

**Liberty Utilities Battery Storage Pilot Program**  
**Customer Agreement**

Introduction.

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities, (“Liberty”) is offering a battery storage pilot program (the “Program”) that will provide residential customers with the benefits of a battery storage system manufactured by Tesla, Inc. (“Tesla”), and will provide Liberty with access to the batteries at peak times to potentially lower Liberty’s transmission costs and achieve other system benefits. Participation in the Program is governed by this Battery Storage Pilot Program Customer Agreement (“Agreement”), which describes the relationship between the customer and Liberty.

Customers participating in the Program will lease from Liberty at least two Tesla batteries and related equipment, which will be installed at the customer’s home by Tesla or by an authorized Tesla contractor. The customer will have full access to the batteries except when Liberty periodically exercises control over the batteries during peak energy periods. The customer will not be allowed to export power from the batteries to the grid, except for those customers with a behind-the-meter distributed generation (“DG”) system. Those DG customers may be able to export from their batteries to the grid, provided that the batteries are charged only with energy from their DG system.

Installation includes a Tesla gateway that provides communication and integration into an energy management platform owned by Tesla and used by both Liberty and Tesla as part of the Program. Communication between the battery system, Liberty, and Tesla is through that platform, using the customer’s internet connection.

By signing this Agreement, Liberty and the Customer identified below (each a “Party” and together the “Parties”) are making the commitments described in this Agreement to each other, and the Parties and Tesla will rely on these commitments in performing their respective roles.

Agreement

Liberty Utilities (Granite State Electric) Corp. (“Liberty”), a regulated electric distribution utility with its principal office at 15 Buttrick Road, Londonderry, New Hampshire 03053; and

Valentin Demidov , 44608749-44542031 , wdemidov@gmail.com ,  
(Customer Name, Liberty Account Number, and Customer Email Address)

(“You” or “Customer”) of 55 High St  
Plainfield, NH 03781-5239, US , NH (“Home”)  
(Address for Installation)

agree as follows:

1. The Parties agree that Tesla is a third-party beneficiary of this Agreement.

2. **Equipment:**

<b>Equipment Description</b>	<b>Quantity</b>
Tesla Powerwall 2 and Gateway	Two Powerwall 2, One Gateway

3. **Lease:** Liberty agrees to lease to You, and You agree to lease from Liberty, in the quantity specified above, a Tesla Gateway and at least two 13.5kWh lithium-ion Tesla Powerwall 2 batteries (together, the “Powerwall”). Liberty will maintain ownership of the Powerwall for the entire term of this Agreement. There is no option for You to buy the Powerwall.

4. **Term:** The term of this Agreement will begin on the date that the Powerwall is installed at your Home and will continue for a period of one hundred twenty (120) months, or until either You or Liberty terminate this Agreement as described below. You may extend this Agreement for additional sixty (60) month terms as described in Paragraph 20.

5. **Eligibility for the Program:** To participate in the Program, You must:

- a. Be a residential customer of Liberty;
- b. Have and maintain reliable Internet access;
- c. Be the owner of the Home, or receive the homeowner’s signed consent to this Agreement;
- d. Be and remain current with all payments due to Liberty; and
- e. Take service under Liberty’s time-of-use (TOU) rate tariff applicable to the Program.

6. **Payment Options:**

- a. There is no security deposit required and no amount is due when You sign this Agreement.
- b. Select **one** of the following two options for Lease Payments:

**Check One:**

\$25 per month **per Powerwall** (or \$50 per month total for two batteries) for the entire 120-month Term. The monthly charges will appear as a separate line item beginning with the first Liberty bill following the Powerwall installation, and will be due at the same time as the regular utility charges as stated on each bill.

A one-time payment of \$2,433 **per Powerwall (or \$4,866 total for two batteries)**. The one-time charge will appear as a separate line item on the first Liberty bill following the Powerwall installation and will be due at the same time as the regular utility charges as stated on that bill.

- c. The above Powerwall charges are in addition to all other Liberty charges related to your electricity service. Any partial payments will be applied first to all other charges related to your electricity service and then to the Lease Payments due under this Agreement. Failure to make timely payment for Powerwall charges will not be grounds for disconnection of

**STATE OF NEW HAMPSHIRE  
ELECTRICIANS BOARD**

**NAME: STEPHEN J CONNOLLY**

**14476 M**

**ISSUED: 07/17/2019**

**EXPIRES: 01/31/2022**

**MASTER**

**ABBREVIATIONS**

A AMPERE AC ALTERNATING CURRENT BLDG BUILDING CONC CONCRETE DC DIRECT CURRENT EGC EQUIPMENT GROUNDING CONDUCTOR (E) EXISTING EMT ELECTRICAL METALLIC TUBING FSB FIRE SET-BACK GALV GALVANIZED GEC GROUNDING ELECTRODE CONDUCTOR GND GROUND HDG HOT DIPPED GALVANIZED I CURRENT Imp CURRENT AT MAX POWER Isc SHORT CIRCUIT CURRENT kVA KILOVOLT AMPERE kW KILOWATT LBW LOAD BEARING WALL MIN MINIMUM (N) NEW NEUT NEUTRAL NTS NOT TO SCALE OC ON CENTER PL PROPERTY LINE POI POINT OF INTERCONNECTION PV PHOTOVOLTAIC SCH SCHEDULE S STAINLESS STEEL STC STANDARD TESTING CONDITIONS TYP TYPICAL UPS UNINTERRUPTIBLE POWER SUPPLY V VOLT Vmp VOLTAGE AT MAX POWER Voc VOLTAGE AT OPEN CIRCUIT W WATT 3R NEMA 3R, RAIN TIGHT

**ELECTRICAL NOTES**

1. THIS SYSTEM IS GRID-INTERTIED VIA A UL-LISTED POWER-CONDITIONING INVERTER.
2. A NATIONALLY - RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3.
3. WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.17.
4. EACH UNGROUNDED CONDUCTOR OF THE MULTIWIRED BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5.
5. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B).
6. DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER ART. 690.31(E).
7. ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING.
8. MODULE FRAMES SHALL BE GROUNDED AT THE UL - LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE.
9. MODULE FRAMES, RAIL, AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS.

**JURISDICTION NOTES**

**LICENSE**

MODULE GROUNDING METHOD: WEEB  
 AHJ: Plainfield  
 UTILITY: Liberty Utilities (NH)

**GENERAL NOTES**

1. ALL WORK SHALL COMPLY WITH THE 2015 IBC AND 2015 IRC. 2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2017 NATIONAL ELECTRIC CODE.

**VICINITY MAP**



**INDEX**

Sheet 1 COVER SHEET  
 Sheet 2 SITE PLAN  
 Sheet 3 THREE LINE DIAGRAM  
 Cutsheets Attached

REV	BY	DATE	COMMENTS
REV A	NAME	DATE	COMMENTS
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*

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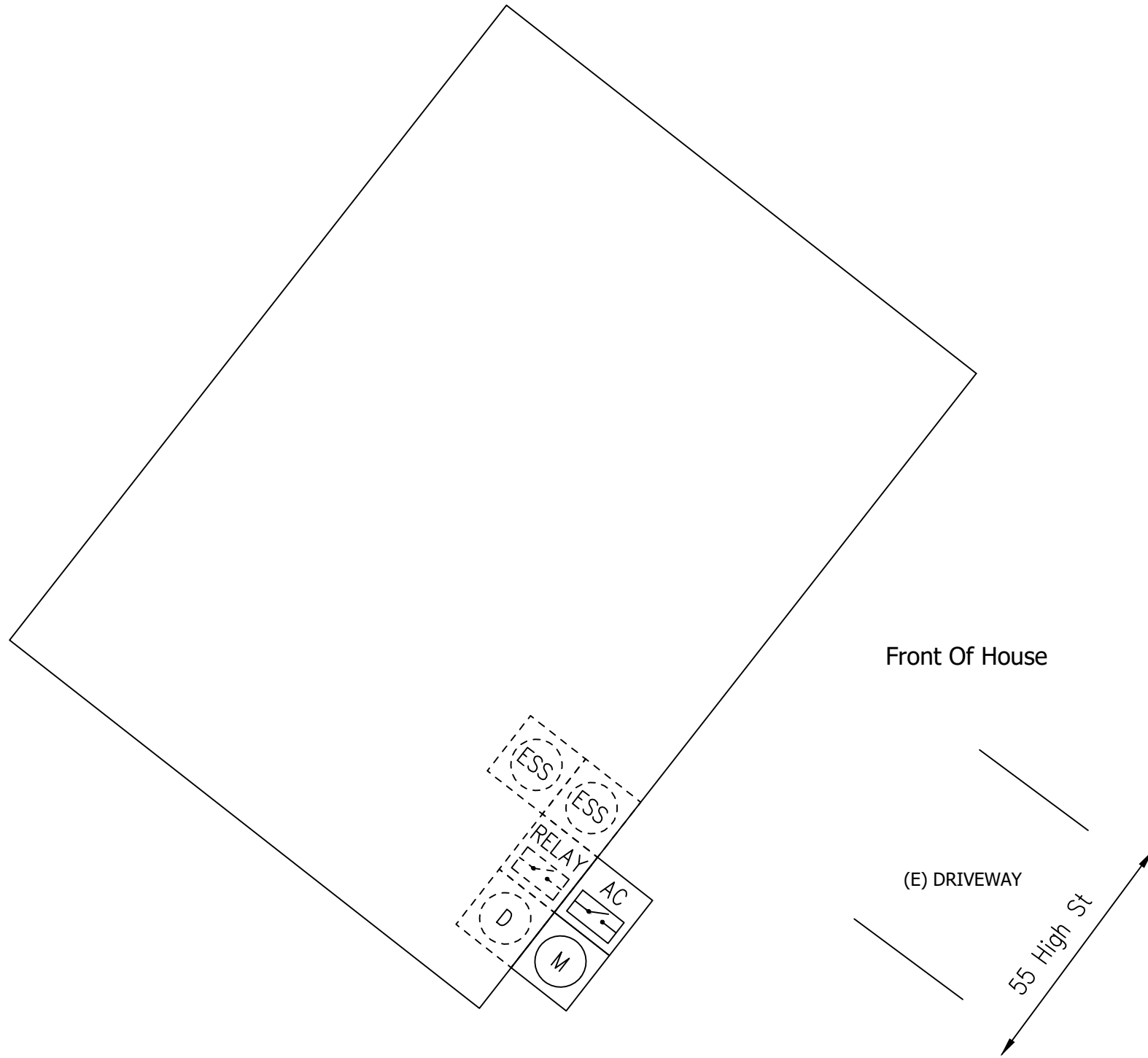
JOB NUMBER: JB-0275835 00  
 MOUNTING SYSTEM:  
 MODULES:  
 INVERTER:

CUSTOMER:  
 Valentin Demidov  
 55 High St  
 Plainfield, NH 02781  
 802-565-7297


















DESCRIPTION:  
 27 KWH ENERGY STORAGE SYSTEM  
 PAGE NAME:  
 COVER SHEET

DESIGN:  
 Timothy Camilleri  
 SHEET: 1 REV: DATE: 6/8/2021





### LEGEND

-  (E) UTILITY METER & WARNING LABEL
-  INVERTER W/ INTEGRATED DC DISCO & WARNING LABELS
-  AUTOMATIC RELAY
-  DC DISCONNECT & WARNING LABELS
-  AC DISCONNECT & WARNING LABELS
-  DC JUNCTION/COMBINER BOX & LABELS
-  ENERGY STORAGE SYSTEM FOR STAND ALONE OPERATION
-  DISTRIBUTION PANEL & LABELS
-  LOAD CENTER & WARNING LABELS
-  DEDICATED PV SYSTEM METER
-  RAPID SHUTDOWN
-  STANDOFF LOCATIONS
-  CONDUIT RUN ON EXTERIOR
-  CONDUIT RUN ON INTERIOR
-  GATE/FENCE
-  HEAT PRODUCING VENTS ARE RED
-  INTERIOR EQUIPMENT IS DASHED

### SITE PLAN

Scale: 1/8" = 1'



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JOB NUMBER: JB-0275835 00

MOUNTING SYSTEM:

MODULES:

INVERTER:

CUSTOMER:  
Valentin Demidov  
55 High St  
Plainfield, NH 02781

802-565-7297

DESCRIPTION:  
27 KWH ENERGY STORAGE SYSTEM

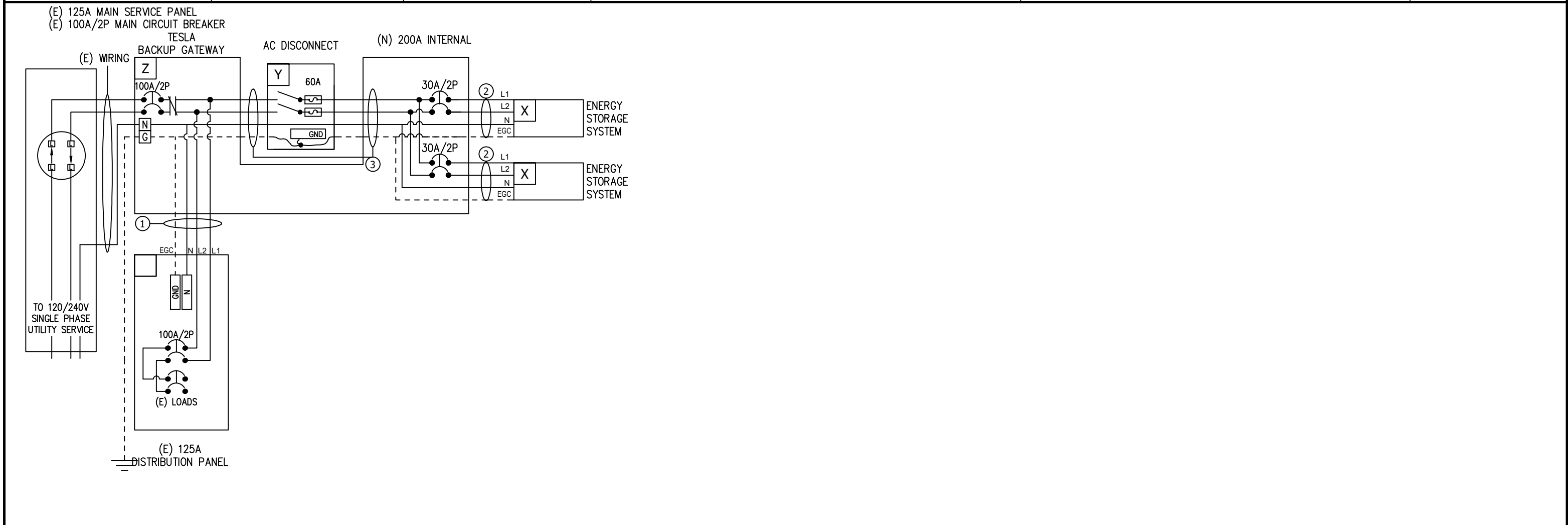
PAGE NAME:  
SITE PLAN

DESIGN:  
Timothy Camilleri

SHEET: 2 REV: DATE: 6/8/2021



<b>GROUND SPECS</b>	<b>MAIN PANEL SPECS</b>	<b>GENERAL NOTES</b>		<b>LICENSE</b>
BOND (N) AWG #6 TO (N) GROUND ROD AT PANEL WITH IRREVERSIBLE CRIMP	Panel Number: G3030B1100CU Meter Number: 38300100 Overhead Service Entrance	*		



<b>POI</b>	(1) Ground Rod 5/8" x 8", Copper		
<b>Z</b>	(1) Tesla # 1232100-00-E Back-up Gateway 2.0 NA for AC PW 2.0 (1) Eaton # BW2100 100A Main Circuit Breaker; 2-Pole, 240V, 10kAIC (2) CUTLER-HAMMER # BR230 Breaker; 30A/2P, 2 Spaces (1) Panelboard Accessory Kit for GW 2.0 NA 200A, 6sp/12cir, 120/240V, 1PH	<b>1</b>	(1) AWG #4, THWN-2, Black (1) AWG #4, THWN-2, Red (1) AWG #4, THWN-2, White (1) AWG #8, THWN-2, Green --- (1) Conduit Kit; 1" EMT
<b>Y</b>	(1) CUTLER-HAMMER #DS16FK Class R Fuse Kit (2) FERRAZ SHAWMUT # TR60R Fuse; 60A, 250V, Class RK5 (1) CUTLER-HAMMER # DG100NB Ground/Neutral Kit; 60-100A, General Duty (DG) (1) CUTLER-HAMMER # DG222NRB Disconnect; 60A, 240Vac, Fusible, NEMA 3R	<b>2</b>	(1) AWG #10, THWN-2, Black (1) AWG #10, THWN-2, Red (1) AWG #10, THWN-2, White (1) AWG #10, THWN-2, Green --- (1) Conduit Kit; 1" EMT
<b>X</b>	(2) 3012170-05-B ASY, AC POWERWALL 2.1, 5KW, 13.5KWH, M48	<b>3</b>	(1) AWG #6, THWN-2, Black (1) AWG #6, THWN-2, Red (1) AWG #6, THWN-2, White (1) AWG #10, THWN-2, Green --- (1) Conduit Kit; 3/4" EMT

<b>AC</b>	
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JOB NUMBER: JB-0275835 00
MOUNTING SYSTEM:
MODULES:
INVERTER:

CUSTOMER:  
Valentin Demidov  
55 High St  
Plainfield, NH 02781  
  
802-565-7297

DESCRIPTION:  
27 KWH ENERGY STORAGE SYSTEM  
  
PAGE NAME:  
THREE LINE DIAGRAM

DESIGN:  
Timothy Camilleri  
  
SHEET: 3 REV: DATE: 6/8/2021



**BACKUP LOAD CENTER**

Label Location:  
(BLC)  
Per Code:  
NEC 408.4

**CAUTION**  
TRI POWER SOURCE  
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM  
THIRD SOURCE IS ENERGY STORAGE SYSTEM

Label Location:  
(MP)  
Per Code:  
NEC 705.12(B)(3)

**CAUTION**  
DO NOT ADD NEW LOADS

Label Location:  
(BLC)  
Per Code:  
NEC 220

**WARNING**  
THIS EQUIPMENT FED BY  
MULTIPLE SOURCES. TOTAL  
RATING OF ALL OVER CURRENT  
DEVICES, EXCLUDING MAIN  
SUPPLY OVERCURRENT DEVICE,  
SHALL NOT EXCEED AMPACITY  
OF BUSBAR.

Label Location:  
(MP)  
Per Code:  
NEC 705.12.B.2.3.c

**CAUTION**  
THIS PANEL HAS SPLICED FEED-  
THROUGH CONDUCTORS.  
LOCATION OF DISCONNECT AT ENERGY  
STORAGE BACKUP LOAD PANEL

Label Location:  
(MP)  
Per Code:  
NEC 312.8.A(3)

**NOMINAL ESS VOLTAGE: 120/240V**  
**MAX AVAILABLE SHORT-  
CIRCUIT FROM ESS: 32A**  
**ARC FAULT CLEARING  
TIME FROM ESS: 67ms**  
**DATE OF  
CALCULATION:**

Label Location:  
(MP)  
Per Code:  
Per 706.7(D) label to be marked in field

**CAUTION**  
DUAL POWER SOURCE  
SECOND SOURCE IS  
ENERGY STORAGE SYSTEM

Label Location:  
(MP)  
Per Code:  
NEC 705.12(B)(3)

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED WITHIN LINE OF SIGHT**

Label Location:  
(MP)  
Per Code:

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED ON ADJACENT WALL**

Label Location:  
(MP)  
Per Code:

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED ON OPPOSITE WALL**

Label Location:  
(MP)  
Per Code:

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED INSIDE**

Label Location:  
(MP)  
Per Code:

(AC): AC Disconnect  
(BLC): Backup Load Center  
(MP): Main Panel

Label Set

## POWERWALL

Tesla Powerwall is a fully-integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, time-based control, and backup.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.



### PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240 V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Total Energy <sup>1</sup>	14 kWh
Usable Energy <sup>1</sup>	13.5 kWh
Real Power, max continuous <sup>2</sup>	5 kW (charge and discharge)
Real Power, peak (10s, off-grid/backup) <sup>2</sup>	7 kW (charge and discharge)
Apparent Power, max continuous	5.8 kVA (charge and discharge)
Apparent Power, peak (10s, off-grid/backup)	7.2 kVA (charge and discharge)
Maximum Supply Fault Current	10 kA
Maximum Output Fault Current	32 A
Overcurrent Protection Device	30 A
Imbalance for Split-Phase Loads	100%
Power Factor Output Range	+/- 1.0 adjustable
Power Factor Range (full-rated power)	+/- 0.85
Internal Battery DC Voltage	50 V
Round Trip Efficiency <sup>1,3</sup>	90%
Warranty	10 years

<sup>1</sup>Values provided for 25°C (77°F), 3.3 kW charge/discharge power.

<sup>2</sup>In Backup mode, grid charge power is limited to 3.3 kW.

<sup>3</sup>AC to battery to AC, at beginning of life.

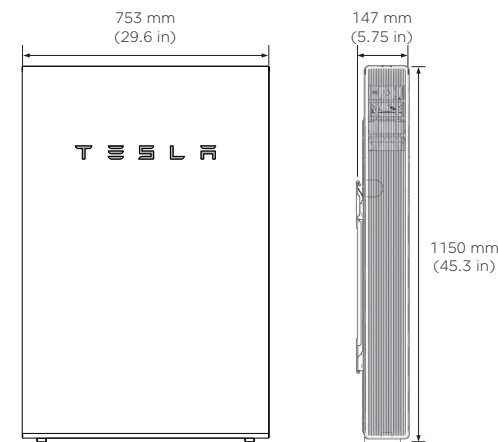
### COMPLIANCE INFORMATION

Certifications	UL 1642, UL 1741, UL 1973, UL 9540, IEEE 1547, UN 38.3
Grid Connection	Worldwide Compatibility
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)

### MECHANICAL SPECIFICATIONS

Dimensions <sup>1</sup>	1150 mm x 753 mm x 147 mm (45.3 in x 29.6 in x 5.75 in)
Weight <sup>1</sup>	114 kg (251.3 lbs)
Mounting options	Floor or wall mount

<sup>1</sup>Dimensions and weight differ slightly if manufactured before March 2019. Contact Tesla for additional information.

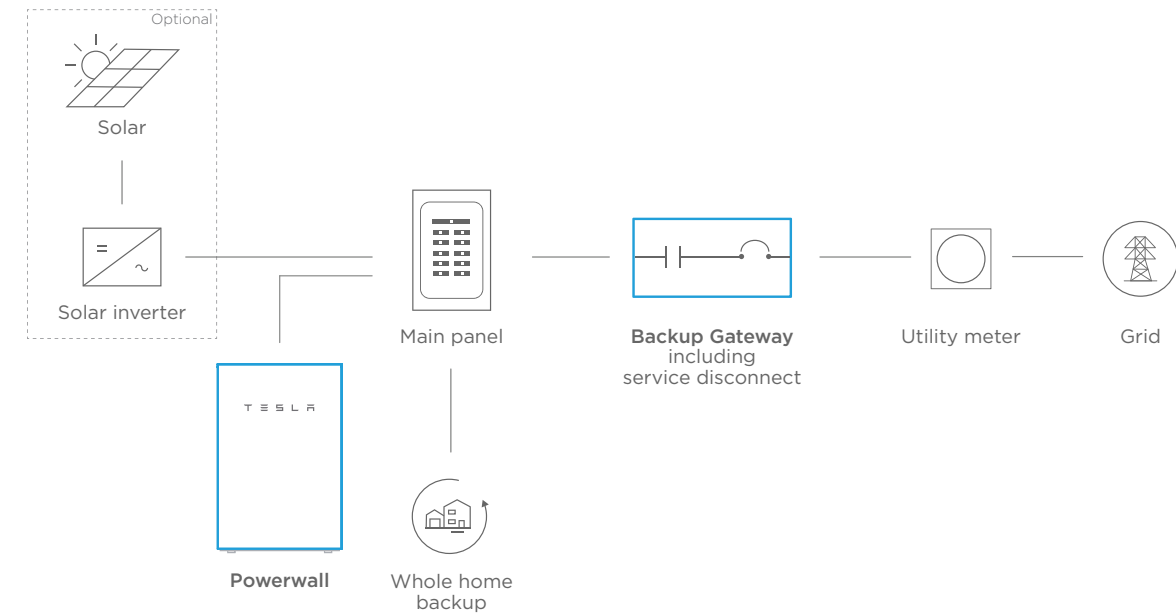


### ENVIRONMENTAL SPECIFICATIONS

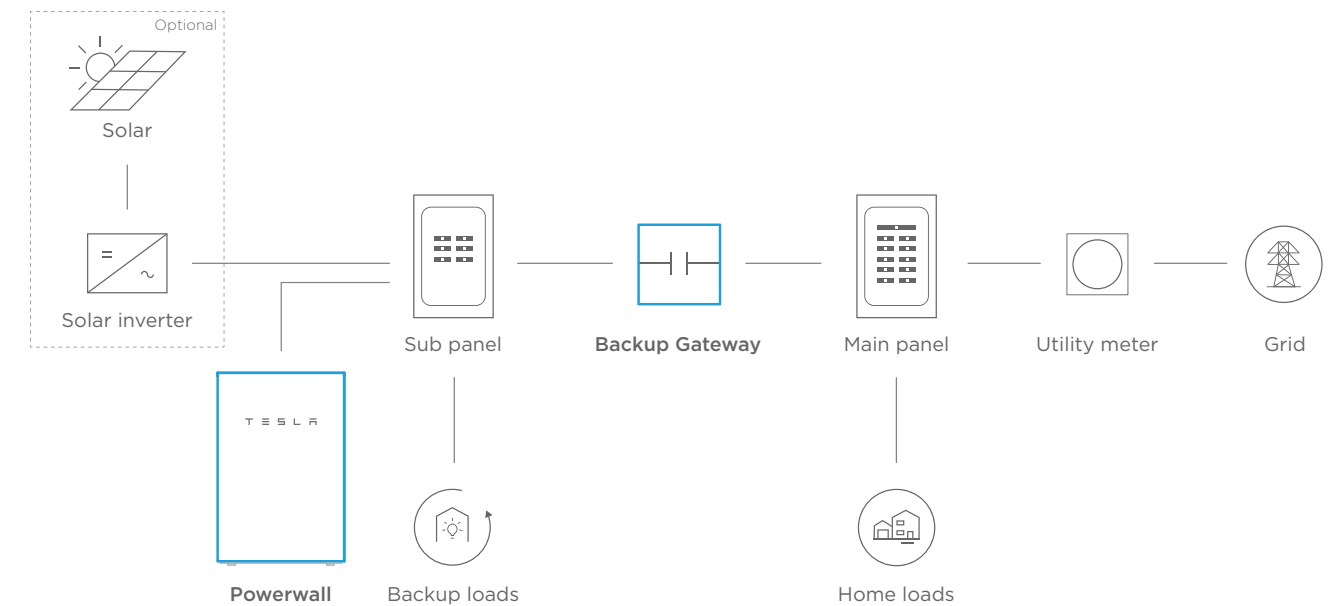
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Recommended Temperature	0°C to 30°C (32°F to 86°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP56 (Wiring Compartment)
Wet Location Rating	Yes
Noise Level @ 1m	< 40 dBA at 30°C (86°F)

## TYPICAL SYSTEM LAYOUTS

### WHOLE HOME BACKUP



### PARTIAL HOME BACKUP





## POWERWALL

### Backup Gateway 2

The Backup Gateway 2 for Tesla Powerwall provides energy management and monitoring for solar self-consumption, time-based control, and backup.

The Backup Gateway 2 controls connection to the grid, automatically detecting outages and providing a seamless transition to backup power. When equipped with a main circuit breaker, the Backup Gateway 2 can be installed at the service entrance. When the optional internal panelboard is installed, the Backup Gateway 2 can also function as a load center.

The Backup Gateway 2 communicates directly with Powerwall, allowing you to monitor energy use and manage backup energy reserves from any mobile device with the Tesla app.



### PERFORMANCE SPECIFICATIONS

<b>AC Voltage (Nominal)</b>	120/240V
<b>Feed-In Type</b>	Split Phase
<b>Grid Frequency</b>	60 Hz
<b>Current Rating</b>	200 A
<b>Maximum Input Short Circuit Current</b>	10 kA <sup>1</sup>
<b>Overcurrent Protection Device</b>	100-200A; Service Entrance Rated <sup>1</sup>
<b>Overvoltage Category</b>	Category IV
<b>AC Meter</b>	Revenue accurate (+/- 0.2 %)
<b>Primary Connectivity</b>	Ethernet, Wi-Fi
<b>Secondary Connectivity</b>	Cellular (3G, LTE/4G) <sup>2</sup>
<b>User Interface</b>	Tesla App
<b>Operating Modes</b>	Support for solar self-consumption, time-based control, backup, and off-grid
<b>Backup Transition</b>	Automatic disconnect for seamless backup
<b>Modularity</b>	Supports up to 10 AC-coupled Powerwalls
<b>Optional Internal Panelboard</b>	200A 6-space / 12 circuit Eaton BR Circuit Breakers
<b>Warranty</b>	10 years

<sup>1</sup> When protected by Class J fuses, Backup Gateway 2 is suitable for use in circuits capable of delivering not more than 22kA symmetrical amperes.

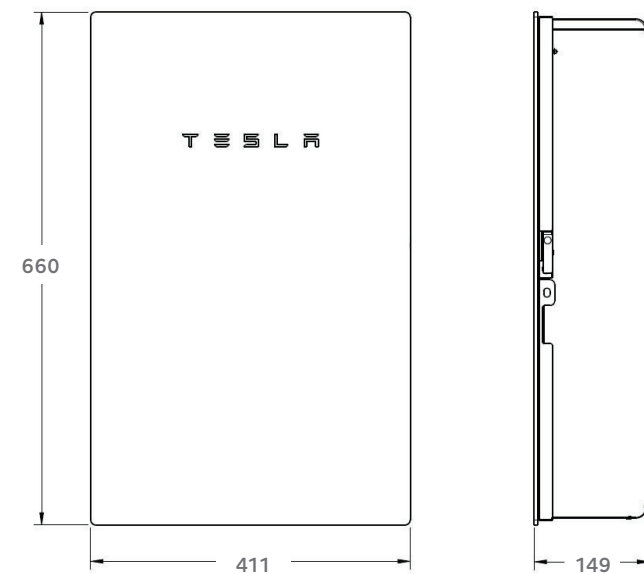
<sup>2</sup> The customer is expected to provide internet connectivity for Backup Gateway 2; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

### COMPLIANCE INFORMATION

<b>Certifications</b>	UL 67, UL 869A, UL 916, UL 1741 PCS CSA 22.2 0.19, CSA 22.2 205
<b>Emissions</b>	FCC Part 15, ICES 003

### MECHANICAL SPECIFICATIONS

<b>Dimensions</b>	660 mm x 411 mm x 149 mm (26 in x 16 in x 6 in)
<b>Weight</b>	20.4 kg (45 lb)
<b>Mounting options</b>	Wall mount, Semi-flush mount



### ENVIRONMENTAL SPECIFICATIONS

<b>Operating Temperature</b>	-20°C to 50°C (-4°F to 122°F)
<b>Operating Humidity (RH)</b>	Up to 100%, condensing
<b>Maximum Elevation</b>	3000 m (9843 ft)
<b>Environment</b>	Indoor and outdoor rated
<b>Enclosure Type</b>	NEMA 3R