



December 10, 2019

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 550-kilowatt Fuel Cell Customer Side Distributed Resource at 28 Cross Street, Norwalk, CT

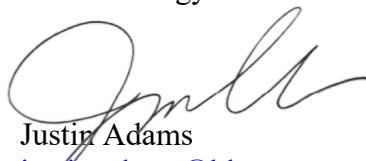
Dear Attorney Bachman:

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 location and construction of a 550-kilowatt fuel cell and associated equipment (the “Facility”). The Facility will be located at 28 Cross Street, Norwalk, CT, the operations center of Altice USA (formerly Cablevision) (the “Site”). Electricity generated by the Facility will benefit Altice USA, and any excess electricity will be exported to the electric grid. The Facility will be fueled by natural gas.

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

Sincerely,
Bloom Energy


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

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

PETITION OF BLOOM ENERGY	:	PETITION NO. _____
CORPORATION FOR A DECLARATORY	:	
RULING FOR THE LOCATION AND	:	
CONSTRUCTION OF A 550-KILOWATT FUEL	:	
CELL CUSTOMER-SIDE DISTRIBUTED	:	
RESOURCE AT 28 CROSS STREET,	:	
NORWALK, CT	:	DECEMBER 10, 2019

PETITION OF BLOOM ENERGY CORPORATION 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”) requests that the Connecticut Siting Council (“Council”) approve by declaratory ruling the location and construction of a customer-side distributed resources project comprised of two (2) ES-5 Bloom Energy Server solid oxide fuel cells and associated equipment (the “Facility”), providing 550 kilowatts (“kW”) (net) of power to the Altice USA (formerly Cablevision) (“Altice”) property located at 28 Cross Street, Norwalk, Connecticut (the “Site”). *See* Exhibits 1A and 1B. The Facility will be installed, maintained and operated by Bloom. It will be owned by a third-party financing source of Bloom under an agreement with Altice.

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

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

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The proposed Facility 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 Protection (“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.

I. COMMUNICATIONS

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

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4353 North First Street
San Jose, CA 95134
Telephone: (408) 543-1500
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San Jose, CA 95134
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Fax: (408) 543-1501
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II. DISCUSSION

A. Project Description and Purpose

The Facility will be a 550 kW customer-side distributed resource consisting of two (2) state-of-the-art Bloom Energy Servers and associated equipment. The Facility will be interconnected to an existing switchboard within the Altice building. *See* Exhibits 1B and 2.

The proposed Facility is a “customer-side distributed resources” project because it will be “a unit with a rating of not more than sixty-five megawatts [located] on the premises of an industrial end user within the transmission and distribution system including, but not limited to, fuel cells . . .” Conn. Gen. Stat. § 16-1(a)(34)(A). Further, in its Final Decision in Docket No.

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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)(20)(A).

The purpose of the proposed project is to replace the average baseload of the Site with a Class I renewable energy source, achieve Altice’s sustainability goals, and improve reliability of electrical systems and equipment. The Facility has been sized to provide at least 98% of the average annual Altice baseload. Exhibit 3. Electricity generated by the Facility will be consumed primarily at the Site, and any excess electricity will be exported to the grid.

B. The Facility

The Facility will consist of two Bloom solid oxide fuel cell Energy Servers, one (1) 262.5 kW ES5-AA2AAA model and one (1) 300 kW ES5-YA1AAA model, and associated equipment to be located near the western boundary of the Site. As shown in Exhibit 2, the fuel cells and associated equipment will be placed on concrete pads that will replace a portion of the paved or landscaped area between the existing building and the adjacent railroad tracks and beside the parking area. The associated equipment includes water deionizers, telemetry cabinets, disconnect switches and utility cabinets. The Facility is enclosed, factory-assembled and tested prior to installation on the Site. See Exhibit 3 for Bloom Energy Server Product Datasheets.

The operational life of the Facility is for the life of the 10-year contract and the solid oxide media in the fuel cells are exchanged at roughly five-year intervals. The Facility, the connections, and associated equipment will be installed in compliance with applicable building, plumbing, electrical, and fire codes. At the conclusion of the 10-year contract, Altice may renew the contract, return the Facility at no cost, or buy the Facility at a fair market value. If the

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

The Facility will be capable of producing 550 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 in accordance with the Eversource interconnection technical requirements. This installation will not have an uninterruptible power module ("UPM") and thus will not have any means to output power in a grid independent capacity at any time. The grid-parallel output will interconnect with the utility power system at the switchboard within the existing building.

Each Energy Server is equipped with a UL-1741 listed inverter set that complies with IEEE-1547 standards for interconnection of inverter-based distributed generation. It is UL Recognized under UL Category QIKH2 and UL File Number E310552. The interconnection will be provided from the existing cabinet within the nearby operations building. The interconnection application for the Facility has been submitted and Eversource has conducted a preliminary screen and provided contingent approval. The impact study agreement and cost determination are pending. The Facility will be fueled by natural gas supplied by Eversource.

The Facility will have extensive hardware, software and operator safety control systems, designed in accordance with American National Standards Institute and Canadian Standards Association for Stationary Fuel Cell Power Systems ("ANSI/CSA"). It is Listed by UL as a

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“Stationary Fuel Cell Power System” to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102. The Facility would be controlled remotely and have internal sensors that continuously monitor system operation. If safety circuits detect a condition outside normal operating parameters, the fuel supply is stopped and individual system components are automatically shut down. A Bloom Energy Remote Monitoring Control Center (RMCC) operator can also remotely initiate any emergency sequence. An emergency stop alarm initiates an automatic shutdown sequence that puts the system into “safe mode” and causes it to stop exporting power. Bloom operators can assess different situations and take the necessary actions to mitigate impacts on the fuel cells during maintenance work, shutdowns or outages and enable them come back online smoothly and efficiently when the disruption is completed. In addition, Altice personnel are provided with an Emergency Response Plan. Exhibit 4.

The Facility will be installed in accordance with NFPA 853¹. This standard provides fire prevention and fire protection requirements for safeguarding life and physical property associated with buildings or facilities that employ stationary fuel cell systems of all sizes. The risk of fire related to the operation of the Facility is therefore very low. Furthermore, in the Facility, 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. Before commissioning, the fuel lines (pipe) are cleaned in accordance with Conn. Gen. Stat. Section 16-50ii².

¹ Standard for the Installation of Stationary Fuel Cell Power Systems, 2015 Edition

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

C. Existing Environment

i. The Site

The Facility would be installed at 28 Cross Street, Norwalk, CT. The Facility will be constructed on the 1.88-acre parcel that houses the Altice customer service center and warehouse. The Site is in the central portion of the City, within the commercial corridor along Route 7 and U.S. Route 1. The property is zoned B2, Business No. 2. Properties to the west, south and east are zoned for industrial and commercial use. Areas to the north and northeast are high density residential development. A rail line runs abuts the property to the west. The closest residential property is located approximately 70 feet to the west/southwest of the Facility.

The Facility was strategically placed to take advantage of the existing utility functions along the west boundary of the property adjacent to the rail line while minimizing impact on Altice's existing operations at the Site.

ii. Wildlife and Habitat

A review of the publicly available Natural Diversity Database (NDDB) June 2019 data shows that there are no known occurrences of state-listed species within ¼ mile of the proposed Site. *See Exhibit 6.*

iii. Wetlands and Watercourse

There are no identified wetlands or watercourses within the proposed location of the Facility. The host parcel is fully developed, with a multi-story commercial building and paved parking. *See Exhibit 7.*

iv. Cultural Resources

The Facility is proposed in a previously disturbed area and the construction and operation of the Facility will therefore not have a substantial adverse effect on cultural (archaeological and historical) resources.

v. 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”) has shown the Facility would be located within Zone X, an area of Minimal Flood Hazard. *See* Exhibit 8.

The Site was also reviewed for proximity to Aquifer Protection Areas. According to GIS data provided by CTDEEP, the closest Aquifer Protection Area is located in Norwalk approximately .77 mile to the north and northwest of the proposed Facility.

D. Environmental Effects and Mitigation

i. Natural Gas Desulfurization Process

The first step in the production of electricity in a Bloom Energy server is desulfurization – the removal of the sulfur compounds that have been added to the natural gas as an odorant by the natural gas suppliers. This step occurs in the desulfurization unit (“Desulf Unit”), a canister that contains a filter made for this purpose. Sulfur is not “produced” in this process, but is separated from the natural gas in which it was contained. In this process, trace levels of sulfur oxides and other naturally occurring elements may also absorb to the filter.

The desulfurization process takes place entirely within the Desulf Unit. Because they are built to hold natural gas, their structural integrity is essential. That integrity is assured by around the clock monitoring of the Energy Servers to detect any leak. Were there a leak, the Server

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(including the desulfurization operation) would shut down automatically. The structural integrity and leak prevention continue after the desulfurization canisters are removed from service. At that point, the entry and exit points for the natural gas automatically seal shut. The desulfurization canister remains sealed and is not opened at the Site, or anywhere in the State of Connecticut. No gaseous substances are released or vented at any point during the desulfurization process.

The Desulf Unit contains a composite copper catalyst that includes copper. This catalyst removes non-hazardous sulfur odorants from the natural gas feedstock. The sulfur, if not removed, would rapidly and irreversibly damage the fuel cells, bringing the production of electricity to a halt. Although the Desulf Unit is not intended to capture benzene or any other hazardous material, a small amount of benzene adheres to the adsorbent in the Unit.

The Desulf Units are periodically removed from service and replaced with Units containing fresh composite copper catalyst. Upon disconnection, the Desulf Unit automatically seals shut—to assure there is no release of natural gas. The Desulf Units are certified by the U.S. Department of Transportation (DOT) as meeting the hazardous waste shipment standards of the United Nations, DOT, IATA, ICAO and IMO Hazardous Materials Distribution and Packaging requirements.

The spent units are transported to ShoreMet, L.L.C. (ShoreMet) in Indiana, a facility 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.

The Indiana Department of Environmental Management (IDEM) reviewed ShoreMet's management of Bloom's spent desulfurization units. IDEM issued a letter concluding that the spent desulfurization units sent to ShoreMet are excluded from hazardous waste requirements

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because the contents (i.e., spent media) are used to make copper products (Code of Federal Regulation, title 40, section 261.2(e)(1)(i)). The US Environmental Protection reviewed IDEM's findings and agreed. The California Department of Toxic Substances Control (DTSC) reviewed these decisions and concluded that the Desulf Units are excluded recyclable material (ERM) under California Health and Safety Code, section 25143.2, subsection (b). There are a number of conditions that apply to this exemption; Bloom satisfies those conditions.

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.

With respect to water discharges, the Facility is designed to operate without water discharge under normal operating conditions. There are no connections or discharge points to the proposed Facility. Additionally, the Facility would use no water during normal operation beyond a 192-gallon injection at start up.

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, 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 Facility³. Even though the fuel cell systems are exempt from the emissions requirements, Bloom Energy fuel

³ See Conn. Agencies Regs. §§ 22a-174-42(b) and (e).

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cells do meet the emissions standards of Section 22a-174-42. Per Section 22a-174-42(e)(1)(A) a certification by the California Air Resources Board (CARB) pursuant to Title 17, sections 94200 through 94214 of the California Code of Regulations meets the requirements of Conn. Agencies Regs. § 22a-174-42. The Bloom Energy fuel cells are certified under the CARB distributed generation program. A current list of certified applications is provided on the CARB's distributed generation certification website (<http://www.arb.ca.gov/energy/dg/eo/eo-current.htm>).

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) program⁴, 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 CH₄, SF₆, HFC or PFC emissions. The CH₄ is broken down in the reforming process. Reforming is the type of process where if you have sufficient catalyst, the reaction can go all the way to completion. That is the case for the Bloom Energy Server. The fuel is reformed in the hot box – with a significant excess catalyst for reaction.

Table 1: Connecticut Thresholds for Greenhouse Gases

Emission Type	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 (CO ₂) ⁵	679-833 lbs/MWh	Not Listed

⁴ Sec. 16-244t

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

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The proposed Facility will ultimately displace less efficient fossil fueled marginal generation on the ISO New England system. Based upon US Environmental Protection Agency (EPA) “eGrid” data the proposed facility is expected to reduce carbon emissions by more than 25% while essentially eliminating local air pollutants like NOx, SOx, and particulate matter.

iii. Sound Levels

The nearest residential parcel boundary is to the southwest of the host property. At Bloom’s request, Cavanaugh Tocci Associates evaluated the environmental sound impact associated with the proposed Facility. The evaluation concluded that, “[B]ased on our review of the modeling results, it is our opinion that sound produced by the proposed fuel cell installation will comply with the most stringent requirements of both the state and local noise regulations.”

Exhibit 9.

iv. Visual Effects

The visual effect of the Facility will be minimal. The Facility will be installed near the property boundary that abuts the rail line in an area that is already developed. The building will screen a portion of the Facility from the east. The addition of the Facility is consistent with the existing development on the property.

E. Project Construction and Maintenance

Bloom anticipates construction to start in the second quarter of 2020 with 12-14 weeks of total construction time (4 weeks of site prep, 4 weeks of installation, and 4 weeks of commissioning). Bloom will comply with the construction hour requirements of the City’s Noise Ordinance (Monday – Friday, 7 am – 8 pm, Saturday 8 am – 8pm, Sunday 9 am – 8 pm).

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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 effect 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.

III. COMMUNITY OUTREACH

Bloom has provided notice of this petition via certificate of mailing 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)⁶. A copy of the notice letter, a service list and documentation of mailing are provided in Exhibit 10 and the corresponding abutters map is provided in Exhibit 11.

A representative of Bloom discussed the proposed Facility, including the change of two parking spaces to compact cars only, with Bryan Baker of the City's Department of Planning and Zoning. Mr. Baker reviewed the plans and had no requested changes or concerns. *See Exhibit 12.*

IV. BASIS FOR GRANTING OF THE PETITION

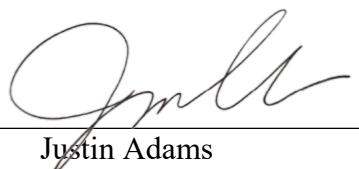
Under Conn. Gen. Stat. § 16-50k(a), the Council is required to approve by declaratory ruling the construction or location of a customer-side distributed resources project or facility with a capacity of not more than 65 MW, as long as the facility meets DEEP air and water quality standards. The proposed Facility meets each of these criteria. The Facility is a “customer-side distributed resources” project, as defined in Conn. Gen. Stat. § 16-1(a)(34)(A), because the Facility is “a unit with a rating of not more than sixty-five megawatts [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 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.

⁶ Conn. Agencies Regs. § 16-50j-40(a) requires that “[p]rior to submitting a petition for a declaratory ruling to the Council, the petitioner shall, where applicable, provide notice to each person other than the petitioner appearing of record as an owner of property which abuts the proposed primary or alternative sites of the proposed facility, each person appearing of record as an owner of the property or properties on which the primary or alternative proposed facility is to be located, and the appropriate municipal officials and government agencies [listed in Section 16-50l of the Connecticut General Statutes].”

V. CONCLUSION

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

Respectfully submitted,
Bloom Energy Corporation

By: 

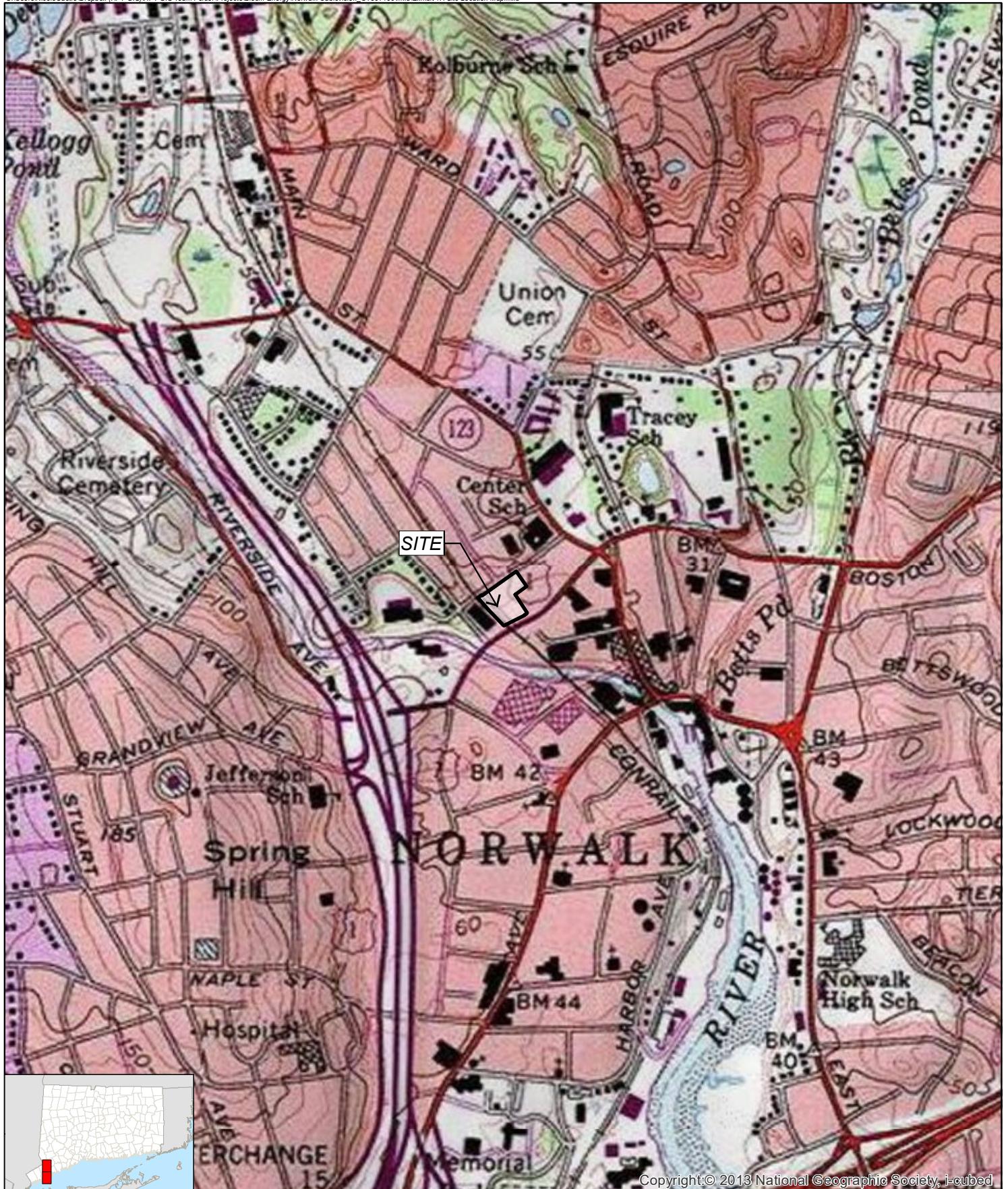
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EXHIBITS

- Exhibit 1A: Site Location Map
- Exhibit 1B: Site Schematic
- Exhibit 2: Site and Permit Plans
- Exhibit 3: Bloom Energy Server System Background Documentation
- Exhibit 4: Emergency Response Plan
- Exhibit 5: Photos of the Proposed Location
- Exhibit 6: DEEP Coastal Boundary, Natural Diversity Data Base (NDDB), Critical Habitats
- Exhibit 7: DEEP Wetlands and Watercourse Map
- Exhibit 8: FEMA Map
- Exhibit 9: Sound Model
- Exhibit 10: Notice Pursuant to Conn. Agencies Regs. § 16-50j-40(a)
- Exhibit 11: Abutters Map
- Exhibit 12: Municipal Consultation

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Exhibit 1A



Legend

 Site

Exhibit 1A
Site Location Map

Proposed Bloom Energy Facility
Altice USA - Cablevision Property
28 Cross Street
Norwalk, CT 06851

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1,000 500 0 1,000
Feet

Map Notes:

Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps:

Norwalk North (1971) and Norwalk South (1984), CT

Map Scale: 1:12,000

Map Date: December 2019

 **ALL-POINTS**
TECHNOLOGY CORPORATION

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Exhibit 1B



Legend

- Site
- Project Area
- Gas Supply Line
- Approximate Assessor Parcel Boundary (CTDEEP)



Map Notes:

Base Map Source: 2016 Aerial Photograph (CTEDC)

Map Scale: 1 inch = 100 feet

Map Date: December 2019

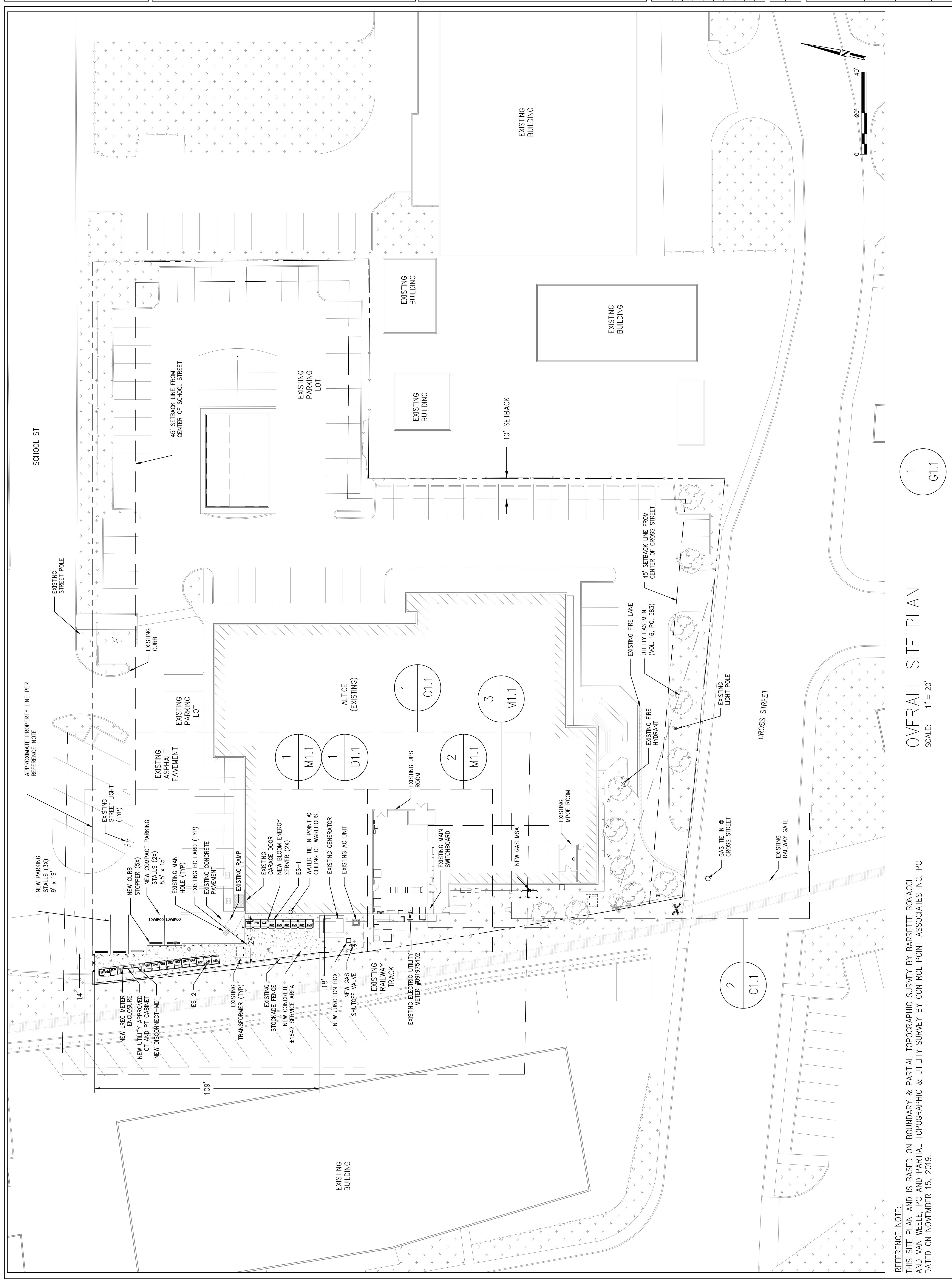
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**Exhibit 1B
Site Schematic**

Proposed Bloom Energy Facility
Altice USA - Cablevision Property
28 Cross Street
Norwalk, CT 06851

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ALL-POINTS
TECHNOLOGY CORPORATION

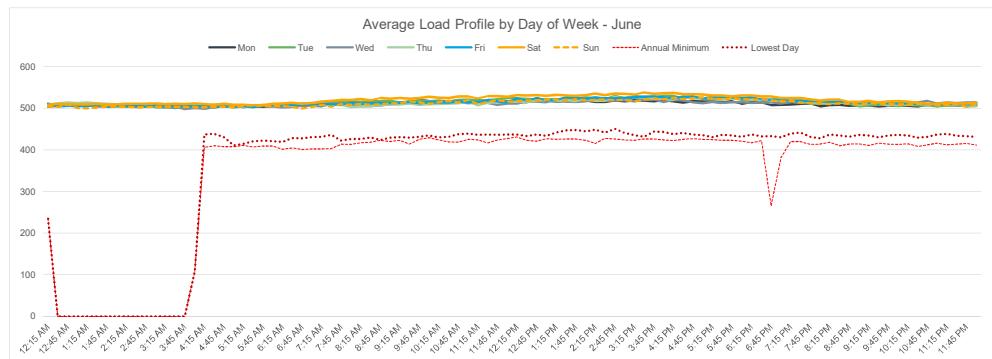
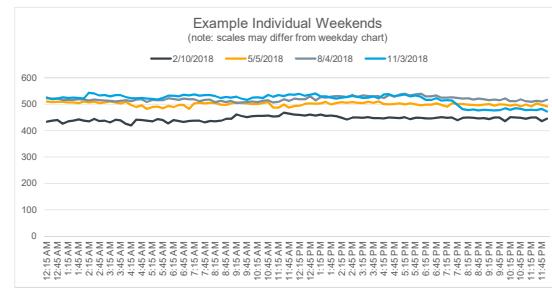
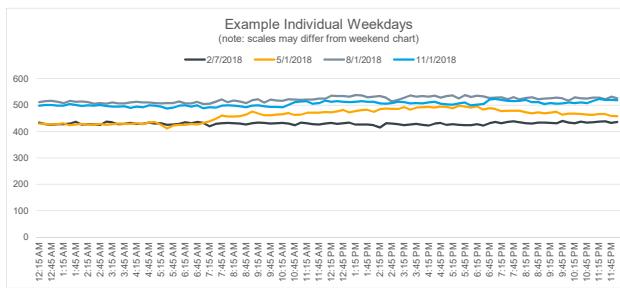
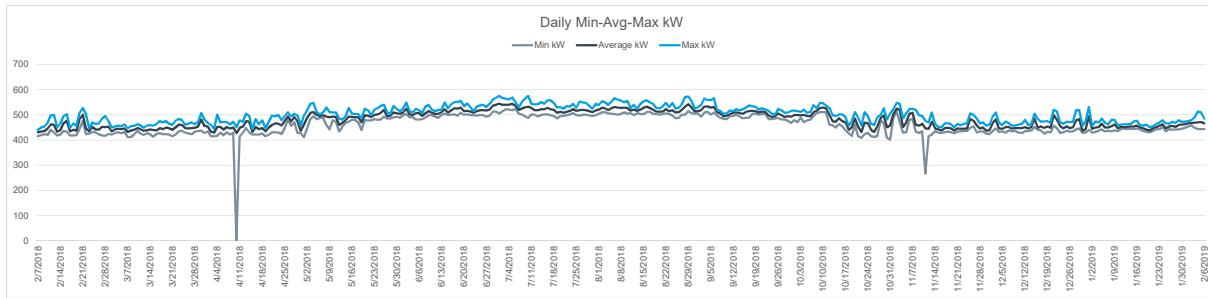
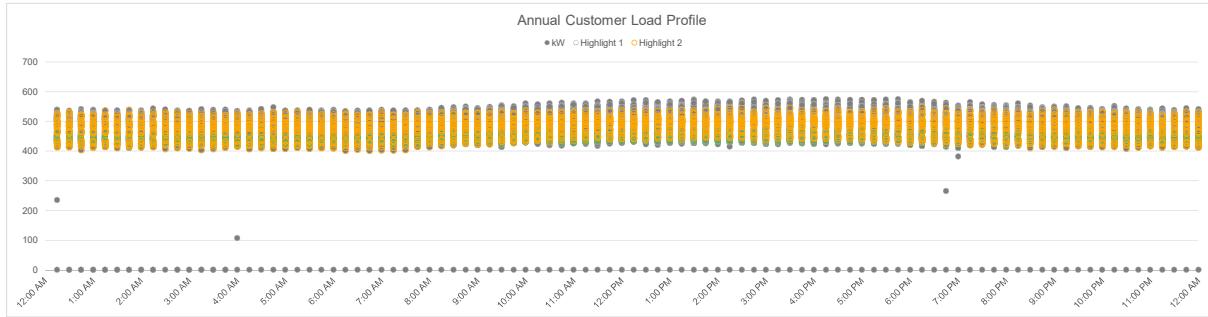
Exhibit 2



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Exhibit 3

INPUTS		SIZING SUMMARY	
Customer Name	Alice	Total Days of Complete, Non-Zero Data	363
Site Name	Nonwalk CT	Annual Load Factor	99%
Select Utility	EVRC-CT	Daily Load Factor	99%
Enter Tariff (Include Primary, Secondary, etc.)	EVRC-CT 5¢-5¢	Total Customer Usage	4,195,298 kWh
If Other, Input Tariff	0	Average Hourly kW	480 kW
Utility Account Number	458253002	Average Daily Max Demand	502 kW
Meter Number	891975402	Absolute Minimum kW	0 kW
DA Vintage	0	Recurring Minimum Baseload	421 kW
Supply Rate	\$0.000	Average Baseload	465 kW
Gas Utility	0	Proposed System Size*	550 kW
NOTES			
		Battery Analysis Results:	
		Battery kW	
		Battery kWh	
		System Configuration:	
		#VALUE!	





Energy Server 5

Clean, Reliable, Affordable Energy



CLEAN, RELIABLE POWER ON DEMAND

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

INNOVATIVE TECHNOLOGY

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

ALL-ELECTRIC POWER

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

CONTROLLED AND PREDICTABLE COST

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

About Bloom Energy

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

Headquarters:
Sunnyvale, California

For More Information:
www.bloomenergy.com

Energy Server 5

Technical Highlights (ES5-YA1AAA)	
Outputs	
Nameplate power output (net AC)	300 kW
Base load output (net AC)	300 kW
Electrical connection	480 V, 3-phase, 60 Hz
Inputs	
Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water	None during normal operation
Efficiency	
Cumulative electrical efficiency (LHV net AC)*	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh
Emissions	
NOx	< 0.01 lbs/MWh
SOx	Negligible
CO	< 0.05 lbs/MWh
VOCs	< 0.02 lbs/MWh
CO ₂ @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas
Physical Attributes and Environment	
Weight	13.6 tons
Dimensions (variable layouts)	14' 9" x 8' 8" x 7' 0" or 29' 4" x 4' 5" x 7' 5"
Temperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Noise	< 70 dBA @ 6 feet
Codes and Standards	
Complies with Rule 21 interconnection and IEEE1547 standards	
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards	
An Energy Server is a Stationary Fuel Cell Power System. It is Listed by Underwriters Laboratories, Inc. (UL) as a 'Stationary Fuel Cell Power System' to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102.	
Additional Notes	
Access to a secure website to monitor system performance & environmental benefits	
Remotely managed and monitored by Bloom Energy	
Capable of emergency stop based on input from the site	

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

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Energy Server 5

Clean, Reliable, Affordable Energy



CLEAN, RELIABLE POWER ON DEMAND

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

INNOVATIVE TECHNOLOGY

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

ALL-ELECTRIC POWER

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

CONTROLLED AND PREDICTABLE COST

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

About Bloom Energy

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

Headquarters:
Sunnyvale, California

For More Information:
www.bloomenergy.com

Energy Server 5

Technical Highlights (ES5-AA2AAA)	
Outputs	
Nameplate power output (net AC)	262.5 kW
Base load output (net AC)	250 kW
Electrical connection	480 V, 3-phase, 60 Hz
Inputs	
Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water	None during normal operation
Efficiency	
Cumulative electrical efficiency (LHV net AC)*	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh
Emissions	
NOx	< 0.01 lbs/MWh
SOx	Negligible
CO	< 0.05 lbs/MWh
VOCs	< 0.02 lbs/MWh
CO ₂ @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas
Physical Attributes and Environment	
Weight	13.6 tons
Dimensions (variable layouts)	14' 9" x 8' 8" x 7' 0" or 29' 4" x 4' 5" x 7' 5"
Temperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Noise	< 70 dBA @ 6 feet
Codes and Standards	
Complies with Rule 21 interconnection and IEEE1547 standards	
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards	
An Energy Server is a Stationary Fuel Cell Power System. It is Listed by Underwriters Laboratories, Inc. (UL) as a 'Stationary Fuel Cell Power System' to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102.	
Additional Notes	
Access to a secure website to monitor system performance & environmental benefits	
Remotely managed and monitored by Bloom Energy	
Capable of emergency stop based on input from the site	

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

Bloomenergy®

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

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Exhibit 4



Fire Prevention and Emergency Planning – Grid Parallel

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

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 - 7.2 Flood
8. Utility Outage
9. Good Housekeeping and Maintenance
 - 9.1 Good Housekeeping
 - 9.2 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 mode and causes it to stop exporting power. If you have questions about any of these safety features, please contact Bloom Energy.

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

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



Figure 1: Emergency Power Off Button

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



Figure 2: Electrical Disconnect

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



Figure 3: Manual Natural Gas Valve

Site map:

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

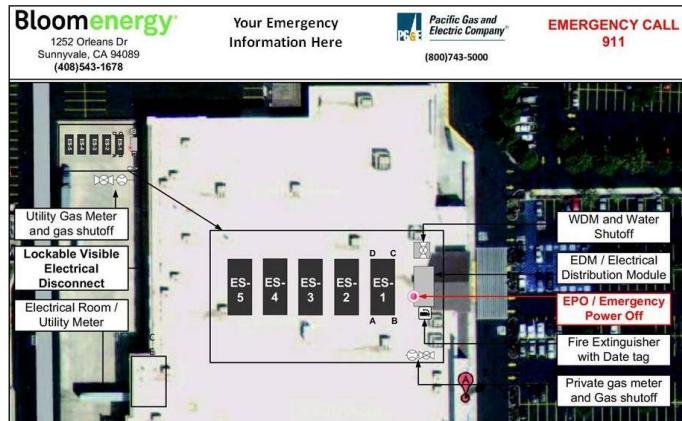


Figure 4: Sample Site Map

Manual controls:

- Clearly marked emergency stop button labeled —Fuel Cell Emergency Shut 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)

Electrical hazard and mitigation:

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

Mechanical hazard and mitigation:

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

Material hazard mitigation:

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

3. EMERGENCY NOTIFICATION PROCEDURES

Life-Threatening Emergencies

To report life-threatening emergencies, immediately call:

Fire:	911
Ambulance:	911
Police:	911

Conditions that require automatic emergency notification include:

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

Non-Life-Threatening Emergencies

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

When you report an emergency, give the following information:

- Exact nature of the emergency (describe as clearly and accurately as possible).
- Exact location (i.e., address, building, floor, area, department, etc.).
- Telephone number from which you are calling.
- Your full name.
- ***Do not hang up***, as additional information may be needed.

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

- Summary of any violation

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

4. FIRE OR SMOKE PROCEDURES

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

If you discover a fire or smoke:

1. Activate the nearest fire alarm if not activated already.
2. Activate the fuel cell Emergency Stop if possible.
3. Shut off the fuel cell installation natural gas line if possible.
4. If the fire is small and does not pose an immediate risk to personal safety, you may attempt to extinguish it with a portable fire extinguisher **only if trained to do so**.
5. Avoid using water on electrical fires.
6. Report every fire, regardless of size, immediately. Smoke or the smell of smoke should be reported.
 - From a safe location dial **911**.
 - Report the incident to the local security safety center.

5. MEDICAL EMERGENCY PROCEDURES

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

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

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

Life-Threatening Medical Emergency

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

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

Non-Life-Threatening Medical Emergency

1. Remain calm.
2. Report the incident to the local security safety center.
3. Do not move the victim unless it is absolutely necessary.
4. Call out for personnel trained in first aid.
5. Ask someone to bring the area first aid kit.
6. If the victim requires further medical attention, then direct them to the nearest approved medical clinic or hospital – Contact Security or Human Resources for assistance if needed.
7. The injured employee's supervisor/manager is responsible for ensuring injury forms are properly filled out. Complete the forms within 24 hours of incident and submit to the injury reporting system for follow-up. Follow company protocols.

6. MATERIALS RELEASE PROCEDURES

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

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

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

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

7. NATURAL DISASTERS AND SEVERE WEATHER

7.1 Earthquake

This section provides information and procedures for earthquake emergencies.

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

The natural gas supply line has an external, manual shut-off valve that should be activated if it is safe to do so. This valve will be labeled, "Notice – Fuel Cell Gas Shut

Off". The natural gas line will be labeled with the word "gas" on a yellow background with an arrow pointing in the direction of flow.

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

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

7.2 Flood

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

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

Precautions to follow after a flood:

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

8. UTILITY OUTAGE

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

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

Before a Planned Outage

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

During a Utility Power Loss

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

9. GOOD HOUSEKEEPING AND MAINTENANCE

9.1 Good Housekeeping

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

- What to do if you smell gas:
 - Do not try to light any appliance
 - Do not touch any electrical switch; do not use any phone in the area
 - Leave the area immediately
 - Immediately call your gas supplier. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department
- Notify Bloom Energy Remote Monitoring Control Center at 1-408-543-1678 of any condition that would impair the safety of the fuel cell installation so that mitigation measures could be determined and placed into effect.
- Prohibit smoking within the area of the fuel cell installation. Bloom Energy will furnish No Smoking signs for the area.
- Ensure only Bloom Energy Service Providers are permitted access inside the system.
- Keep the area around the fuel cell installation clear for ten feet in all directions, for safety and ease of maintenance.
- Keep the area around the fuel cell power system clear and free of combustible materials, gasoline, and other flammable vapors and liquids.
- Shut the system down and call Bloom Energy immediately if you suspect a fuel line rupture.
- **Never enclose an operating system** in a tarp, tent, shed, or other structure that would allow air to become trapped. This system runs on natural gas, and produces trace amounts of CO and CO₂. The amounts of these gases are safe for normal outdoor operation but could gather in an enclosed place.
- Do not block or obstruct air openings on the fuel cell power system. This system requires air flow in order to operate.

- Do not use this fuel cell power system if any part has been under water. Immediately call qualified service personnel to inspect the fuel cell power system and to replace any functional part which has been under water.
- Please contact Bloom Energy at 408-543-1678 with as much advance notice as possible if you plan, detect, or suspect a prolonged Internet outage.
- The Bloom Energy Field Service team will periodically clean the equipment; do not spray with pressurized hoses.

9.2 Maintenance

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

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

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

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

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

10. TRAINING

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

Exhibit 5



Exhibit 6



Exhibit 6
CTDEEP Coastal Boundary, NDDB, & Critical Habitats

Proposed Bloom Energy Facility
 Altice USA - Cablevision Property
 28 Cross Street
 Norwalk, CT 06851

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Exhibit 7

**Legend**

- █ Site
- █ Project Area
- Gas Supply Line
- Approximate Assessor Parcel Boundary (CTDEEP)

- ██ CTDEEP Wetlands
- ~~~~~ CTDEEP Watercourse
- ~~~~~ CTDEEP Waterbody



100 50 0 100
Feet

Map Notes:

Base Map Source: 2016 Aerial Photograph (CTECO)

Map Scale: 1 inch = 100 feet

Map Date: December 2019

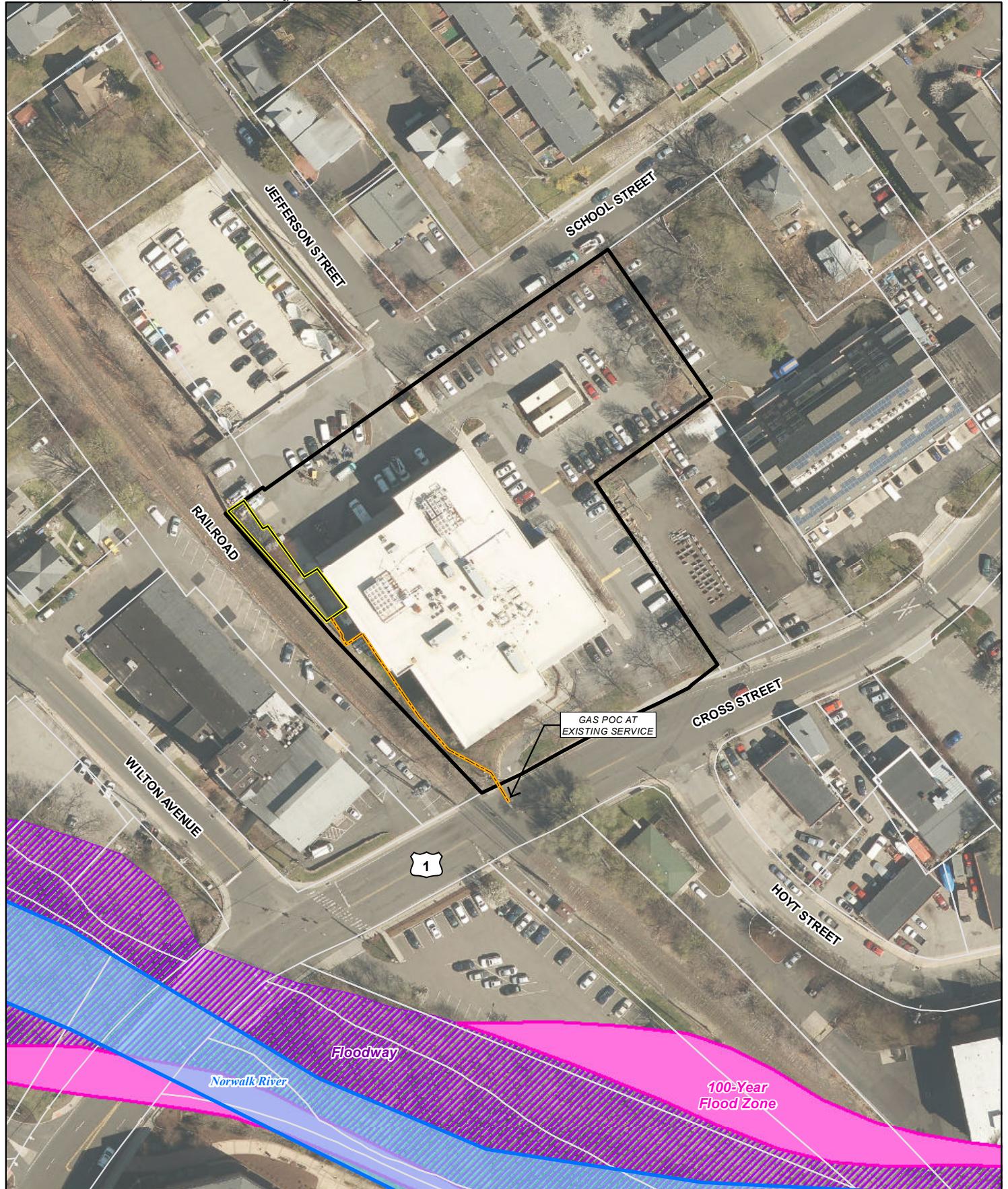
Exhibit 7

CTDEEP Wetland and Watercourses

Proposed Bloom Energy Facility
Altice USA - Cablevision Property
28 Cross Street
Norwalk, CT 06851

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Exhibit 8



Legend

- Site
- Project Area
- Gas Supply Line
- Approximate Assessor Parcel Boundary (CTDEEP)
- CTDEEP Watercourse

- CTDEEP Waterbody
- FEMA Flood Zones (FEMA NFHL)**
 - 100-Year Flood Zone
 - 500-Year Flood Zone
 - Floodway



100 50 0 100
Feet

Map Notes:
Base Map Source: 2016 Aerial Photograph (CTECO)
Map Scale: 1 inch = 100 feet
Map Date: December 2019

Exhibit 8 FEMA Flood Zones

Proposed Bloom Energy Facility
Altice USA - Cablevision Property
28 Cross Street
Norwalk, CT 06851

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Exhibit 9

December 6, 2019

Mr. Justin Adams
BloomEnergy - Connecticut

Justin.Adams@bloomenergy.com

SUBJECT: Environmental Sound Evaluation
Fuel Cell Installation
Altice, Norwalk, CT

Dear Justin,

Cavanaugh Tocci Associates has evaluated environmental sound impact associated with the proposed Bloom Energy fuel cell installation at 28 Cross Street, in Norwalk, Connecticut. The objectives of this evaluation were:

- To quantify and characterize existing background sound in the community surrounding the project,
- To estimate the acoustic impact of the proposed project in the surrounding community.

Results of the evaluation are summarized herein. Appendix A of this report is a glossary of relevant acoustic terminology.

Existing Background Sound

Sound is a feature of all environments. Sound is only objectionable when it is inconsistent with its environment; by being either too loud or by being distinctive in character (i.e. tonally or temporally varying). The goal of acoustical design is to render facility noise consistent with the level and character of other sounds in the environment. To this end, the following environmental noise analysis evaluates sound produced by the proposed Project in light of existing environmental sound levels.

An environmental sound survey was conducted to quantify and characterize the existing acoustic environment in the vicinity of the project site. To document typical background sound levels in the project area, the sound monitoring program consisted of continuous sound monitoring for a weeklong period (168-hours) starting on Wednesday, November 13, 2019 at 12:00 noon. The results of the survey allow both quantitative and qualitative analyses of the acoustic environment surrounding the Project. For this survey one sound monitor was located near the closest residential property boundary southwest of the proposed installation. Figure 1 is an aerial photograph of the site that indicates the sound monitoring location.

Sound levels were monitored using a Rion NL52 sound level meter outfitted with a $\frac{1}{2}$ inch electret microphone and windscreen. The instrument was calibrated before and after the measurement period using a Larson Davis CAL-200 acoustical calibrator. These instruments and their use conform to ANSI S1.4 for Type 1 precision sound measurement instrumentation and have current calibration certificates traceable to National Institute of Standards and Technology (NIST).

For this study, the sound monitor was programmed to record the following hourly A-weighted and one-third octave band environmental noise descriptors:

- Maximum and minimum sound levels (L_{max} , L_{min})
- Percentile sound levels (L_{99} , L_{90} , L_{50} , L_{10} , L_{01})
- Equivalent sound level (L_{eq})

Figure 2 presents selected results of the environmental sound survey. Currently background sound in this area is dominated by rooftop equipment on nearby commercial facilities and local and distant traffic. In addition, regular train activity on the adjacent rail line produces significant transient sounds associated with trains passing by the site. The data indicates that hourly background sound levels range between 48 dBA and 58 dBA with the lowest levels occurring during the early morning hours when local traffic is at a minimum.

Environmental Sound Regulations

There are two regulations that are pertinent with respect to sound produced by the proposed Project. These are the Connecticut Regulations for the Control of Noise, which are enforced by the Connecticut Department of Energy and Environmental Protection, and City of Norwalk Noise Ordinance. The following briefly discusses the applicable aspects of these regulations.

State of Connecticut Noise Regulation

The State of Connecticut Noise Regulation (Section 22a-69-1 to 7.4) defines sound level limits for environmental sound produced by the Project. These limits are based on both emitter and receptor land use classifications, and are listed below in Table 1:

Table 1: Connecticut Regulations for the Control of Noise Sound Level Limits (dBA)

Emitter Class	Receptor Class			
	C	B	A/Day	A/Night
C	70	66	61	51
B	62	62	55	45
A	62	55	55	45

Definitions

In the above table, day is defined as the time interval 7:00 a.m. to 10:00 p.m. Night is defined as the time interval 10:00 p.m. to 7:00 a.m. Noise Zone Classifications are based on the actual use of the land. Where multiple land uses exist on the same property, the least restrictive limits apply.

- A Class A noise zone is land generally designated for residential use or areas where serenity and tranquility are essential to the intended use.
- A Class B noise zone includes land uses generally of a commercial nature.
- A Class C noise zone includes uses generally of an industrial nature.

Exceptions and Other Limit Provisions

Section 22a-69-3.3 Prominent Discrete Tones

To offset the undesirable nature of tonal sound in the environment, the regulation penalizes sources of prominent, audible discrete tones. If a facility produces such sounds, the applicable limits in Table 2 are reduced by 5 dBA. In its definitions (Section 22a-69-1.2), the regulation defines a method for identifying prominent discrete tones based on measuring one third octave band sound levels.

Section 22a-69-3.7 High Background Noise Areas

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

City of Norwalk Noise Regulations

Chapter 68 of the Code of the City Norwalk is a noise ordinance. The definitions and limits found in this regulation are nearly identical to the state regulations.

Facility Acoustic Requirements

Our interpretation of the above referenced regulations follows:

- The Fuel Cell installation is located in a commercial zone and should be classified as a Class B emitter.
- The fuel cell installation will produce sound continuously during daytime and nighttime hours. As such, where the regulations provide more stringent limits for nighttime operation, these will apply.

- Sound produced by the fuel cell facility is not expected to contain prominent discrete tones as defined by the regulation.
- The nearest property boundary is southwest of the proposed installation. At this boundary there are both commercial and residential land uses.
- The lowest background sound level ($LA_{90\text{ 1-hour}}$) measured at this site during the baseline sound survey was 48 dBA. Since this level exceeds the nighttime limit of 45 dBA for residential land uses, the nighttime limit should be raised by 5 dBA to 53 dBA (Section 22a-69-3.7 of the state noise regulation).

Facility Sound Analysis

Facility related sound impacts that are associated with equipment at the proposed Project have been calculated using CadnaA environmental sound modeling software (Version 2018 DataKustic GmbH). The CadnaA sound modeling software uses algorithms and procedures described in International Standard ISO 9613-2:1996 "Acoustics- Attenuation of sound during propagation outdoors – Part 2: General method of calculation". This standard and its associated methodology are the most universally accepted approach for environmental sound modeling of industrial and transit sound sources. The methodology described in this standard provides estimates of A-weighted and octave band sound levels for meteorological conditions that are favorable for the propagation of sound (downwind with a wind speed of 1-5 meters/sec). This methodology is also valid for sound propagation under well-developed moderate ground-based temperature profile inversions, which commonly occur on clear calm nights.

The analysis is based on source sound emission data derived from measurements performed near similar fuel cell equipment located in Cambridge, Massachusetts. Figure 3 presents the results of the acoustic modeling. The results indicate a maximum sound level of 57 dBA at the nearest commercial receptor. At this location the sound level limit is 62 dBA (Class B emitter and Class B receptor). At the nearest residential receptor, a maximum sound level of 47 dBA is estimated. At this location the most stringent nighttime limit is 53 dBA (adjusted from 45 dBA to 53 dBA based on pre-existing background sound levels).

Conclusion

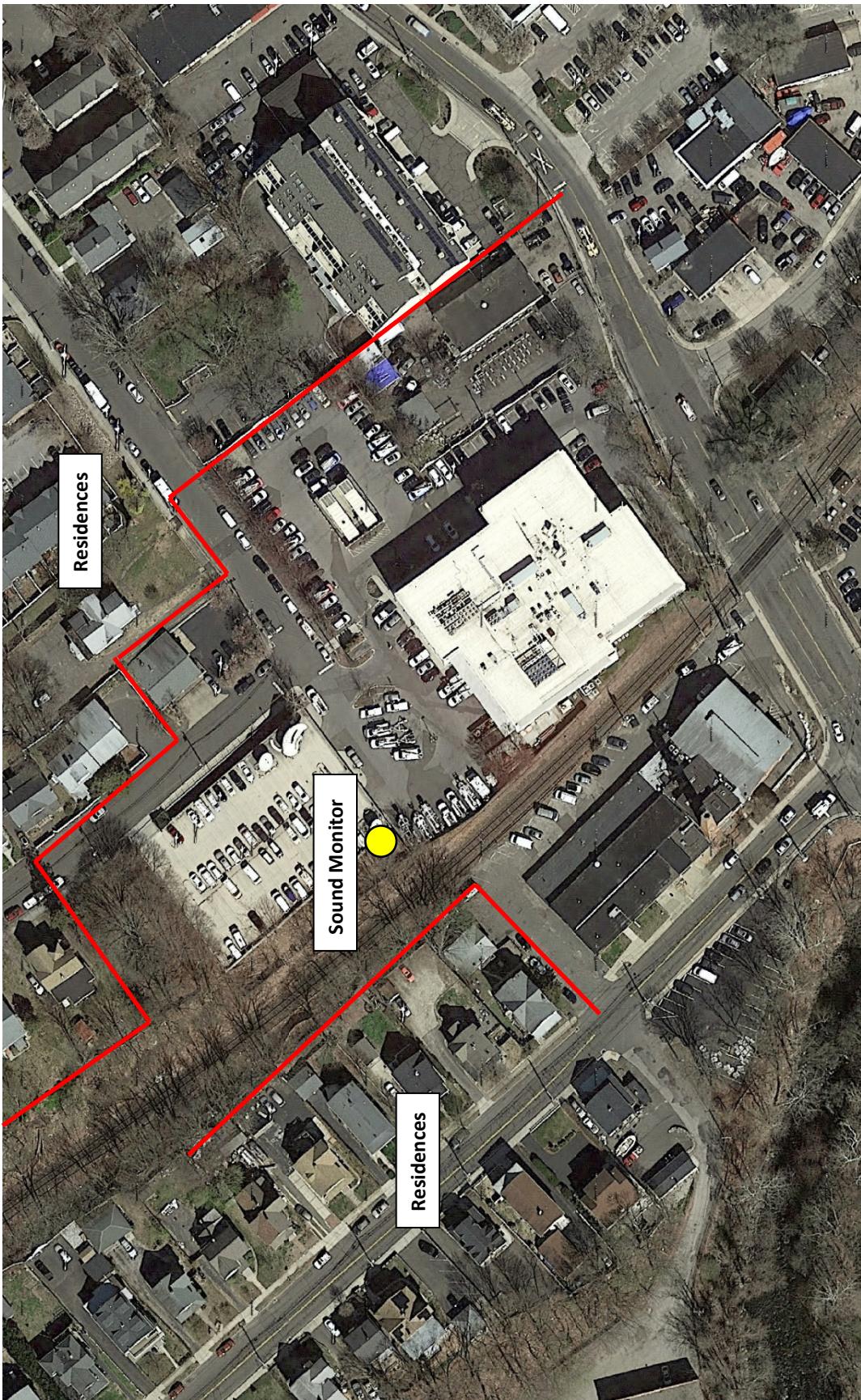
Based on our review of the modeling results, it is our opinion that sound produced by the proposed fuel cell installation will comply with the most stringent requirements of both the state and local noise regulations.

Sincerely,
CAVANAUGH TOCCI



Douglas H. Bell
19270/Fuel Cell - Altice - Norwalk CT - Sound Evaluation.docx

FIGURES



Aerial Photograph of Project Site Indicating Sound Monitoring Location

Figure 1

Sound Levels Measured at 28 Cross Street - Adjacent to Nearest residence (SM-1)

Norwalk, CT (November 13 - November 20, 2019)

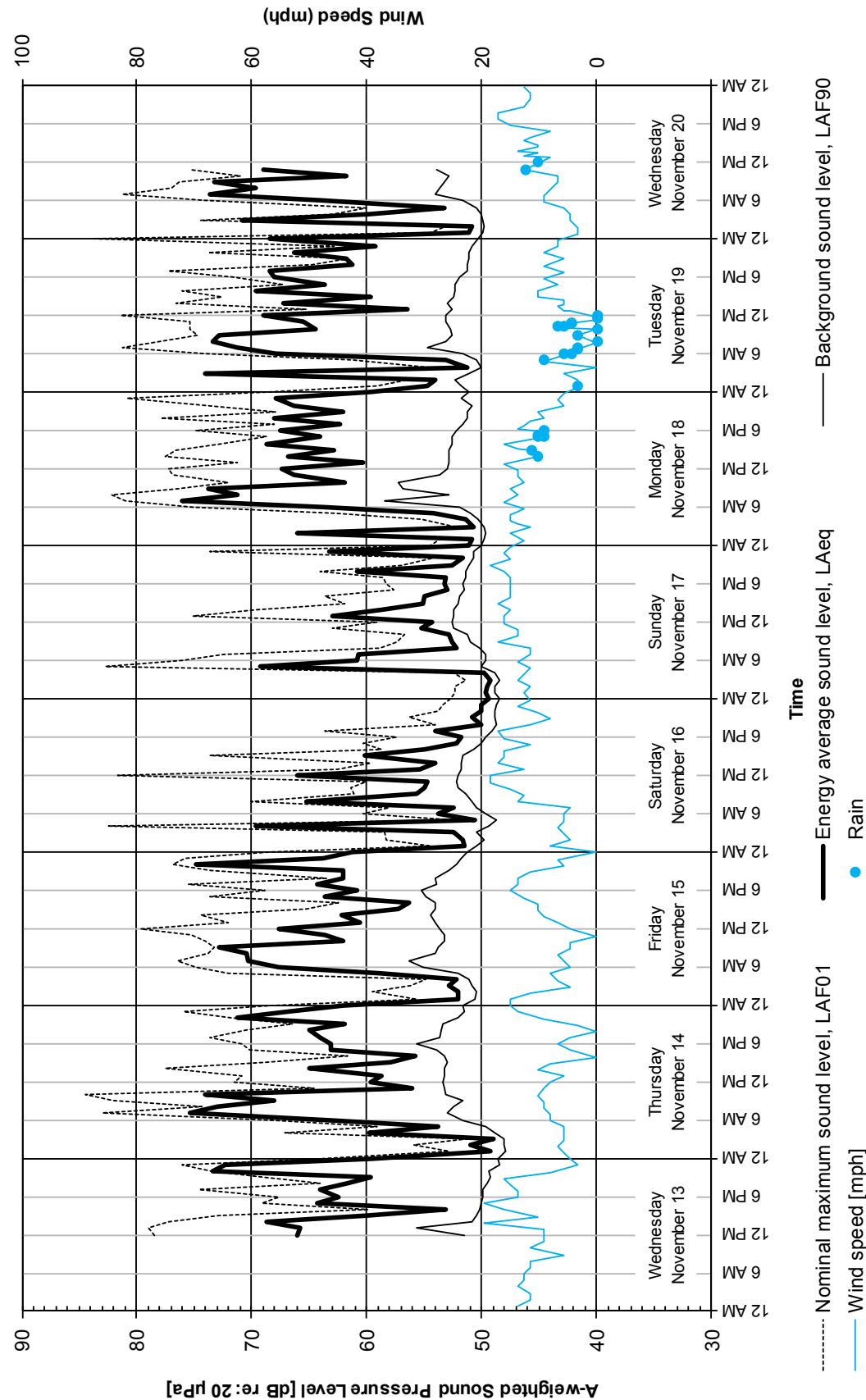
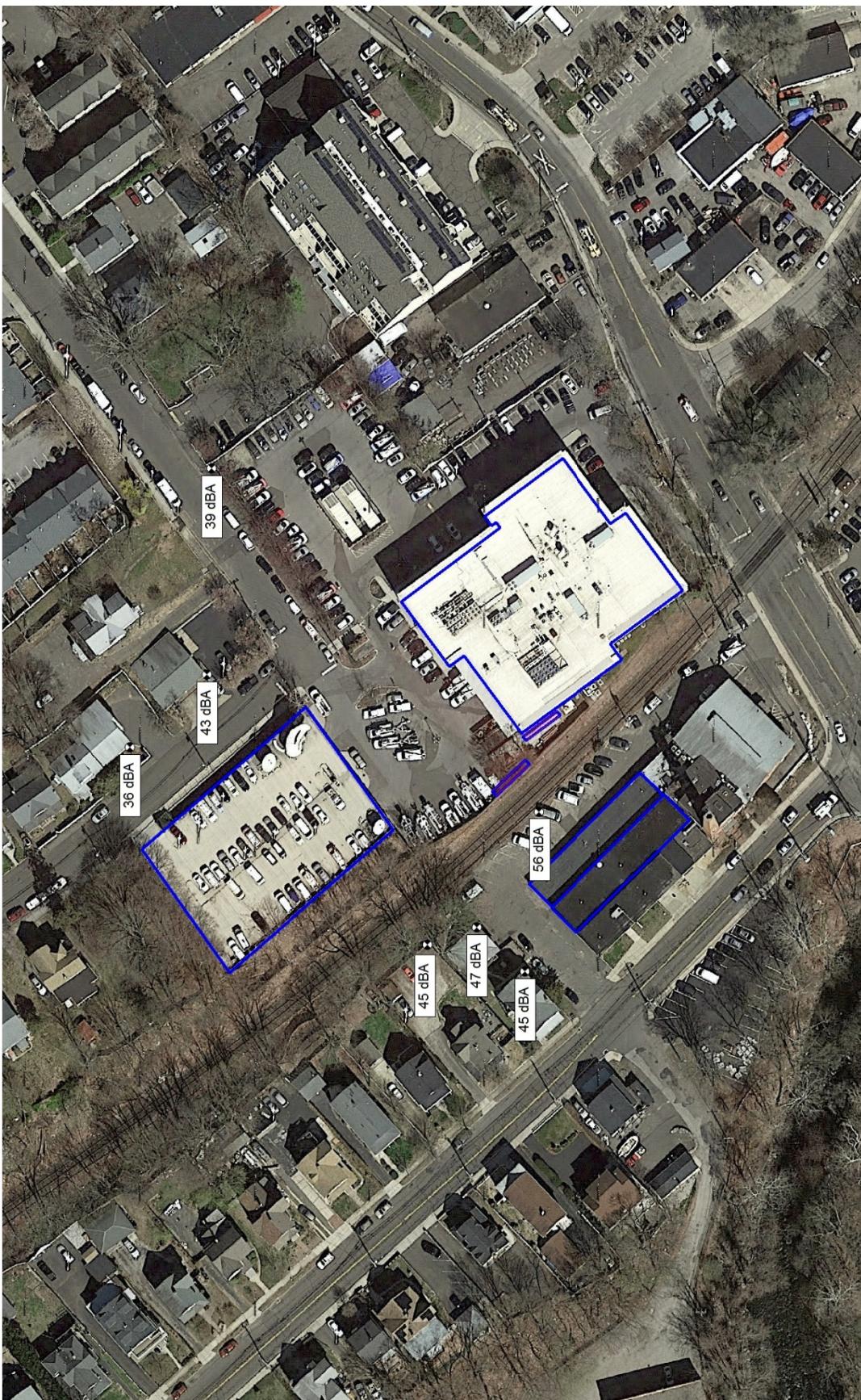


Figure 2



Estimates of Project Sound – Property Boundaries and Nearby Residences

Figure 3

Appendix A

Sound Measurement Terminology

SOUND MEASUREMENT TERMINOLOGY

In order to quantify the amplitude, frequency, and temporal characteristics of sound, various acoustical descriptors are used. The following is an introduction to acoustic terminology that is used in this report.

Sound Level

Sound levels are typically quantified using a logarithmic decibel (dB) scale. The use of a logarithmic scale helps to compress the wide range of human sensitivity to sound amplitude into a scale that ranges from approximately 0 to 180 dB. Note however, that the use of the logarithmic scale prevents simple arithmetic operations when combining the cumulative impact of sources. For example, two sources of equal sound level operated simultaneously results in a combined sound level that is only 3 dB higher than if only one source was operated alone. An important feature of the human perception of continuous sound is that an increase or decrease in sound pressure level by 3 dB or less is barely perceptible, and an increase or decrease by 10 dB is perceived as a doubling or halving of noise level.

A-weighting

Generally, the sensitivity of human hearing is restricted to the frequency range of 20 Hz to 20,000 Hz. However, the human ear is most sensitive to sound in the 500 Hz to 5,000 Hz frequency range. Above and below this range, the ear becomes progressively less sensitive. To account for this feature of human hearing, sound level meters incorporate filtering of acoustic signals that corresponds to the varying sensitivity of the human ear to sound at different frequencies. This filtering is called A-weighting. Sound level measurements that are obtained using this filtering are referred to as A-weighted sound levels and are signified by the identifier, dBA. A-weighted sound levels are widely used for evaluating human exposure to environmental sounds. To help place A-weighted sound levels in perspective, Figure A-1 contains a scale showing typical sound levels for common interior and environmental sound sources.

Spectral Characteristics – Octave and 1/3 Octave Band Sound Levels

To characterize a sound, it is often necessary to evaluate the frequency distribution of the sound energy. As mentioned before, the frequencies of most interest where human exposure is concerned range between 20 Hz and 20,000 Hz. This frequency range is commonly divided into octave bands, where an octave band is a range of frequencies. Each octave band is referred to by its center frequency and has a bandwidth of one octave (a doubling of frequency). To cover the full range of human hearing, it is necessary to measure sound in 10 separate octave bands. Typically, the lowest frequency band measured has a center frequency of 31.5 Hz. The next frequency band has a center frequency of 63 Hz. This geometric series continues to the highest frequency band that has a center frequency of 16,000 Hz. A set of octave band sound levels to describe a particular sound is called an octave band spectrum. Covering the full range of

Appendix A – 1

hearing, an octave band spectrum would have 10 values, one for each band. Under certain circumstances, more frequency resolution in acoustical data is needed to identify the presence of tonal sounds. A 1/3 octave band spectrum uses filters that divide each octave band into 3 separate frequency bands. Note that octave band and 1/3 octave band sound levels are not usually A-weighted, with their units being dB.

Environmental Noise Descriptors

Sound levels in the environment are continuously fluctuating and it is difficult to quantify these time-varying levels with single number descriptors. Statistical approaches, which use *percentile sound levels* and *equivalent sound levels*, are often used to quantify the temporal characteristics of environmental sound.

Percentile sound levels (L_n) are the A-weighted sound levels that are exceeded for specific percentages of time within a noise measurement interval. For example if a measurement interval is one hour long, the 50th percentile sound level (L_{50}) is the A-weighted sound level that is exceeded for 30 minutes of that interval.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The 90th percentile sound level represents the nominally lowest level reached during the monitoring interval and is typically influenced by sound of relatively low level, but nearly constant duration, such as distant traffic or continuously operating industrial equipment. The L_{90} is often used in standards to quantify the existing background or residual sound level.
- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles or aircraft.

By using percentile sound levels, it is possible to characterize the sound environment in terms of the steady-state background sound (L_{90}) and occasional transient sound (L_{10}).

The equivalent sound level (L_{eq}) is the energy average of the A weighted sound level for the measurement interval. Sounds of low level and long duration, as well as sounds of high level and short duration influence this sound level descriptor.

Noise levels at night generally produce greater annoyance than do the same levels which occur during the day. It is generally agreed that a given level of environmental noise during the day would appear to be 10 dBA louder at night – at least in terms of potential for causing community concern. The day night average sound level (Ldn) is a 24 hour average A-weighted

Appendix A – 2

sound level where a 10 dB “penalty” is applied to sound occurring between the hours of 10:00 p.m. and 7:00 a.m. The 10 dB penalty accounts for the heightened sensitivity of a community to noise occurring at night.

When a steady continuous sound is measured, the L_{10} , L_{50} , L_{90} and L_{eq} are all equal. For a constant sound level, such as from a power plant operating continuously for a 24-hour period, the L_{dn} is approximately 6 dBA higher than the directly measured sound level.

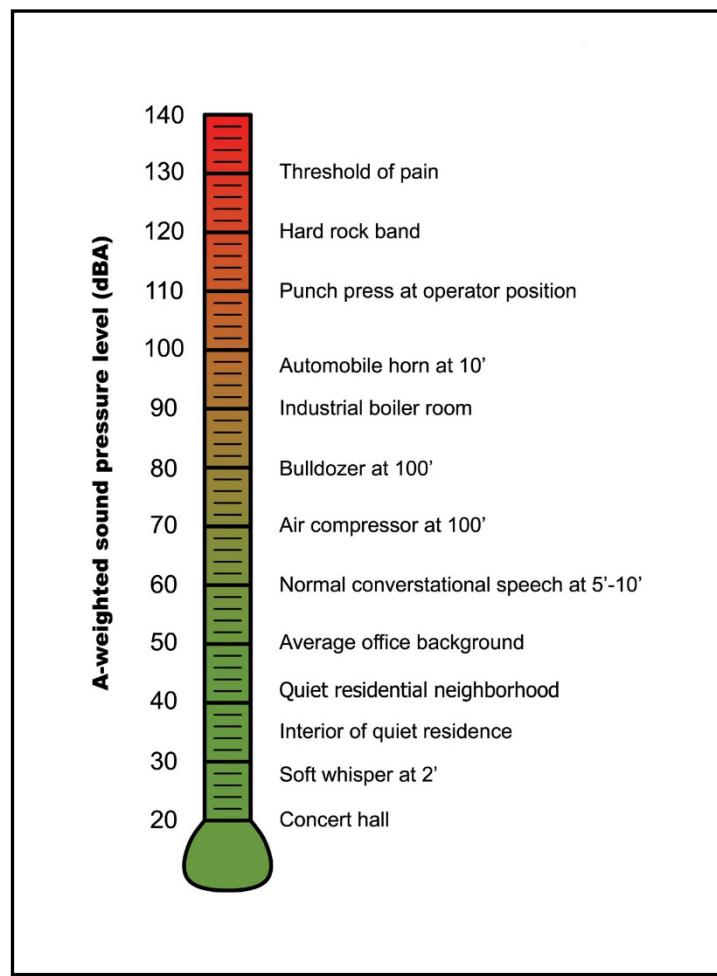


Figure A-1
Typical Sound Levels for Common Interior and Environmental Sources

Appendix A – 3

Bloomenergy®

Exhibit 10



VIA CERTIFICATE OF MAILING

December 5, 2019

RE: Application of Bloom Energy for the location and construction of two (2) new ES-5 Bloom Energy Server solid oxide fuel cells to provide 550 Kilowatts of Customer-Side Distributed Resource at 28 Cross Street, Norwalk, 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 December 10, 2019, a petition for declaratory ruling with the Council. The petition will request the Council's approval of the location and construction of a 550-kilowatt (KW) fuel cell installation and associated equipment. The Facility will be located at the Altice/Cablevision office and operations center at 28 Cross Street in Norwalk, Connecticut (the "Site").

The purpose of the proposed Facility is to replace the average baseload of Altice's operations at that location with a renewable energy source¹ 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,



Justin Adams
justin.adams@bloomenergy.com

Be

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

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

Municipal and Elected Officials

Last Name	First Name	Title	Address	City	State	Postal Code
Rilling	Harry	Mayor, City of Norwalk	125 East Avenue, PO Box 5125	Norwalk	CT	06856-5125
Kleppin	Steven	Director, Planning & Zoning	125 East Avenue, Room 223	Norwalk	CT	06856
		Chairman, Planning & Zoning Commission	125 East Avenue, Room 223	Norwalk	CT	06856
Verel	John	Chair, Conservation Commission & Inland Wetland Agency	125 East Avenue, Room 223	Norwalk	CT	06856
Blumenthal	Richard	U.S. Senator	702 Hart Senate Office Building	Washington	DC	20510
Murphy	Chris	U.S. Senator	B40A Dirksen Senate Office Building	Washington	DC	20510
Himes	Jim	U.S. Representative	1227 Longworth House Office Building	Washington	DC	20515
Duff	Bob	State Senator, 25 th District	Legislative Office Building, Room 3300	Hartford	CT	06106-1591
Perone	Chris	State Representative, 137th District	Legislative Office Building, Room 4111	Hartford	CT	06106-1591
Tong	William	Connecticut Attorney General	55 Elm Street	Hartford	CT	06106
Dykes	Katie	Commissioner, Department of Energy and Environmental Protection	79 Elm Street	Hartford	CT	06106-5127
Paslick Gillett	Marissa	Chairman, Public Utilities Regulatory Authority	10 Franklin Square	New Britain	CT	06051
Coleman-Mitchell	Renée D.	Commissioner, Department of Public Health	410 Capitol Avenue	Hartford	CT	06134
Merrow	Susan D.	Chair, Council on Environmental Quality	79 Elm Street	Hartford	CT	06106
Hurlburt	Bryan P.	Commissioner, Department of Agriculture	450 Columbus Blvd., Suite 701	Hartford	CT	06103

McCaw	Melissa	Secretary, Office of Policy and Management	450 Capitol Avenue	Hartford	CT	06106
Giulietti	Joseph	Commissioner, Department of Transportation	2800 Berlin Turnpike	Newington	CT	06111
Lehman	David	Commissioner, Department of Economic and Community Development	450 Columbus Boulevard	Hartford	CT	06103
Rush-Kittle	Regina	Deputy Commissioner, Division of Emergency Management and Homeland Security (DEMHS)	1111 Country Club Road	Middletown	CT	06457
Seagull	Michelle H.	Commissioner, Department of Consumer Protection	450 Columbus Boulevard, Suite 901	Hartford	CT	06103
Geballe	Josh	Commissioner, Department of Administrative Services	450 Columbus Boulevard	Hartford	CT	06103
Westby	Kurt	Commissioner, Department of Labor	200 Folly Brook Boulevard	Wethersfield	CT	06109
		Western Connecticut Council of Governments	1 Riverside Road	Sandy Hook	CT	06482

Abutter Properties

M/B/L	Property Address	Owner Name	Street	City	State	Zip
1-76-6-0	16 School Street	City of Norwalk (Housing Authority – ASC Building	26 Monroe St	Norwalk	CT	06854-2948
1-73-11-0	28 Cross Street (subject property)	Cablevision of Litchfield Inc., c/o Cushman & Wakefield/Altice/ALC00217	575 Maryville Center Dr, Suite 500	St Louis	MO	63141
1-74-1-0	23 Jefferson Street	CVNC Trust LTD	1111 Stewart Ave	Bethpage	NY	11714-3581
1-76-5-0	18 School Street	Bruno Manes 2014 Revocable Living Trust & Palma O Manes 2014 Revocable Living Trust	198 B Bayfield Ln	Stratford	CT	06614
1-76-13-0	20 School Street	20 School Street LLC	248 Mansfield Ave	Darien	CT	06820

1-73-17-0	18 Cross Street	Cross River Preservation Associates LP, c/o JHM Financial Group LLC	1281 East Main St, Ste 201	Stamford	CT	06902
1-73-16-0	22 Cross Street	Donna D Patchen	126 5th Ave	Milford	CT	06460
1-74-54-0	2 Wilton Avenue	2-5 Wilton Avenue LLC	149 East Ave, Ste 37	Norwalk	CT	06851
1-73-15-0	24 Cross Street	Martin Wolf	24 Cross St	Norwalk	CT	06850- 0000
1-74-52-0	10 Wilton Avenue	Stephanie Carusone	52 Cranberry Rd	Westport	CT	06880- 0000
1-64-3-0	35 Hoyt Street	PS Co-Investment Partners	Dept PT CT 27024, PO Box 25025	Glendale	CA	91201- 5025
1-72- 18A-0	25 Cross Street	John J & Olive Lawlor	28 Hoyt St	Norwalk	CT	06851- 4605
1-72-17-0	24 Hoyt Street	Hyatt and Wood Realty LLC	83 Cranbury Rd	Norwalk	CT	06851



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3.	Planning & Zoning Commission 125 East Ave. Room 223 Norwalk, CT 06856				
4.	John Verel, Chair Conservation Commission & Inland Wetland Agency 125 East Ave. Norwalk, CT 06856				
5.					
6.	Conservation Department 125 East Ave. Room 223 Norwalk, CT 06856				



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1.		Honorable Richard Blumenthal Senator 702 Hart Senate Office Building Washington, DC 20510				
2.		Hon. Chris Murphy Senator 840A Dirksen Senate Office Building Washington, DC 20510				
3.		Hon. Jim Himes U.S. Representative 1227 Longworth House Office Building Washington, DC 20515				
4.		Hon. William Tong Attorney General 55 Elm St. Hartford, CT 06106				
5.		Katie Dykes, Commissioner Dept. of Energy & Environmental Protection 79 Elm St. Hartford, CT 06106-5127				
6.		Marissa Paslick Gillett, Chairman Public Utilities Regulatory Authority 10 Franklin Square New Britain, CT 06051				



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1.	Hon. Bob Duff State Senator, 25 th District Legislative Office Building, Room 3300 Hartford, CT 06106-1591					
2.	Hon. Chris Perone Representative, 137 th District Legislative Office Building, Room 4111 Hartford, CT 06106-1591 PS Co-Investment Partners Dept PT CT 27024 PO Box 25025 Glendale, CA 91201-5025					
3.						
4.						
5.						
6.						



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1.	20 School Street LLC 248 Mansfield Ave. Darien, CT 06820		
2.	CVNC Trust LTD 1111 Stewart Bethpage, NY 11714-3581		
3.	Hyatt and Wood Realty LLC 83 Cranbury Rd. Norwalk, CT 06851		
4.	John J. & Olive Lawlor 28 Hoyt St. Norwalk, CT 06851-4605		
5.	Western Connecticut Council of Governments 1 Riverside Rd. Sandy Hook, CT 06482		
6.			



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Postmaster, per (name of receiving employee)				
USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling Parcel Airlift
1.	Regina Rush-Kittle, Deputy Commissioner Div. of Emergency Mgmt and Homeland Security 1111 Country Club Rd. Middletown, CT 06457			
2.	Michelle H. Seagull, Commissioner Department of Consumer Protection 450 Columbus Blvd., Suite 901 Hartford, CT 06103			
3.	Josh Geballe, Commissioner Department of Administrative Services 450 Columbus Blvd. Hartford, CT 06103			
4.	Kurt Westby, Commissioner Department of Labor 200 Folly Brook Blvd. Wethersfield, CT 06109			
5.	Stephanie Carusone 52 Cranberry Rd. Westport, CT 06880-0000			
6.	City of Norwalk Housing Authority – ASC Bldg 26 Monroe St Norwalk, CT 06854-2948			



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USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift	
1.	Renee D. Coleman-Mitchell, Commissioner Department of Public Health 410 Capitol Ave. Hartford, CT 06134					
2.	Susan D. Merrow, Chair Council on Environmental Quality 79 Elm St. Hartford, CT 06106					
3.	Bryan P. Hurlburt, Commissioner Department of Agriculture 450 Columbus Blvd., Suite 701 Hartford, CT 06103					
4.	Melissa McCaw, Secretary Office of Policy and Management 450 Capitol Ave. Hartford, CT 06106					
5.	Joseph Giulietti, Commissioner Department of Transportation 2800 Berlin Turnpike Newington, CT 06111					
6.	David Lehman, Commissioner Dept. of Economic and Community Development 450 Columbus Blvd Hartford, CT 06103					



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USPS® Tracking Number	Firm-specific Identifier	Address		Postage	Fee	Special Handling	Parcel Airlift	
1.		Cablevision of Litchfield Inc. ~~~™/c/o Cushman & Wakefield/Altice/ ALC00217						
		575 Maryville Center Dr., Suite 500 St. Louis, MO 63141						
2.		Martin Wolf 24 Cross St. Norwalk, CT 06850-0000						
3.		Bruno Manes 2014 Rev. Living Trust Palma O Manes 2014 Rev. Living Trust 198 B Bayfield Ln. Stratford, CT 06614						
4.		205 Wilton Avenue LLC 149 East Ave., Ste 37 Norwalk, CT 06851						
5.		Donna D. Patchen 126 5th Ave. Milford, CT 06460						
6.		Cross River Preservation Associates LP c/o JHM Financial Group LLC 1281 East Main St., Ste 201 Stamford CT 06902						

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Exhibit 11

**Legend**

- Site
- Abutting Property
- Project Area
- Gas Supply Line
- Approximate Assessor Parcel Boundary (CTDEEP)

Map Notes:

Base Map Source: 2016 Aerial Photograph (CTECO)

Map Scale: 1 inch = 150 feet

Map Date: December 2019



100 50 0 100
Feet

Exhibit 11 Abutters Map

Proposed Bloom Energy Facility
Altice USA - Cablevision Property
28 Cross Street
Norwalk, CT 06851

Bloomenergy
ALL-POINTS
TECHNOLOGY CORPORATION

Bloomenergy®

Exhibit 12

Jennifer Young Gaudet

From: Jennifer Young Gaudet
Sent: Tuesday, August 6, 2019 9:36 AM
To: 'Baker, Bryan'
Subject: RE: 28 Cross Street (Cablevision) - Bloom Energy

Thank you, Brian. We will be preparing the Siting Council petition over the next several weeks. Your Department will receive formal notice as required by the Council's regulations at that time. We will follow up with the zoning permit after the Council's review is complete.

Jennifer Young Gaudet
860.798.7454

From: Baker, Bryan <bbaker@norwalkct.org>
Sent: Tuesday, August 6, 2019 9:31 AM
To: Jennifer Young Gaudet <jyounggaudet@allpointstech.com>
Subject: RE: 28 Cross Street (Cablevision) - Bloom Energy

Hi Jennifer,

The plans look good for Planning and Zoning, once you have the siting council letter submit a copy of that as well as three sets of the drawings and we will issue the zoning permit.

Let me know if you have any questions.

Thanks,
Bryan

Bryan Baker, CZEO
Land Use Planner
City of Norwalk
(203) 854-7705



From: Jennifer Young Gaudet [<mailto:jyounggaudet@allpointstech.com>]
Sent: Monday, August 5, 2019 2:48 PM
To: Baker, Bryan <bbaker@norwalkct.org>
Subject: 28 Cross Street (Cablevision) - Bloom Energy

CAUTION: EXTERNAL Email: Don't open links or attachments from untrusted senders

Brian –

Thank you for your call. Attached are drawings for the proposed Bloom Energy fuel cell installation at the Cablevision/Altice property at 28 Cross Street. As I mentioned, the plans include conversion of two parking spaces to compact spaces; that change is called out on the drawings.

Bloom will be filing a petition with the Connecticut Siting Council, and is seeking the City's comments in advance. I am happy to answer any questions you may have, and look forward to hearing from you following your review.

Thank you.

Jennifer

Jennifer Young Gaudet
Program Manager



860.798.7454 (M)