut (the "Site"). Bloom will install a fuel cell consisting of two (2) ES-5 Bloom Energy Server solid oxide fuel cells and associated equipment (the "Facility") that will provide a total of 600 kilowatts ("kW") (net) of power to the Site. *See* Exhibits 1 and 3. The Facility will be installed, maintained and operated by Bloom under a 20-year power purchase agreement with Bristol Hospital, Inc. owned by a third-party financing source. The Facility has been selected as part of the LREC program.

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 sixtyfive megawatts, as long as such project meets air and water quality standards of the Department of Energy and Environmental Projection....

The proposed fuel cell will be a customer-side distributed resources facility under 65 MW that complies with the air and water quality standards of the State of Connecticut Department of Energy and Environmental Projection ("DEEP"). Bloom submits that no Certificate is required for the proposed Facility, as the installation would not have a substantial adverse environmental effect in the immediate vicinity of the Site or in the State of Connecticut.

### II. COMMUNICATIONS

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

Kristen Grillo Erik Amrine

Bloom Energy Corporation
4353 North First Street
4353 North First Street
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San Jose, CA 95134
Telephone: (917) 803-4511
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Email: Kristen.Grillo@bloomenergy.com Email: erik.amrine@bloomenergy.com

### III. DISCUSSION

### A. The Facility

The Facility will be a 600-kW customer-side distributed resource consisting of two (2) Bloom solid oxide fuel cell Energy Servers, model ES5-YASAAL, and associated equipment. As shown on Exhibits 2 and 3, the fuel cell and associated equipment (utility cabinets, water deionizers, telemetry cabinets, and disconnect switches) will be installed in a grassy area at the end of the Hospital emergency department entrance drive (formerly Newell Road). Existing Hospital buildings will surround the Facility on three sides. A retaining wall will be installed on

the north side of the fuel cell area; the wall will be topped with a chain link fence with privacy slats.

Connections to existing water and electrical utilities will extend south into the existing Hospital building. The Facility will be fueled by natural gas supplied by Yankee Gas; the gas interconnection will be along Goodwin Street to the west. Exhibits 1 and 2 depict the Facility location; Exhibit 3 contains plans; Exhibit 4 contains photographs and equipment specifications.

Bloom has sized the system at 600 kW based on consultation with Hospital representatives and analysis of the Hospital's operational needs. The Facility will replace a portion of the average baseload of the Site with a Class I renewable energy source and improve reliability of electrical systems and equipment. The Facility has been sized to provide at least 72% of the Hospital's average annual baseload. Exhibit 4. Electricity generated by the Facility will be consumed primarily at the Site and any excess electricity will be exported to the grid.

The operational life of the Facility is for the life of the 20-year contract with the Hospital.

At the conclusion of the 20-year contract, the Hospital may renew the contract, return the Facility at no cost, or buy the Facility at a fair market value.

The interconnection application for the Facility will be filed with Eversource in early December 2022.

### B. Public Health and Safety

The Facility will be installed in compliance with applicable building, plumbing, electrical, and fire codes. The Facility is enclosed, factory-assembled and tested prior to installation on the Site. Solid oxide media in the fuel cells are exchanged at roughly five-year intervals. Extensive hardware, software and operator safety control systems are utilized, and will be controlled from a Bloom Energy Remote Monitoring Control Center ("RMCC"). Internal sensors continuously monitor system operation and provide for system components to shut down

if safety circuits detect a condition outside normal operating parameters; the RMCC operator can initiate an emergency shutdown if warranted. Bloom will provide City of Bristol ("Bristol") Fire Department personnel and Hospital operations/emergency personnel with an Emergency Response Plan and will offer to provide training. Exhibit 6.

The Facility will be installed in accordance with NFPA 853<sup>1</sup>. The Facility does not burn natural gas; it is used in a chemical reaction to generate electricity, and is digested almost immediately upon entering the unit and is no longer combustible. Before commissioning, the fuel lines (pipes) are cleaned in accordance with Conn. Gen. Stat. Section 16-50ii<sup>2</sup>.

### C. Existing and Proposed Environment

### i. The Site

The Site is located in the densely developed central part of the City, bordered by U. S. Route 6 to the north and state Routes 72, 229 and 69 to the south, east and west, respectively. The immediate surrounding area contains a mix of residential and institutional/commercial development, much of which is medical in nature. It is an approximately 12.03-acre parcel within the R-15 Single-Family Residential Zone.

The Site is fully developed with Hospital infrastructure, including multiple Hospital building, utility/mechanical facilities, and surface parking lots. The fuel cell installation will be located in the central portion of the Site, adjacent to the emergency department ambulance entrance. The area will be paved with asphalt and a paved service path will extend along the edge of the existing access drive from an existing walk. Energy Servers will be placed on skids.

Associated equipment will be installed to the south in an existing utility area behind a brick wall.

<sup>2</sup> Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission

<sup>&</sup>lt;sup>1</sup> Standard for the Installation of Stationary Fuel Cell Power Systems, 2015 Edition

The Facility is designed to take advantage of existing infrastructure, including utilities, with little or no impact on operational requirements and traffic and pedestrian flow within the Site after construction is complete. The location is not within a paved area, and there will be no effect on parking or pedestrian movement.

### ii. Wildlife and Habitat

Based on a review of the publicly available Connecticut Department of Energy and Environmental Protection (DEEP) Natural Diversity Database (NDDB) August 2022 data, the proposed Facility is not within an NDDB area, an identified location of endangered, threatened and special concern species or significant natural community. Exhibit 5. Therefore, no consultation with DEEP NDDB is required.

The Site and the surrounding vicinity are extensively developed with buildings and paved surfaces, including a recent building addition. Installation and operation of the Facility will eliminate one landscape tree and portions of a grassy area within a strip between vehicle access and parking and a building. There will be no resulting effect on wildlife habitat.

### iii. Wetlands and Watercourses

There are no identified wetland or watercourse resources within or proximate to the proposed Site. Therefore, the Facility will not have any adverse effect on wetlands or watercourses. As described herein, appropriate erosion and sedimentation control measures will be employed during construction.

### iv. Flood Zones and Aquifer Protection Area

A review of the flood hazard mapping data from Federal Emergency Management Agency's ("FEMA") National Flood Insurance Program ("NFIP") shows the Facility would not be located in either a 100-year or 500-year flood zone. *See* Exhibit 5.

The Site was also reviewed for proximity to Aquifer Protection Areas. According to GIS data provided by DEEP, the nearest final, adopted Aquifer Protection Area is approximately 0.80 mile north of the Site. A preliminary Aquifer Protection Area is approximately 0.36 mile east of the proposed Facility.<sup>3</sup>

### v. Cultural Resources

The Site, including the Facility location, has been previously developed and disturbed.

The construction and operation of the Facility will therefore not have a substantial adverse effect on cultural (archaeological and historical) resources.

### D. Environmental Effects and Mitigation

### i. Natural Gas Desulfurization Process

Sulfur compounds that are added to natural gas as an odorant are removed in the first step of electricity production in a Bloom Energy Server. Sulfur is separated from the natural gas by filtering in a specialized canister within the Energy Server (the "Desulf Unit") that uses a copper catalyst to remove the sulfur. The Desulf Units are periodically removed and replaced. The spent units are transported to ShoreMet, L.L.C. (ShoreMet) in Indiana, where they are opened, the contents are removed and copper is used as an ingredient in various products. The Desulf Units are then cleaned, refilled, and sent back to the field for reuse. Handling and transportation are performed in accordance with hazardous waste restrictions.

### ii. Water, Heat and Air 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.

<sup>&</sup>lt;sup>3</sup> Designation as a "Final, Adopted Aquifer Protection Area" indicates that detailed mapping has been completed and the municipality has adopted land use regulations for the area. Designation as a "Preliminary Aquifer Protection Area" indicates that preliminary mapping has been completed, providing an estimate of the Aquifer Protection Area and where land use regulations have not been adopted for the area.

The Facility is designed to operate without water discharge under normal operating conditions. There are no connections or discharge points to the proposed Facility. The Facility uses no water after start-up, which requires a 192-gallon injection.

Heat generated by the proposed Facility is used internally to increase the electrical efficiency of the fuel cell system. As a result, there is no useful waste heat generated by the fuel cell. The minimal amount of thermal load present at the Site would preclude the efficient deployment of a combined heat and power application.

Conn. Agencies Regs. § 22a-174-42 exempts fuel cells from air permitting requirements. Accordingly, no permits, registrations, or applications are required based on the actual emissions from the Facility. 4 It should be noted, however, that Bloom Energy fuel cells do meet the emissions standards of Section 22a-174-42.

The Facility will also meet state criteria thresholds for all greenhouse gases defined in Section 22a-174-1(49). Table 1 lists thresholds set by the Low and Zero Emissions Renewable Energy Credit (LREC/ZREC) program<sup>5</sup>, and compares them to emissions generated from the proposed Facility. By virtue of the non-combustion process the Bloom Energy fuel cells virtually eliminate NOx, SOx, CO, VOCs and particulate matter emissions from the energy production process. Similarly, there are no CH<sub>4</sub>, SF<sub>6</sub>, HFC or PFC emissions.

**Table 1: Connecticut Thresholds for Greenhouse Gases** 

| <b>Emission Type</b>              | Bloom Output    | LREC 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) <sup>6</sup> | 679-833 lbs/MWh | Not Listed     |

<sup>&</sup>lt;sup>4</sup> See Conn. Agencies Regs. §§ 22a-174-42(b) and (e).

<sup>&</sup>lt;sup>6</sup> Carbon dioxide is measured at Bloom's stated lifetime efficiency level of 53-60%.

The proposed Facility will ultimately displace less efficient fossil fueled marginal generation on the ISO New England system. Based upon the most recent US Environmental Protection Agency (EPA) "eGrid" data (2020), the proposed Facility is expected to reduce carbon emissions by approximately 13% while essentially eliminating local air pollutants like NOx, SOx, and particulate matter.

The City's Plan of Conservation and Development ("POCD"), adopted in 2015 and revised in 2018, includes a goal to "encourage energy-efficient patterns of development and land use, the use of solar and other renewable forms of energy, and energy conservation" in the context of natural resource protection. Bristol 2015 Plan of Conservation and Development, Revised April 1, 2018, Section 4.3.3. The City's Zoning Regulations, amended to May 3, 2022, define "renewable energy generation facility" and provide for such facilities as a special permit use only in the I – General Industrial Zone. The proposed Facility is located within the R-15 Single-Family Residential Zone.

### iii. Sound Levels

Bloom retained Veneklasen Associates to evaluate the impact of noise from the proposed Facility on adjacent property lines and sensitive noise receptors. *See* Exhibit 7, Veneklasen Associates Property Line Noise Analysis ("Report"). As indicated in the Report, noise levels at the property lines of all surrounding properties meet both the state and City limitations. *See* Exhibit 7.

The City noise ordinance exempts noise from construction equipment during day-time hours, defined as the hours between 7:00 a.m. and 10:00 p.m. Monday through Saturday, and the hours between 9:00 a.m. and 10:00 p.m. on Sunday. Bloom typically performs project construction Monday through Friday, 7:00 a.m. to 5:00 p.m.

#### ix. Visual Effects

The visual effect of the Facility will be minimal, and primarily within the Site. The Facility will be located within a developed area near existing utility and mechanical infrastructure. Existing buildings will obstruct visibility from the north, east and south. Off-Site views of the Facility may be experienced along a portion of Goodwin Street near the Hospital complex entrance.

### **E.** Project Construction and Maintenance

Bloom anticipates construction to start in mid-2023 with approximately four months of total construction time (4 - 6 weeks of site prep, 4 - 6 weeks of installation, and 4 - 6 weeks of commissioning).

Construction of the Facility would conform to best management practices for erosion and sedimentation ("E&S") controls, including those provided for in the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. During construction, appropriate erosion and sedimentation (E&S) controls will be installed and areas of disturbance will be promptly stabilized in order to minimize the potential for soil erosion and the flow of sediments off site. 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 and all disturbed areas have been stabilized. No effects to drainage patterns or stormwater discharges are anticipated. Due to the limited disturbance required for the Facility's installation, no construction-related storm water permits will be required.

Soils that are generated during construction activities would not be stored or stockpiled inside of wetlands or adjacent to a watercourse, and appropriate E&S control measures would be employed and maintained for any temporary soil stockpiles. Any excavated soils compatible for

reuse will be used as backfill in proximity to the same excavation area from where it originated. Any excess excavated soils not suitable for reuse would be trucked off-site and managed in accordance with applicable regulations. Rock, concrete and other debris would be removed and trucked off-site.

Areas affected by construction would be re-graded as practical and stabilized using revegetation or other measures before removing temporary E&S controls. Construction-related impacts will therefore be minimal.

If there is a default in the contract or the Facility is to be removed at the end of the contract, the Energy Servers, associated equipment and components will be dismantled and removed and the site will be restored as nearly as practicable to its effective original condition.

### IV. NOTICE AND CONSULTATION

Bloom has provided notice of this petition via certificate of mailing to abutting property owners and appropriate municipal officials and governmental agencies to whom notice is required to be given pursuant to Conn. Agencies Regs. § 16-50j-40(a). Lists of officials and abutting property owners, a copy of the notice letter and documentation of mailing are provided in Exhibit 8.

A representative of Bloom contacted Mr. Robert Flanagan, AICP, City Planner, by email on September 30, 2022 and provided plans for the proposed Facility for review and comment.

Neither Mr. Flanagan nor any other municipal official has provided comments or questions to date. *See* Exhibit 9.

#### V. CONCLUSION

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 proposed project will replace a portion of the Site's baseload with a Class I renewable energy source, assist in achieving the State's sustainability goals, and improve reliability of electrical systems and equipment.

Bloom submits that no Certificate is required for the proposed Facility, as the installation would not have a substantial adverse environmental effect in the immediate vicinity of the Site or in the State of Connecticut. Accordingly, Bloom respectfully requests that the Council approve the proposed Facility by declaratory ruling.

Respectfully submitted,

**Bloom Energy Corporation** 

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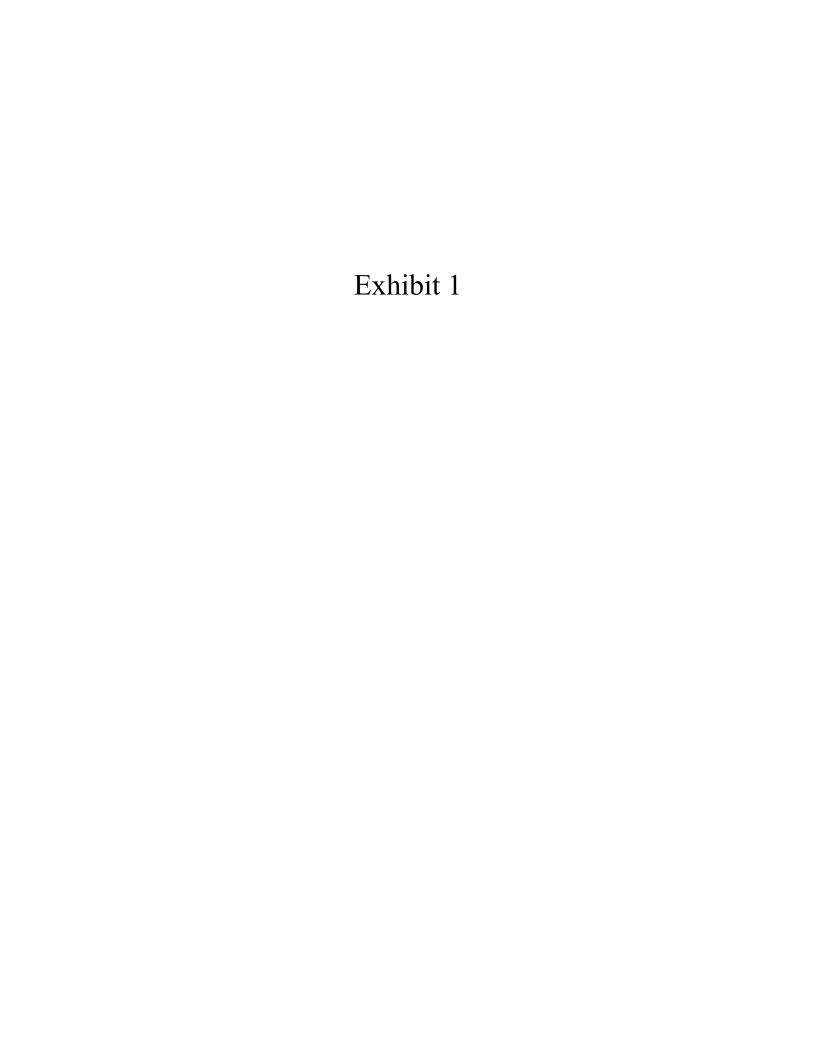
Kristen Grillo

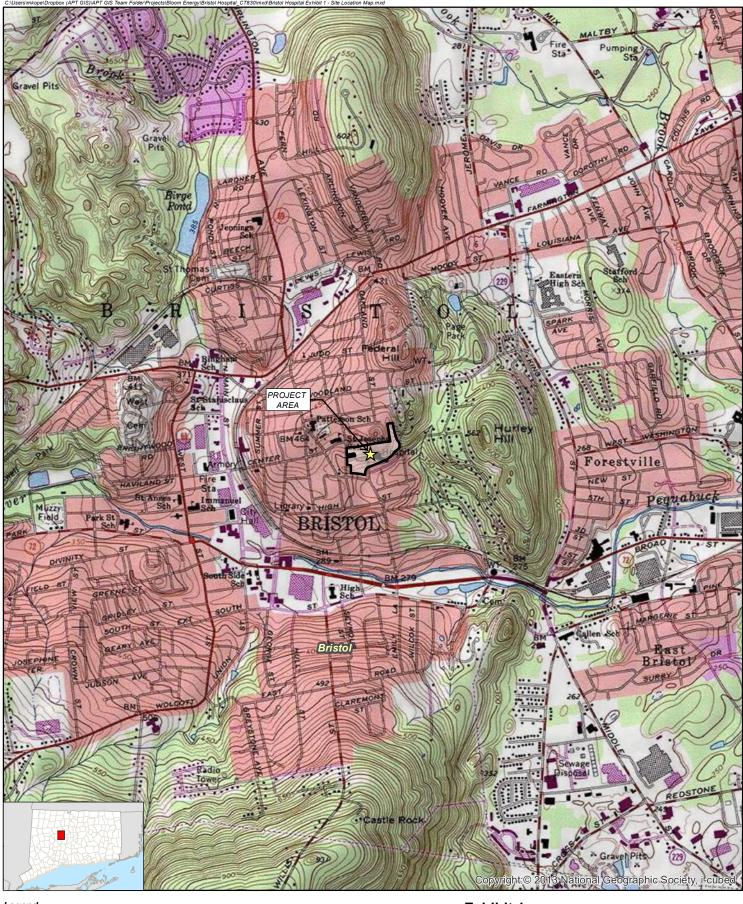
Bloom Energy Corporation 4353 North First Street

San Jose, CA 95134

Telephone: (917) 803-4511

Email: kristen.grillo@bloomenergy.com





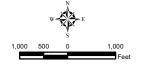
### Legend



Site

Municipal Boundary (CTDEEP)

Map Notes: Base Map Source: USGS 7.5 Minute Topographic Quadrangle Map: Bristol, CT (1984) Map Scale: 1:24,000 Map Date: October 2022

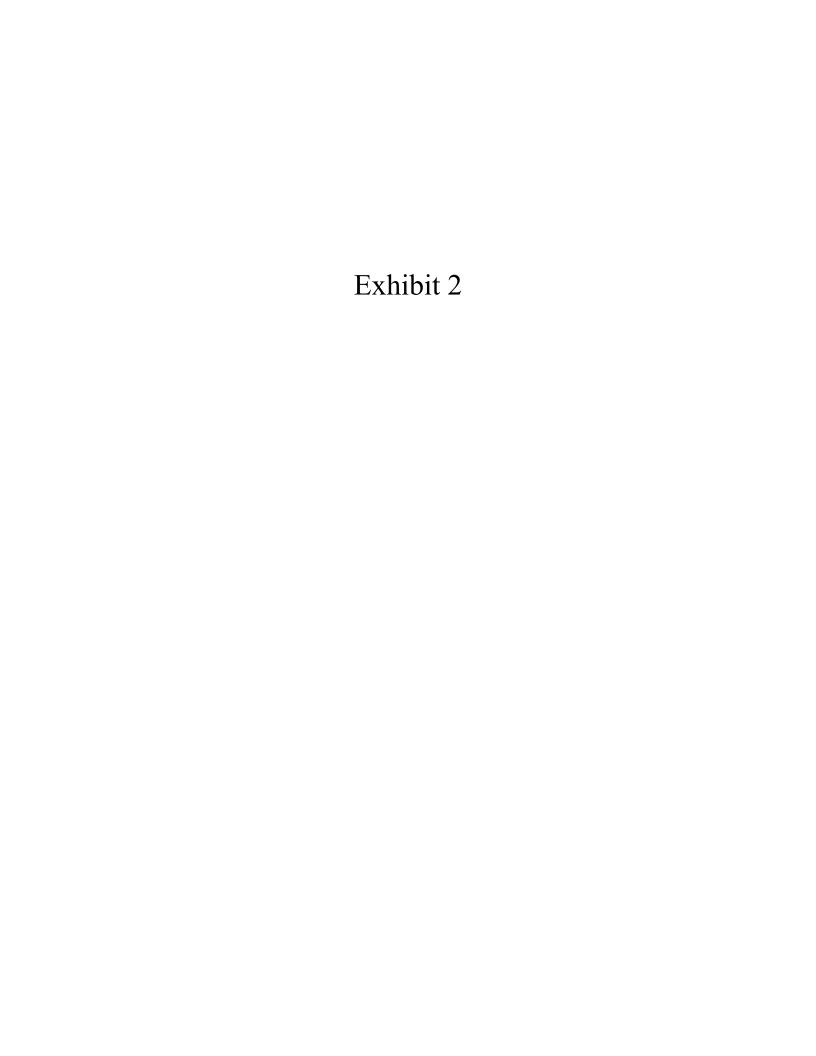


### Exhibit 1 Site Location Map

Proposed Bloom Energy Facility Bristol Hospital 41 Brewster Road Bristol, Connecticut









Proposed Bloom Energy Equipment —

Proposed Service Apron
Proposed Retaining Wall

Proposed Fence

--- Proposed Electrical Service Site

Proposed Gas Service

--- Proposed Water Service Approximate Parcel Boundary
--- Proposed Data Service

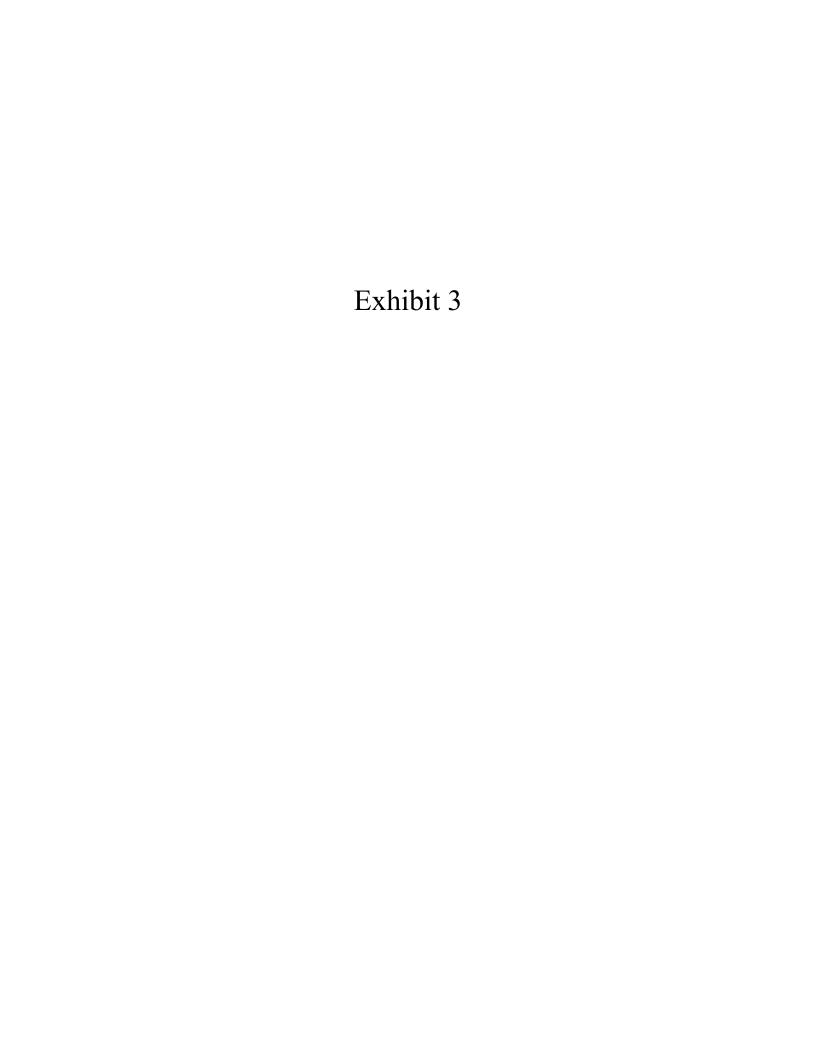
Abutting Property

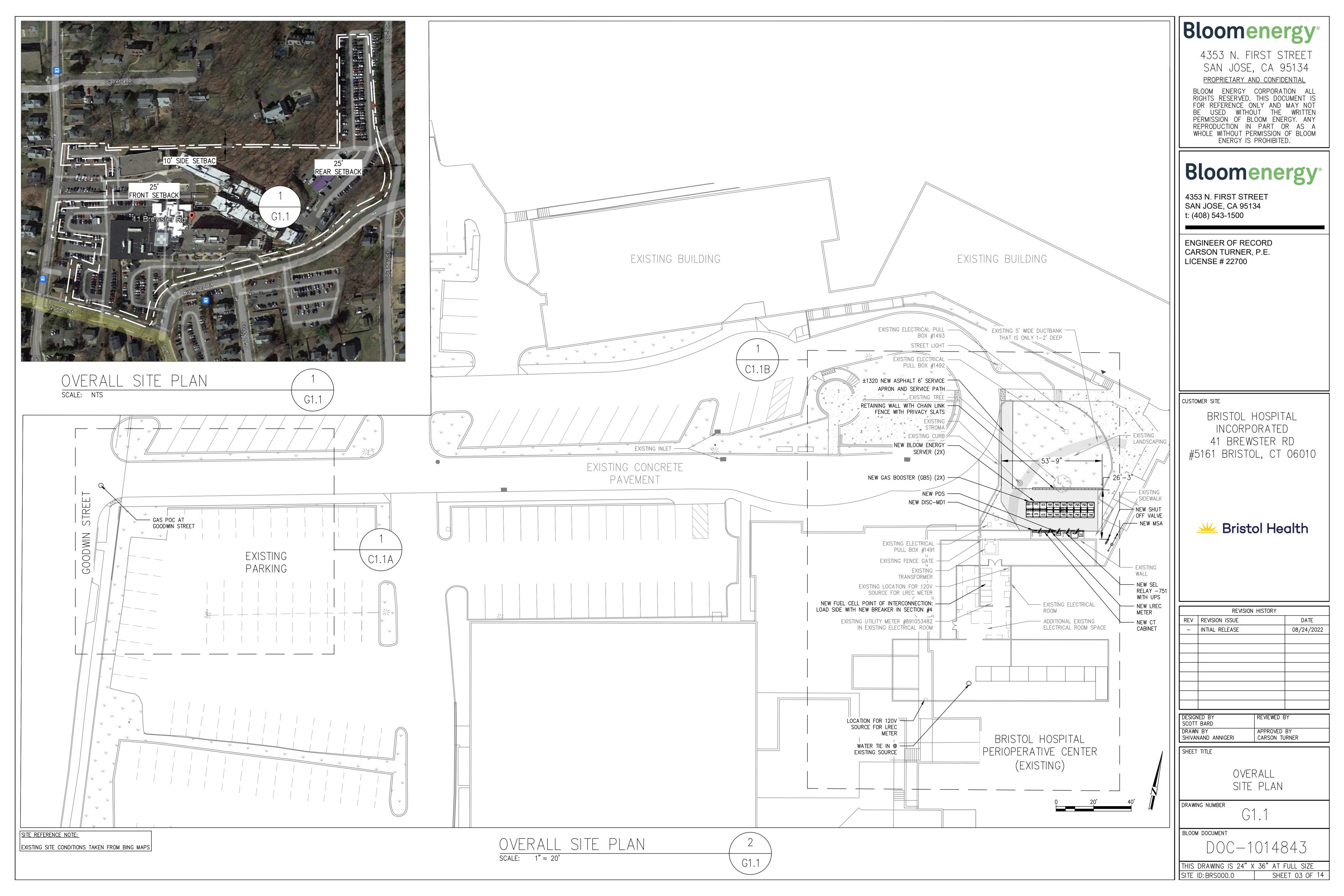
### Exhibit 2 Site Vicinity

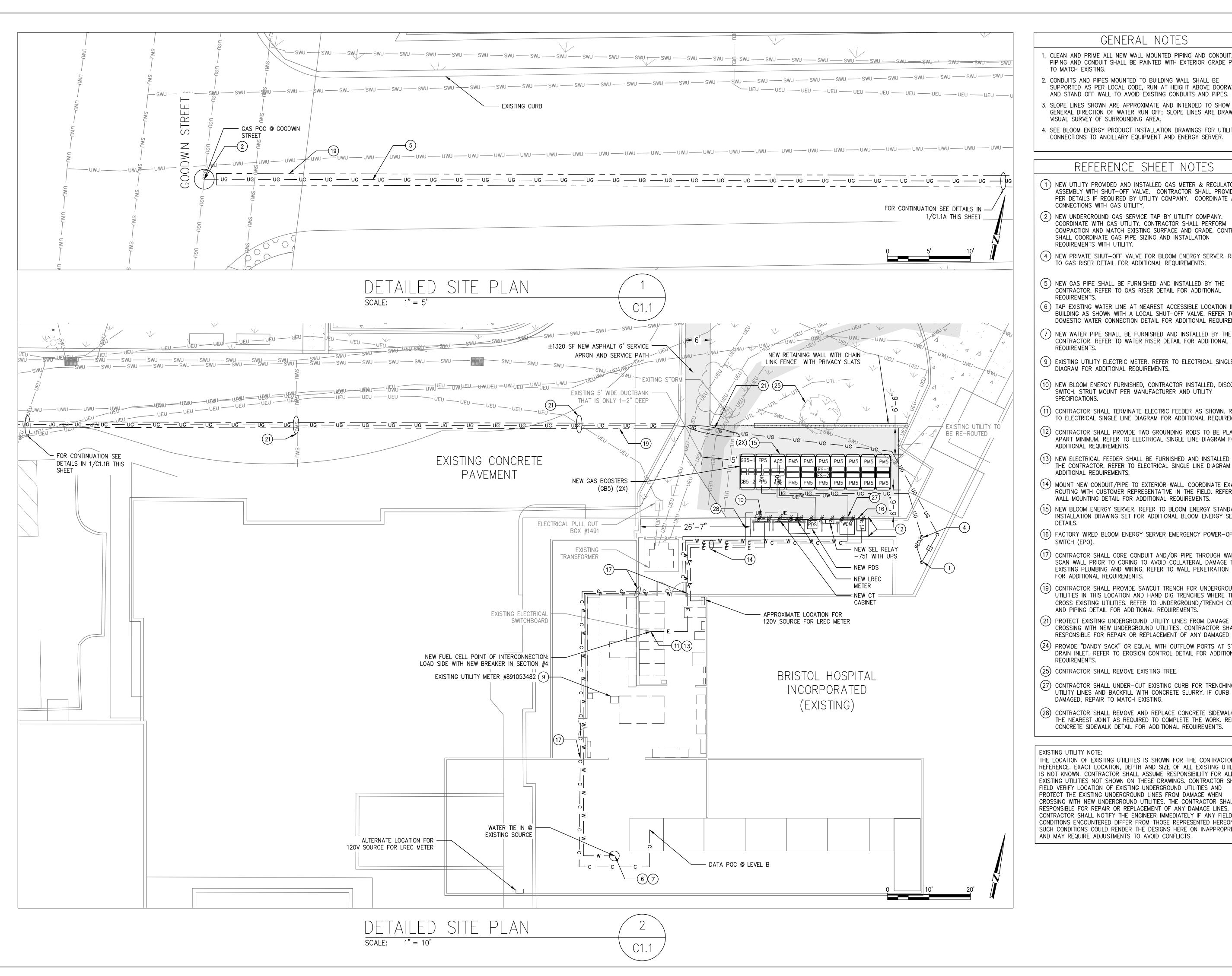
Proposed Bloom Energy Facility Bristol Hospital 41 Brewster Road Bristol, Connecticut



Map Notes: Base Map Source: Nearmap 2022 Aerial Photograph Map Scale: 1 inch = 200 feet Map Date: October 2022







### GENERAL NOTES

- 1. CLEAN AND PRIME ALL NEW WALL MOUNTED PIPING AND CONDUIT. PIPING AND CONDUIT SHALL BE PAINTED WITH EXTERIOR GRADE PAINT TO MATCH EXISTING.
- 2. CONDUITS AND PIPES MOUNTED TO BUILDING WALL SHALL BE SUPPORTED AS PER LOCAL CODE, RUN AT HEIGHT ABOVE DOORWAYS,
- 3. SLOPE LINES SHOWN ARE APPROXIMATE AND INTENDED TO SHOW THE GENERAL DIRECTION OF WATER RUN OFF; SLOPE LINES ARE DRAWN PER VISUAL SURVEY OF SURROUNDING AREA.
- 4. SEE BLOOM ENERGY PRODUCT INSTALLATION DRAWINGS FOR UTILITY CONNECTIONS TO ANCILLARY EQUIPMENT AND ENERGY SERVER.

### REFERENCE SHEET NOTES

- (1) NEW UTILITY PROVIDED AND INSTALLED GAS METER & REGULATOR ASSEMBLY WITH SHUT-OFF VALVE. CONTRACTOR SHALL PROVIDE PAD PER DETAILS IF REQUIRED BY UTILITY COMPANY. COORDINATE ALL CONNECTIONS WITH GAS UTILITY.
- (2) NEW UNDERGROUND GAS SERVICE TAP BY UTILITY COMPANY. COORDINATE WITH GAS UTILITY. CONTRACTOR SHALL PERFORM COMPACTION AND MATCH EXISTING SURFACE AND GRADE. CONTRACTOR SHALL COORDINATE GAS PIPE SIZING AND INSTALLATION REQUIREMENTS WITH UTILITY.
- (4) NEW PRIVATE SHUT-OFF VALVE FOR BLOOM ENERGY SERVER. REFER TO GAS RISER DETAIL FOR ADDITIONAL REQUIREMENTS.
- (5) NEW GAS PIPE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. REFER TO GAS RISER DETAIL FOR ADDITIONAL REQUIREMENTS.
- (6) TAP EXISTING WATER LINE AT NEAREST ACCESSIBLE LOCATION IN BUILDING AS SHOWN WITH A LOCAL SHUT-OFF VALVE. REFER TO DOMESTIC WATER CONNECTION DETAIL FOR ADDITIONAL REQUIREMENTS
- (7) NEW WATER PIPE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. REFER TO WATER RISER DETAIL FOR ADDITIONAL REQUIREMENTS.
- (9) EXISTING UTILITY ELECTRIC METER. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
- (10) NEW BLOOM ENERGY FURNISHED, CONTRACTOR INSTALLED, DISCONNECT SWITCH. STRUT MOUNT PER MANUFACTURER AND UTILITY SPECIFICATIONS.
- (11) CONTRACTOR SHALL TERMINATE ELECTRIC FEEDER AS SHOWN. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
- (12) CONTRACTOR SHALL PROVIDE TWO GROUNDING RODS TO BE PLACED 6' APART MINIMUM. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
- (13) NEW ELECTRICAL FEEDER SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
- (14) MOUNT NEW CONDUIT/PIPE TO EXTERIOR WALL. COORDINATE EXACT ROUTING WITH CUSTOMER REPRESENTATIVE IN THE FIELD. REFER TO WALL MOUNTING DETAIL FOR ADDITIONAL REQUIREMENTS.
- (15) NEW BLOOM ENERGY SERVER. REFER TO BLOOM ENERGY STANDARD INSTALLATION DRAWING SET FOR ADDITIONAL BLOOM ENERGY SERVER
- (16) FACTORY WIRED BLOOM ENERGY SERVER EMERGENCY POWER-OFF SWITCH (EPO).
- (17) CONTRACTOR SHALL CORE CONDUIT AND/OR PIPE THROUGH WALL. SCAN WALL PRIOR TO CORING TO AVOID COLLATERAL DAMAGE TO EXISTING PLUMBING AND WIRING. REFER TO WALL PENETRATION DETAIL FOR ADDITIONAL REQUIREMENTS.
- (19) CONTRACTOR SHALL PROVIDE SAWCUT TRENCH FOR UNDERGROUND UTILITIES IN THIS LOCATION AND HAND DIG TRENCHES WHERE THEY CROSS EXISTING UTILITIES. REFER TO UNDERGROUND/TRENCH CONDUIT AND PIPING DETAIL FOR ADDITIONAL REQUIREMENTS.
- (21) PROTECT EXISTING UNDERGROUND UTILITY LINES FROM DAMAGE WHEN CROSSING WITH NEW UNDERGROUND UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY DAMAGED LINES.
- (24) PROVIDE "DANDY SACK" OR EQUAL WITH OUTFLOW PORTS AT STORM DRAIN INLET. REFER TO EROSION CONTROL DETAIL FOR ADDITIONAL REQUIREMENTS.
- (25) CONTRACTOR SHALL REMOVE EXISTING TREE.
- (27) CONTRACTOR SHALL UNDER-CUT EXISTING CURB FOR TRENCHING UTILITY LINES AND BACKFILL WITH CONCRETE SLURRY. IF CURB IS DAMAGED, REPAIR TO MATCH EXISTING.
- (28) CONTRACTOR SHALL REMOVE AND REPLACE CONCRETE SIDEWALK TO THE NEAREST JOINT AS REQUIRED TO COMPLETE THE WORK. REFER TO CONCRETE SIDEWALK DETAIL FOR ADDITIONAL REQUIREMENTS.

### **EXISTING UTILITY NOTE:**

THE LOCATION OF EXISTING UTILITIES IS SHOWN FOR THE CONTRACTOR'S REFERENCE. EXACT LOCATION, DEPTH AND SIZE OF ALL EXISTING UTILITIES IS NOT KNOWN. CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES NOT SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES AND PROTECT THE EXISTING UNDERGROUND LINES FROM DAMAGE WHEN CROSSING WITH NEW UNDERGROUND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY DAMAGE LINES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON. SUCH CONDITIONS COULD RENDER THE DESIGNS HERE ON INAPPROPRIATE AND MAY REQUIRE ADJUSTMENTS TO AVOID CONFLICTS.

# Bloomenergy®

4353 N. FIRST STREET SAN JOSE, CA 95134

PROPRIETARY AND CONFIDENTIAL

BLOOM ENERGY CORPORATION ALL RIGHTS RESERVED. THIS DOCUMENT IS FOR REFERENCE ONLY AND MAY NOT BE USED WITHOUT THE WRITTEN PERMISSION OF BLOOM ENERGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT PERMISSION OF BLOOM ENERGY IS PROHIBITED.

4353 N. FIRST STREET SAN JOSE. CA 95134 t: (408) 543-1500

**ENGINEER OF RECORD** CARSON TURNER, P.E. LICENSE # 22700

CUSTOMER SITE

BRISTOL HOSPITAL INCORPORATED 41 BREWSTER RD #5161 BRISTOL, CT 06010



|     | REVISION HISTORY |            |
|-----|------------------|------------|
| REV | REVISION ISSUE   | DATE       |
| -   | INTIAL RELEASE   | 08/24/2022 |
|     |                  |            |
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| DESIGNED BY<br>SCOTT BARD | REVIEWED BY   |
|---------------------------|---------------|
| DRAWN BY                  | APPROVED BY   |
| SHIVANAND ANNIGERI        | CARSON TURNER |

SHEET TITLE

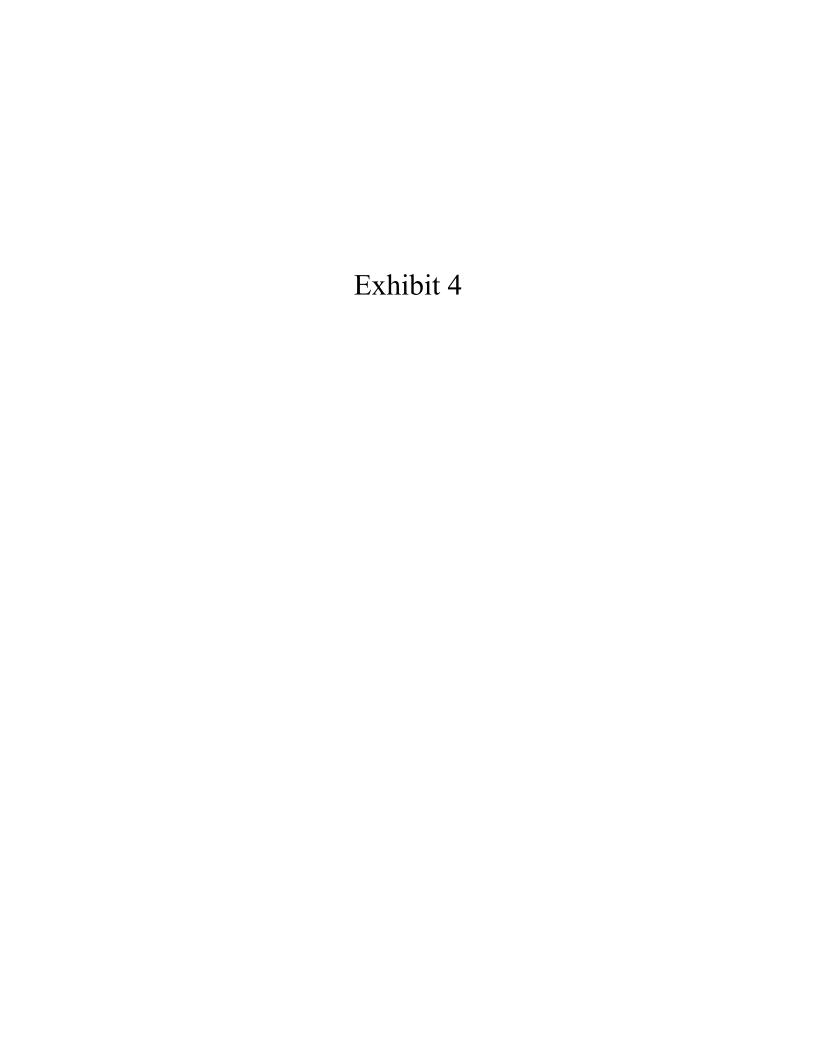
DETAILED SITE PLAN

DRAWING NUMBER

BLOOM DOCUMENT

DOC-1014843

THIS DRAWING IS 24" X 36" AT FULL SIZE SITE ID: BRS000.0 SHEET 04 OF 14

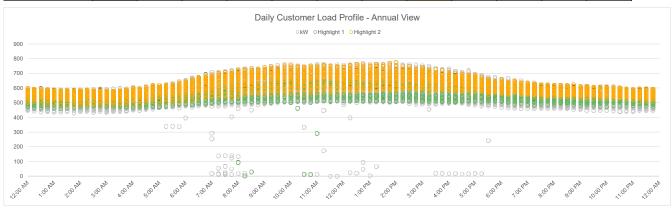


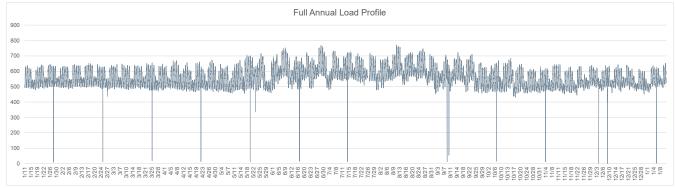
| Utility Tariff         | CT - EVR-CT 58-S     |
|------------------------|----------------------|
| Customer Name          | 0                    |
| Site Name or Address   | 0                    |
| Utility Account Number |                      |
| Meter Number           | 445552060, 537715039 |
| NOTES                  |                      |
| [Notes here]           |                      |

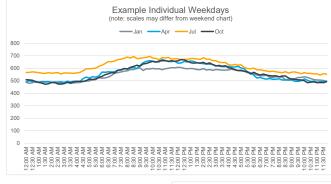
| SIZING SUMMARY                        |           |     | POWER FACTOR SUMMARY [NOT PRINTED] |
|---------------------------------------|-----------|-----|------------------------------------|
| Total Days of Complete, Non-Zero Data | 364       |     | Power Factor from Customer Bill    |
| Annual Load Factor                    | 72%       |     | kVars at Peak Demand               |
| Total Customer Usage                  | 4,894,780 | kWh | Inverter Nameplate Required        |
| Average 15-Min kW                     | 560       | kW  |                                    |
| Average Peak Demand                   | 693       | kW  |                                    |
| Absolute Minimum kW (non-zero)        | 2         | kW  |                                    |
| Estimated Average Baseload            | 500       | kW  |                                    |
| Proposed System Size                  | 600       | kW  |                                    |
| Estimated Resulting Net Metering      | 0.16%     |     |                                    |

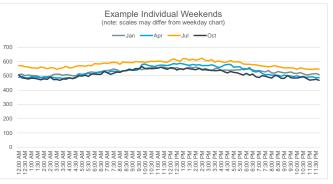
0 - 0 (Acct ; Meter 5039) - New Sizing Tool

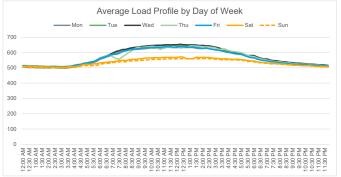
| MONTH                   | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Highlight Color (0/1/2) | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 0   | 0   | 0   | 0   |











## **Bloomenergy**®

## Energy Server 5

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



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



### Clean

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



#### Reliable

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



### Resilient

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



### Simple Installation and Maintenance

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

| Energy Server 5  | Technical Highlights (ES5-YASAAL)                                 |
|--|---|
| Outputs  |   |
| Nameplate power output (net AC)                            | 300kW   |
| Load output (net AC)                                       | 300kW   |
| Electrical connection                                      | 480V, 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) <sup>1</sup> | 65-53%  |
| Heat rate (HHV)  | 5,811-7,127 Btu/kWh   |
| Emissions <sup>2</sup>                                     |   |
| NOx  | 0.0017 lbs/MWh  |
| SOx  | Negligible  |
| CO   | 0.034 lbs/MWh   |
| VOCs   | 0.0159 lbs/MWh  |
| CO <sub>2</sub> @ stated efficiency                        | 679-833 lbs/MWh on natural gas; carbon neutral on directed biogas |
| Physical Attributes and Environment                        |   |
| Weight   | 15.8 tons   |
| Dimensions (variable layouts)                              | 17′11″ x 8′8″ x 6′9″ or 32′3″ x 4′4″ x 7′2″                       |
| Temperature range  | -20° to 45° C   |
| Humidity   | 0% - 100%   |
| Seismic vibration  | IBC site class D  |
| Location   | Outdoor   |
| Noise  | < 70 dBA @ 6 feet   |

#### 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

#### **About Bloom Energy**

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

 $<sup>^{\</sup>rm 1}$  65% LHV efficiency verified by ASME PTC 50 Fuel Cell Power Systems Performance Test

 $<sup>^{\</sup>rm 2}$  NOx and CO measured per CARB Method 100, VOCs measured as hexane by SCAQMD Method 25.3



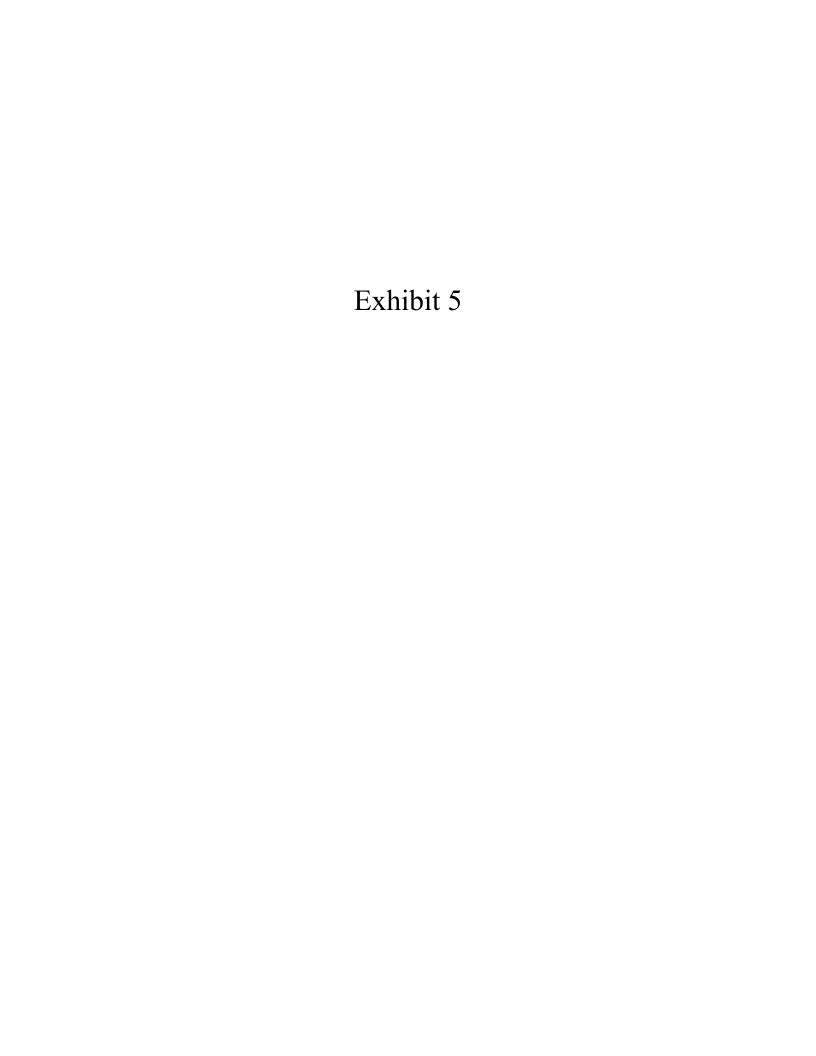
Looking west toward Goodwin Street; Facility location in foreground



Looking southeast toward Facility location at left of photo



Looking toward Facility location; Hospital Emergency Department entrances to right





### CTDEEP Critical Habitat (Oct 2019)

CTDEEP Watercourse

Map Notes: Not All Legend Items May Be Located Within Map Extent Base Map Source: Nearmap 2022 Aerial Photograph Map Scale: 1 inch = 500 feet Map Date: October 2022

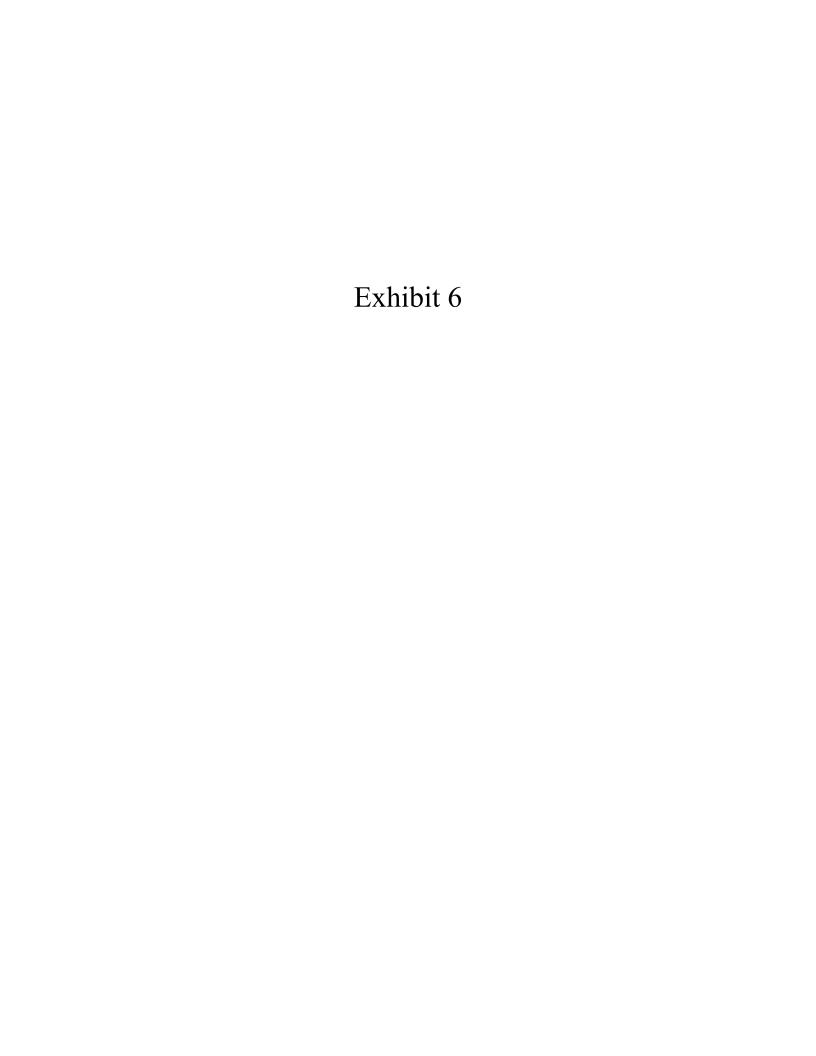
CTDEEP Natural Diversity Database (updated Aug 2022) Floodway

FEMA 500-Year Flood Zone Municipal Boundary

### **Environmental Resources**

Proposed Bloom Energy Facility Bristol Hospital 41 Brewster Road Bristol, Connecticut





# **Bloomenergy**

Fire Prevention and Emergency Planning – Grid Parallel

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|--|
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| Bloom Energy Corporation, 1299 Orleans Drive, Sunnyvale, CA 94089 USA  |
|  |
| Dogo 2 of 12   |

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- 2. Fuel Cell Installation Safety Features
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- 4. Fire and Smoke Procedures
- 5. Medical Emergency Procedures
- 6. Materials Release Procedures
- 7. Natural Disasters and Severe Weather 7.1 Earthquake 7.2 Flood
- 8. Utility Outage
- 9. Good Housekeeping and Maintenance9.1 Good Housekeeping9.2 Maintenance
- 10. Training

### 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 modell 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

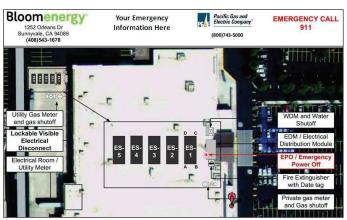


Figure 4: Sample Site Map

### **Manual controls:**

- Clearly marked emergency stop button labeled —Fuel Cell Emergency Shut Downll 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)</li>

### **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 <u>life-threatening</u> emergencies, immediately call:

Fire: 911 Ambulance: 911 Police: 911

Conditions that require automatic emergency notification include:

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

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

For <u>non-life-threatening</u> 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 <u>life-threatening</u> 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 <u>is not immediately life-threatening</u> 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 <u>unknown indoor smell or odor</u>, 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:

- <u>Stay out of flooded areas</u>. 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 standby 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
  - o Do not touch any electrical switch; do not use any phone in the area
  - Leave the area immediately
  - o Immediately call your gas supplier. Follow the gas supplier's instructions.
  - o 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).

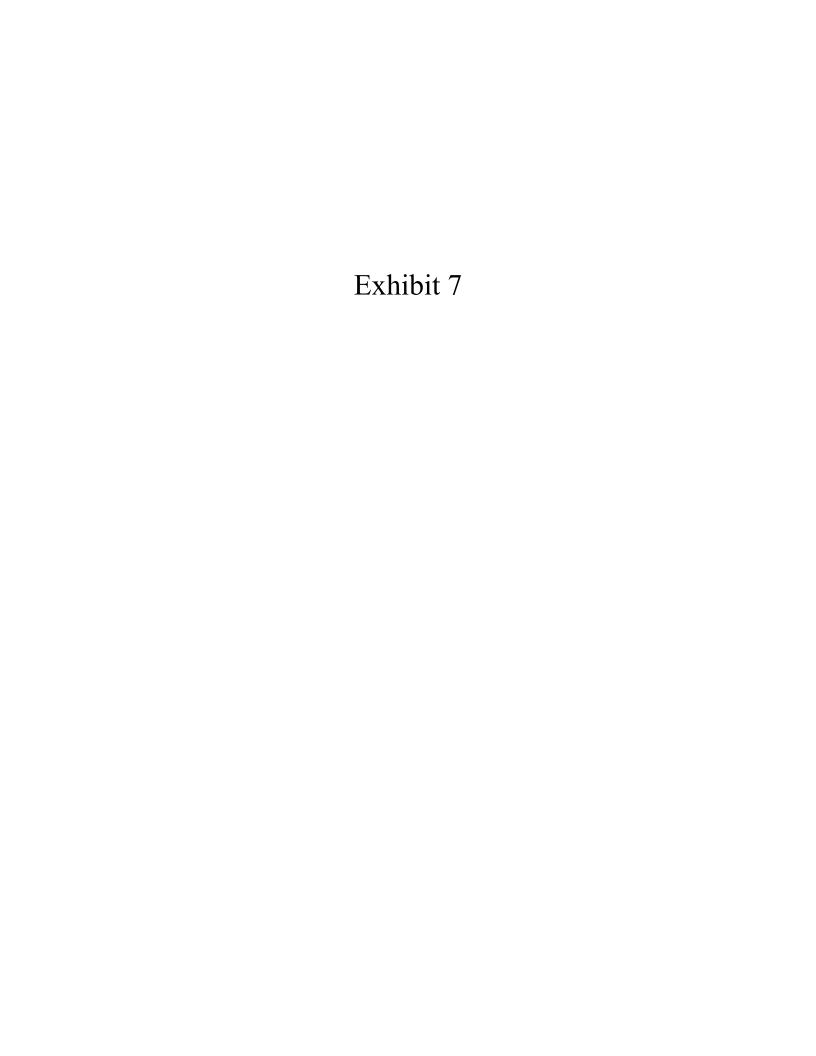
Bloom Energy also requires its employees to follow all necessary safety precautions, including:

- 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.



November 3, 2022

**Bloom Energy** 4353 North 1<sup>st</sup> Street San Jose, California 95134

Attention: Brandon Leaverton | Supply Chain Specialist – Construction

Subject: BRS000.0 Bristol Hospital Incorporated; Bristol, Connecticut

Property Line Noise Analysis Veneklasen Project No. 4631-043

### Dear Brandon:

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

### **Noise Criteria**

The City of Bristol, Connecticut Code of Ordinances Article II "Noise," Section 15-21(b) provides property line noise limits for various property types. These are summarized below in Table 1.

|                       |                  | , =          |                    |                 |
|-----------------------|------------------|--------------|--------------------|-----------------|
| Zone in which         |                  | Zone in whic | h Receptor is loca | ated            |
| Emitter is located    | Industrial Commo | Commercial   | Residential        | Residential     |
| Emitter is located    | (Class C)        | (Class B)    | (Class A)/Day      | (Class A)/Night |
| Residential (Class A) | 62 dBA           | 55 dBA       | 55 dBA             | 45 dBA          |
| Business (Class B)    | 62 dBA           | 62 dBA       | 55 dBA             | 45 dBA          |
| Industrial (Class C)  | 70 dBA           | 66 dBA       | 61 dBA             | 51 dBA          |

**Table 1. City of Bristol Noise Limits** 

The State of Connecticut Statutes Chapter 442 "NOISE POLUTION CONTROL", Sections 22a-69-2.3, 22a-69-2.4, and 22a-69-2.5 provide land use classifications in regard to noise control. In general, Class A is defined as residential land, Class B is defined as commercial land, and Class C is defined as industrial land. Note that many nearby receptors are classified as Class A receptors and the existing hospital property is classified as a Class C emitter.

Veneklasen assumes proposed fuel cells will run 24-hours per day. In the following analysis, fuel cell noise levels are compared to the applicable limits described above.

### **Property Line Noise Analysis**

Drawings received October 6, 2022 indicate that proposed fuel cells will be installed in the west of the parking lot of the existing property. Proposed fuel cells are shown in green in Figure 1 below. Additionally, the nearest receptors are annotated in blue.

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

The calculated fuel cell noise levels as compared with City noise level limits are presented in Table 2 below. The reported distances between property lines and the fuel cells are taken from the closest face of the fuel cell nearest to the associated property line. Note that all analyzed receptors, with the exception of 105 Goodwin Street and 97



Goodwin Street will receive substantial acoustic shielding from the existing hospital buildings.

Table 2. Fuel Cell Property Line Noise Levels: No Mitigation

| Sensitive<br>Receptor | Distance from<br>Fuel Cell, ft | Applicable Noise<br>Limit, dBA | Calculated Fuel Cell<br>Noise Level, dBA | Code<br>Compliant? |
|-----------------------|--------------------------------|--------------------------------|--|--------------------|
| 109 Goodwin St        | 558                            | 51                             | < 25                                     | Yes                |
| 105 Goodwin St        | 539                            | 51                             | 38                                       | Yes                |
| 97 Goodwin St         | 532                            | 51                             | 37                                       | Yes                |
| 83 Goodwin St         | 548                            | 51                             | 36                                       | Yes                |
| 77 Goodwin St         | 560                            | 51                             | 36                                       | Yes                |
| 70 Broadview St       | 309                            | 51                             | 26                                       | Yes                |
| 50 Carleton PI        | 287                            | 51                             | 25                                       | Yes                |
| 38 Carleton PI        | 225                            | 51                             | 26                                       | Yes                |
| 30 Carleton PI        | 270                            | 51                             | 27                                       | Yes                |
| 20 Carleton PI        | 336                            | 51                             | 26                                       | Yes                |
| 112 Goodwin St        | 450                            | 51                             | < 25                                     | Yes                |
| 31 Condon Rd          | 368                            | 51                             | < 25                                     | Yes                |
| 28 Condon Rd          | 450                            | 51                             | < 25                                     | Yes                |

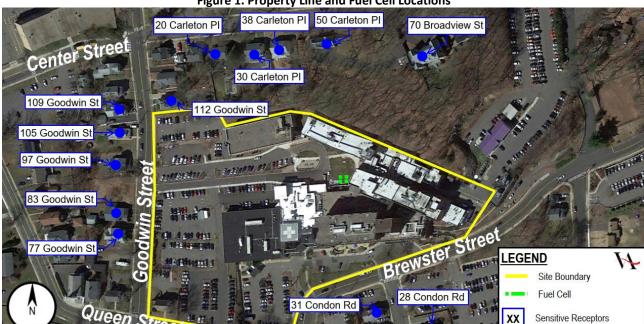


Figure 1. Property Line and Fuel Cell Locations

### **Summary**

Veneklasen has reviewed the subject project proposed fuel cell property line noise levels as they pertain to the City noise requirements. Adjacent properties are all considered Class A receptors.

As currently designed, fuel cell noise levels comply with State and City requirements. Therefore, no noise mitigation is required for the subject project.

BRS000.0 Bristol Hospital Incorporated; Bristol, Connecticut Property Line Noise Analysis Veneklasen Project No. 4631-043 November 3, 2022; Page 3 of 5

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

Sincerely,

Veneklasen Associates, Inc.

Kein Moterson

Associate

John LoVerde, FASA

Principal



### Appendix A - Sound Power Levels

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

**Table 3. Fuel Cell Measured Sound Power Levels** 

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

In a study conducted at an existing installation of the fuel cell systems, measurements were taken of the fuel cell banks with and without the dampening product. The Noise Reduction (NR) of the dampening product was calculated by taking the difference of these measured values at octave band frequencies. Note that no significant reduction was shown at the 63 Hz and 125 Hz bands. The modified sound levels for the fuel cells that were utilized in calculations shown in this report are shown in Table 3.

**Table 4. Measured Sound Dampening Foam Mitigation** 

|                 |  |        | - a p 8 a |         |         |  |  |  |  |  |  |
|-----------------|--|--------|-----------|---------|---------|--|--|--|--|--|--|
| Condition —     | Measured Sound Pressure Level [dB] @10ft – 1/1 Octave Band |        |           |         |         |  |  |  |  |  |  |
| Condition       | 250 Hz   | 500 Hz | 1000 Hz   | 2000 Hz | 4000 Hz |  |  |  |  |  |  |
| No Foam         | 70.8   | 66.8   | 65.5      | 62.4    | 53.6    |  |  |  |  |  |  |
| Foam            | 67.8   | 62.5   | 58.7      | 52.8    | 49.0    |  |  |  |  |  |  |
| Difference (NR) | 3.1  | 4.4    | 6.8       | 9.7     | 4.6     |  |  |  |  |  |  |



### Appendix B - Calculation Methods

Sound level attenuates over distance by a factor of -6 dB per doubling of distance. For example, if a sound source was measured to be 60 dBA at a distance of 10 feet, the measured sound level at 20 feet would be 54 dBA. Sound level reduction due to distance is calculated according to the following equation:

$$L_p = L_w + 10\log_{10}Q - 20\log_{10}d - 0.7$$

### Where:

d = The distance between the center of the fuel cell unit to the property line in feet.

 $L_p$  = The sound pressure level at a distance d in decibels.

 $L_w$  = The sound power level from the fuel cell. Sound power levels are reported above in Appendix A in decibels.

Q = The directivity factor which dictates how sound radiates outward from the source. See Figure 2 below from the 2015 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) Handbook, Chapter 48 describing Q factors and their associated sound radiation patterns.

Figure 2. ASHRAE Handbook: Q Factor Sound Radiation Patterns

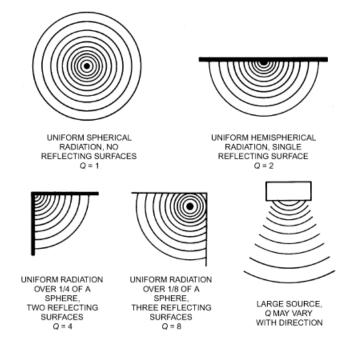
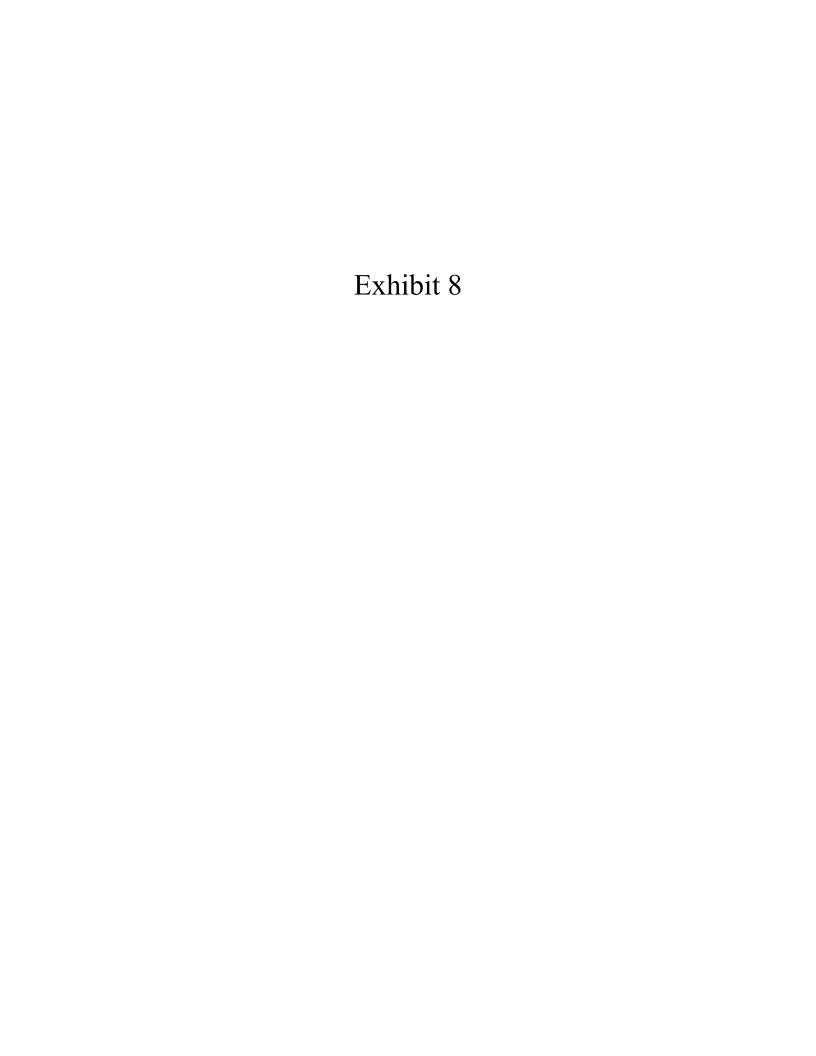


Fig. 30 Directivity Factors for Various Radiation Patterns

In the equation above, the greater the distance away from the sound source (*d*), the lower the sound level. This is intuitive and most people would consider this common knowledge.

In general, the more reflecting surfaces there are adjacent to a noise source, the more sound will bounce off these surfaces and radiate outward. In other words, larger Q factors will increase the noise level. For example, a fuel cell sitting on the ground, with nothing else around, would have a Q factor of 2 because the ground that the fuel cell is sitting on acts as a single reflecting surface. Another example would be a fuel cell sitting on the ground with a retaining wall on one side of it; this system would have a Q factor of 4 because both the ground and the retaining wall act as reflecting surfaces. A doubling of the Q factor increases the receiver noise level,  $L_P$ , by 3 dB.





### **VIA CERTIFICATE OF MAILING**

November 4, 2022

RE: Application of Bloom Energy for the location and construction of a Bloom Energy Server fuel cell installation to provide 600 kilowatts of Customer-Side Distributed

Resource at Bristol Hospital, 41 Brewster Road, Bristol, 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 Bloom Energy intends to file, on or about November 8, 2022, a petition for declaratory ruling with the Council. The petition will request the Council's approval of the location and construction of a 600-kilowatt fuel cell installation and associated equipment. The Facility will be located at Bristol Hospital at 41 Brewster Road in Bristol, Connecticut (the "Site").

The purpose of the proposed Facility is to replace a portion of Bristol Hospital's annual load with a renewable energy source<sup>1</sup> and improve reliability of electrical systems and equipment. 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.

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,

Kristen Grillo

**Senior Permitting Specialist** 

Kristen.grillo@bloomenergy.com

<sup>&</sup>lt;sup>1</sup>Connecticut General Statutes §16-1(a)(26)(A) identifies fuel cells as a "Class I renewable energy source".

### ABUTTING PROPERTY OWNERS

subject parcel

| Property ID | Property Address    | Owner Name                                      | Mailing Address         | Town           | State | Zip   |
|-------------|---------------------|---|-------------------------|----------------|-------|-------|
| 25A-214     | 41 Brewster Road    | Bristol Hospital Inc.                           | 41 Brewster Rd.         | Bristol        | CT    | 06010 |
| 25A-222-1   | 60 Founders Drive   | Ellyssa L. Eror                                 | 60 Founders Dr.         | Bristol        | CT    | 06010 |
| 25A-222-11  | 145 Bradley Street  | Joshua & Nicole Ann Cordero                     | 145 Bradley St.         | Bristol        | CT    | 06010 |
| 25A-222-12  | Bradley Street      | John Gorman                                     | 60 Founders Dr.         | Bristol        | CT    | 06010 |
| 25A-4       | Brewster Road       | The Bristol Hospital                            | 14 Brewster Rd.         | Bristol        | CT    | 06010 |
| 25A-207-1   | Brewster Road       | Bristol Hospital and Health Care Group Inc.     | Brewster Rd.            | Bristol        | CT    | 06010 |
| 25A-181     | 186 Bradley Street  | Elizabeth Ann Gauthier                          | 291 High St.            | Bristol        | CT    | 06010 |
| 25A-207     | Brewster Road       | Bristol Hospital Inc.                           | 41 Brewster Rd.         | Bristol        | CT    | 06010 |
| 25A-196     | Brewster Road       | Bristol Hospital Inc.                           | Brewster Rd.            | Bristol        | CT    | 06010 |
| 25A-197-14  | Condon Road         | HG Property Holdings LLC                        | 41 Brewster Rd.         | Bristol        | CT    | 06010 |
| 75A-194     | Queen Street        | The Bristol Hospital Inc.                       | 8 Brewster Rd.          | Bristol        | CT    | 06010 |
| 25A-123     | 178 Queen Street    | Muharrem Bodlli                                 | 178-180 Queen St.       | Bristol        | CT    | 06010 |
| 25A-122     | 172 Queen Street    | James N. Tardif                                 | 15 Cooper Ave.          | Wallingford    | CT    | 06492 |
| 25A-121     | 166 Queen Street    | Flynn Properties LLC                            | 7820 Scenic Dr.         | Cumming        | ВA    | 30041 |
| 25A-120     | 156 Queen Street    | Mirela Lalaj                                    | 156 Queen St            | Bristol        | CT    | 06010 |
| 25A-119     | 46 Goodwin Street   | Juliana Haeng Cha Kang Choi                     | 15 Copper Beach         | Farmington     | CT    | 06032 |
| 25A-118     | 145 Queen Street    | The Bristol Hospital Inc.                       | 41 Brewster Rd.         | Bristol        | CT    | 06010 |
| 25A-29      | 125 Queen Street    | Glenn Pierce                                    | 60 Donna La.            | Bristol        | CT    | 06010 |
| 25A-34      | 77 Goodwin Street   | Laura M. Carter                                 | 77 Goodwin St.          | Bristol        | CT    | 06010 |
| 25A-35      | 83 Goodwin Street   | Joan Szpak                                      | 83 Goodwin St.          | Bristol        | CT    | 06010 |
| 25A-36      | 91 Goodwin Street   | Banjong Muninnopmas                             | 1221 Lyndon St #15      | South Pasadena | CA    | 91030 |
| 25A-37      | 97 Goodwin Street   | Asifbhai Malek                                  | 97 Goodwin St.          | Bristol        | CT    | 06010 |
| 25A-39      | 105 Goodwin Street  | Lena Darcy                                      | 105 Goodwin St.         | Bristol        | CT    | 06010 |
| 25A-44      | 109 Goodwin Street  | Thomas J. & Thomas G. Thurston                  | 14 Marys La.            | Ridgefield     | CT    | 22890 |
| 25A-98      | 112 Goodwin Street  | Alex Hamzy                                      | 115 Clay St., 1st Floor | Thomaston      | CT    | 06787 |
| 25A-95      | 20 Carleton Place   | Michael G. & Elizabeth M. Hines                 | 20 Carleton Pl.         | Bristol        | CT    | 06010 |
| 25A-96      | 30 Carleton Place   | Thomas J. & Sheree J. Mailhot                   | 30 Carleton Pl.         | Bristol        | CT    | 06010 |
|             |                     | Annette C. Bilodeau & Halley C. Allaire, TR and |                         |                |       |       |
| 25A-97      | 38 Carleton Place   | O/T Irene J. Bilodeau Fam ITT Tr Ind.           | 38 Carleton Pl.         | Bristol        | СТ    | 06010 |
| 25A-215     | 70 Broadview Street | Rickie S. Lassiter                              | 1 Hickory Hill          | Bristol        | СТ    | 06010 |
| 25A-221-C   | 98 Bradley Street   | Rachel & Joseph F. DePaolo                      | 96 Bradley St.          | Bristol        | СТ    | 06010 |

### OFFICIALS

| Name                    | Title  | Mailing Address                        | Town         | State        | Zip        |
|-------------------------|--|--|--------------|--------------|------------|
| William Tong            | Attorney General   | 165 Capitol Ave.                       | Hartford     | CT           | 06106      |
| Katie Dykes             | Commissioner, Dept. of Energy and Environmental Protection | 79 Elm St.                             | Hartford     | כז           | 06106-5127 |
| Marissa Paslick Gillett | Chairman, Public Utilities Regulatory<br>Authority         | 10 Franklin Square                     | New Britain  | ט            | 06051      |
| Dr. Manisha Juthani     | Commissioner, Dept. of Public Health                       | 410 Capitol Ave.                       | Hartford     | ט            | 06134      |
| Susan D. Merrow         | Chair, Council on Environmental Quality                    | 79 Elm St.                             | Hartford     | ט            | 06106      |
| Bryan P. Hurlburt       | Commissioner, Dept. of Agriculture                         | 450 Columbus Blvd., Suite 701          | Hartford     | ט            | 06103      |
| Jeffrey R. Beckham      | Secretary, Office of Policy and                            | 450 Capitol Ave.                       | Hartford     | CT           | 06106      |
|                         | Management   |  |              |              |            |
| Joseph Giulietti        | Commissioner, Dept. of Transportation                      | 2800 Berlin Turnpike                   | Newington    | <del>ل</del> | 06111      |
| David Lehman            | Commissioner, Dept. of Economic and Community Development  | 450 Columbus Blvd.                     | Hartford     | ט            | 06103      |
| Brenda Bergeron         |  | 1111 Country Club Rd.                  | Middletown   | C            | 06457      |
|                         | Deputy Commissioner, Dept. of Emergency                    |  |              |              |            |
| Michelle H Seaguil      | Commissioner Dent of Consumer                              | 450 Columbius Blvd Suite 901           | Hartford     | ٤            | 06103      |
| 300                     | Protection   |  |              | ;            | )          |
| Josh Geballe            | Commissioner, Dept. of Administrative                      | 450 Columbus Blvd.                     | Hartford     | b            | 06103      |
|                         | Services   |  |              |              |            |
| Danté Bartolomeo        | Commissioner, Dept. of Labor                               | 200 Folly Brook Blvd.                  | Wethersfield | C            | 06109      |
| Richard Blumenthal      | Senator  | 706 Hart Senate Office Building        | Washington   | DC           | 20510      |
| Chris Murphy            | Senator  | 136 Hart Senate Office Building        | Washington   | DC           | 20510      |
| John Larson             | U.S. Representative  | 1501 Longworth House Office Building   | Washington   | DC           | 20515      |
| Henri Martin            | State Senator, 31st District                               | Legislative Office Building, Room 3400 | Hartford     | CT           | 06106      |
| Chris Ziogas            | Representative, 79th District                              | Legislative Office Building, Room 4016 | Hartford     | CT           | 06106-1591 |
|                         | Naugatuck Valley Council of Governments                    | 49 Leavenworth St., 3rd Floor          | Waterbury    | כז           | 06702      |
| Jeffrey Caggiano        | Mayor, City of Bristol                                     | 111 North Main St.                     | Bristol      | C            | 06010      |
| Robert Flanagan, AICP   | City Planner   | 111 North Main St.                     | Bristol      | CT           | 06010      |
| Edward Spyros           | Zoning Enforcement Officer                                 | 111 North Main St.                     | Bristol      | CT           | 06010      |
| Zachary Fisk            | Chairman, Inland Wetlands and                              | 111 North Main St.                     | Bristol      | CT           | 06010      |
|                         | Watercourses Agency / Conservation                         |  |              |              |            |
| William Veits           | Chairman, Planning Commission                              | 111 North Main St.                     | Bristol      | را<br>ا      | 06010      |
| Louise Provenzano       | Chair, Zoning Commission                                   | 111 North Main St.                     | Bristol      | CI           | 06010      |
| Jerald Rafaniello       | Chairman, Zoning Board of Appeals                          | 111 North Main St.                     | Bristol      | CT           | 06010      |

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| of Pieces Listed by Sender  |   | Naugatuck Valley  49 Leavenworth S  Waterbury, CT 06                                      | The Hon. Jeffrey ( Mayor, City of Bri 111 North Main S Bristel, CT 06016                       | Robert Flanagan, City Planner 111 North Main S Bristel, CT 06010 | Edward Spyros Zoning Enforcem 111 North Main 8 Bristol, CT 06010                        | Zachary<br>Inland W<br>Conserv  | Bristol, C1 060 William Veits Chairman, Pls 111 North Ma Bristol, CT 06                             |
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|   | Chairman, Zoning Board of Appeals  111 North Marin St.   |                                |                  |                              |
|   | Bristol Hospital Inc. 41 Brewster Rd. Bristol, CT 06010  |                                |                  |                              |
|   | Elyssa L. Eror<br>60 Founders Dr.<br>Bristol, CT 06010   |                                |                  |                              |
|   | Joshua & Nicole Ann Cordero<br>145 Bradley St.<br>Bristol, CT 06010  |                                |                  |                              |
|   | John Gorman<br>60 Founders Dr.<br>Bristel, CT 06010  |                                |                  |                              |
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|   | The Bristol Hospital  |                                |   |                  |                              |
| -   | 14 Brewster Rd.   |                                |   |                  |                              |
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|   | Bristol Hospital and Health Care Group Inc.   |                                |   |                  |                              |
| .2  | Brewster Rd.  |                                |   |                  |                              |
|   | Bristol, CT 06010   |                                |   |                  |                              |
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|   | Elizabeth Ann Gauthier  |                                |   |                  |                              |
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| 5.  | HG Property Holdings LLC  |                                |   |                  |                              |
|   | Bristol, CT 06010   |                                |   |                  |                              |
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| Q.  | The Bristol Hospital Inc.   |                                |   |                  |                              |
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Parcel Airlift

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PS Form **3665**, January 2017 (Page 7 of 10) PSN 7530-17-000-5549

The Bristol Hospital Inc. 41 Brewster Rd. Bristol, CT 06010

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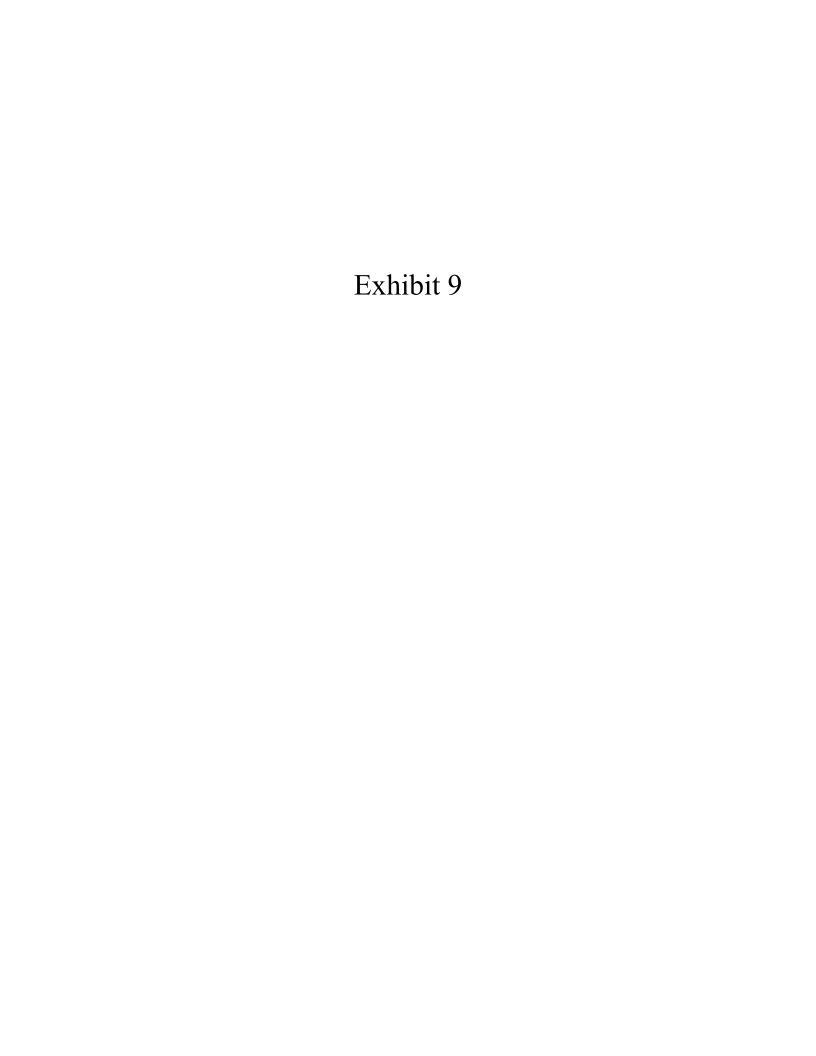
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| 9.  | Joan Szpak<br>83 Goodwin St.<br>Bristel, CT 06010  |  |             |                  |                              |
| 4.  | Banjong Muninnopmas<br>1221 Lyndon St. #15<br>South Pasadena, CA 91030   |  |             |                  |                              |
| 5.  | Asifbhai Malek<br>97 Goodwin St.<br>Bristol, CT 06010  |  |             |                  |                              |
| Ö   | Lena Darcy<br>105 Goodwin St.<br>Bristol, CT 06010   |  |             |                  |                              |
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| Name and Address of Sender  Kristen Grillo c/o All-Points Technology Corp., P.C. 567 Vauxhall St. Ext., Suite 311 Waterford, CT 06385      | Section Number                  | Pirm-specific Identifier  | 2.   | 3.  | 4.  | 2- | 9 |

PS Form **3665**, January 2017 (Page 4 of 16) PSN 7530-17-000-5549

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|                 | Annette C. Bilodeau & Halley C. Allaire, TR and Off Irene J. Bilodeau Fam ITT Tr. Ind. |  |                        |                              |
|                 | 38 Carleton Pl.  |  |                        |                              |
|                 | Bristol, CT 96919  |  |                        |                              |
|                 | Rickie S. Lassiter   |  |                        |                              |
|                 | 1 Hickory Hill<br>Bristol, CT 06010  |  |                        |                              |
|                 |  |  |                        |                              |
|                 | Rachel & Joseph F. DePaolo   |  |                        |                              |
|                 | 96 Bradley St.   |  |                        |                              |
|                 | District Colored   |  |                        |                              |
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|                 |  |  | See                    | See Reverse for Instructions |



From: <u>Jennifer Young Gaudet</u>

To: <u>"RobertFlanagan@bristolct.gov"</u>

Subject: Bloom Energy - proposed fuel cell installation at Bristol Hospital, 41 Brewster Road

**Date:** Friday, September 30, 2022 2:23:00 PM

Attachments: image001.png

Bloom Energy - Bristol Hospital fuel cell.pdf

I am writing on behalf of Bloom Energy in connection with a planned fuel cell installation at Bristol Hospital. Attached are plans depicting the proposed installation, which will consist of two Energy Servers and associated equipment and be fueled by natural gas. As shown, it will be located centrally within the hospital development, near the emergency room entrance.

Bloom will be submitting a petition to the Connecticut Siting Council for approval. In preparation for the filing, we are seeking any comments you or other appropriate City departments may have on the proposed plans.

I am available to discuss the plans or answer any questions you may have. I can be reached by phone at 860 798-7454 or by e-mail.

Thank you.

### Jennifer Young Gaudet



### **JENNIFER YOUNG GAUDET**

Program Manager

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