Tesla PW2 / Gateway 2 Installation (INS-SOP-0116-02)



Overview

Link to CURRENT version of this SOP

This SOP describes the preparation, mounting, and wiring of Tesla PW 2 and Gateway

This product requires certification from the equipment manufacturer.

*The latest updates are highlighted in gray



Legend

General	
	Ensure all Arc Flash PPE is worn during the shown portion of the Installation SOP.
	This symbol indicates a safety-specific call out
	Photo or screenshot required for the Foreperson Installation Checklist (FIC).
	Pro Tip to help the installation procedure.
	Indicates to Tap on a screen or device within an application or website.

Safety Hazards

 Health Hazard	 Explosive Hazard	 Environmental Hazard
 Acutely Toxic	 Oxidizing Hazard	 Flammable
 Pressurized Gas Hazard	 Corrosive Hazard	 Eye irritant, skin irritant, or both
See the Safety Data Sheet in the Related Documents list for additional information relating to OSHA Hazard Pictograms.		

Tools & Materials Required

Estimated Time:	3-5 hours
Tools	• Standard Electricians Tools • Escalera lift, battery cart, hand truck.
Materials:	• Tesla PW2 • Tesla Gateway 2 • Wagos

	• Electrical Tape • CTs

Install Prep

Step 1: Customer Information

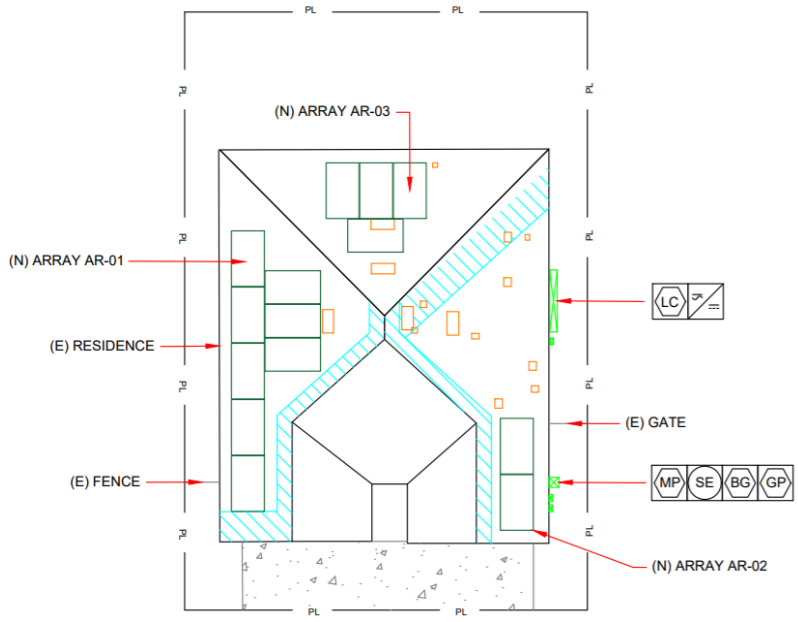
IMPORTANT: To commission the system, customer information is needed as early as possible in the day:

1. WiFi network name and password. Verify that it works.
2. Their personal email address. This will be used when they log into the Tesla app, and it will be needed for the commissioning procedure.
3. Having this information written down is a good way to save time later in the install - especially if the customer plans to leave the home while the install is in progress.

Step 2: Review System Configuration

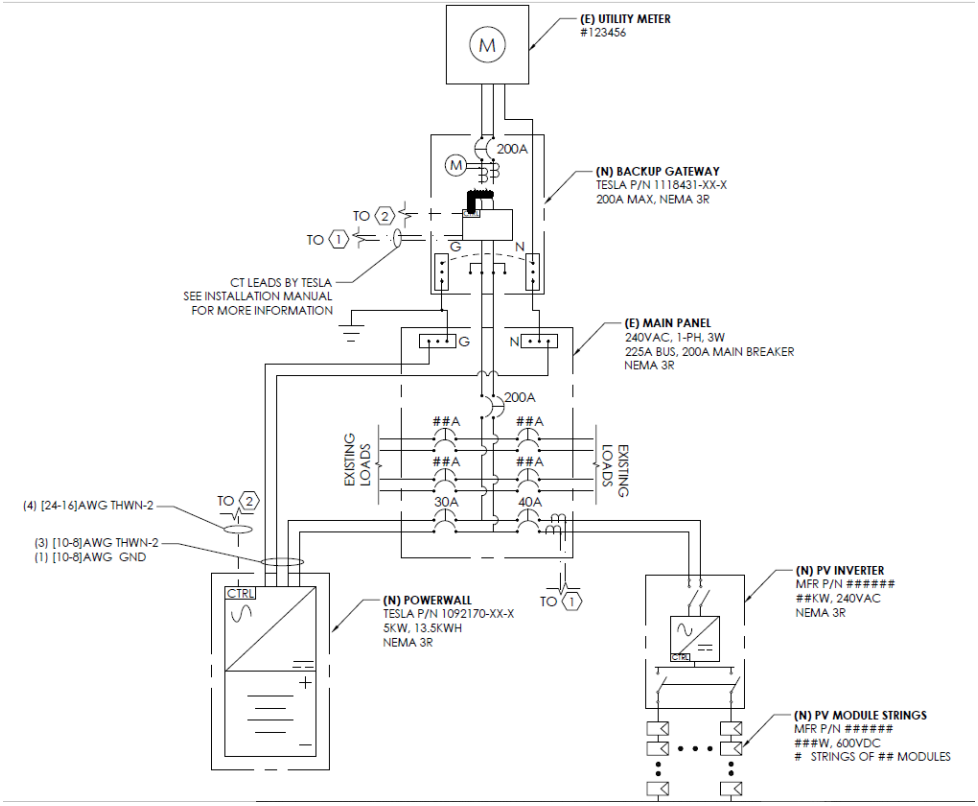
- Before beginning the installation, review the plan set to determine the location of the following items:
    - Powerwall 2 Battery(s)
    - Tesla Gateway

- Solar inverter(s), or Enphase IQ Combiner
- Backup load panel
- Generation panel (if installed)
- Disconnects
- Wiring trough
- NGOM meter socket (only for certain systems in CA with 3 or more batteries)

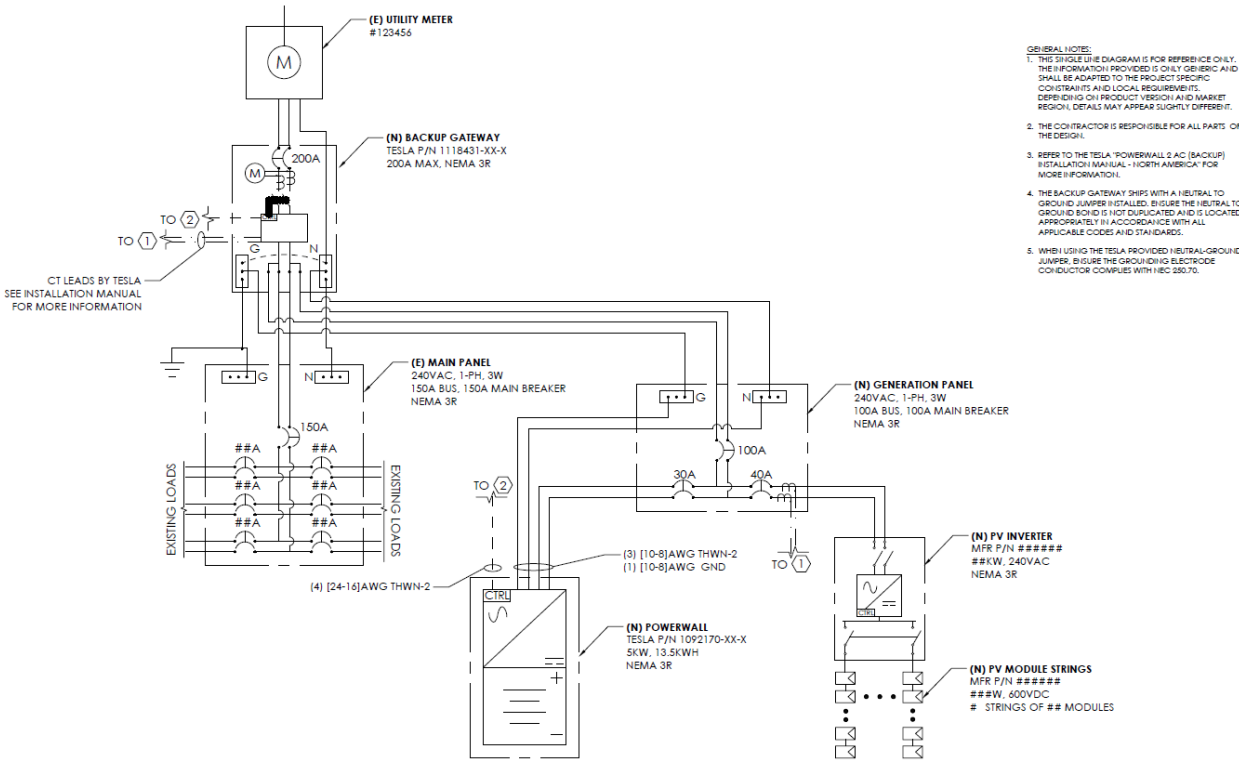


- Understand the backup configuration of the system to be installed. The main configurations are listed below, with example single line diagrams in the following pages (Steps A-C).

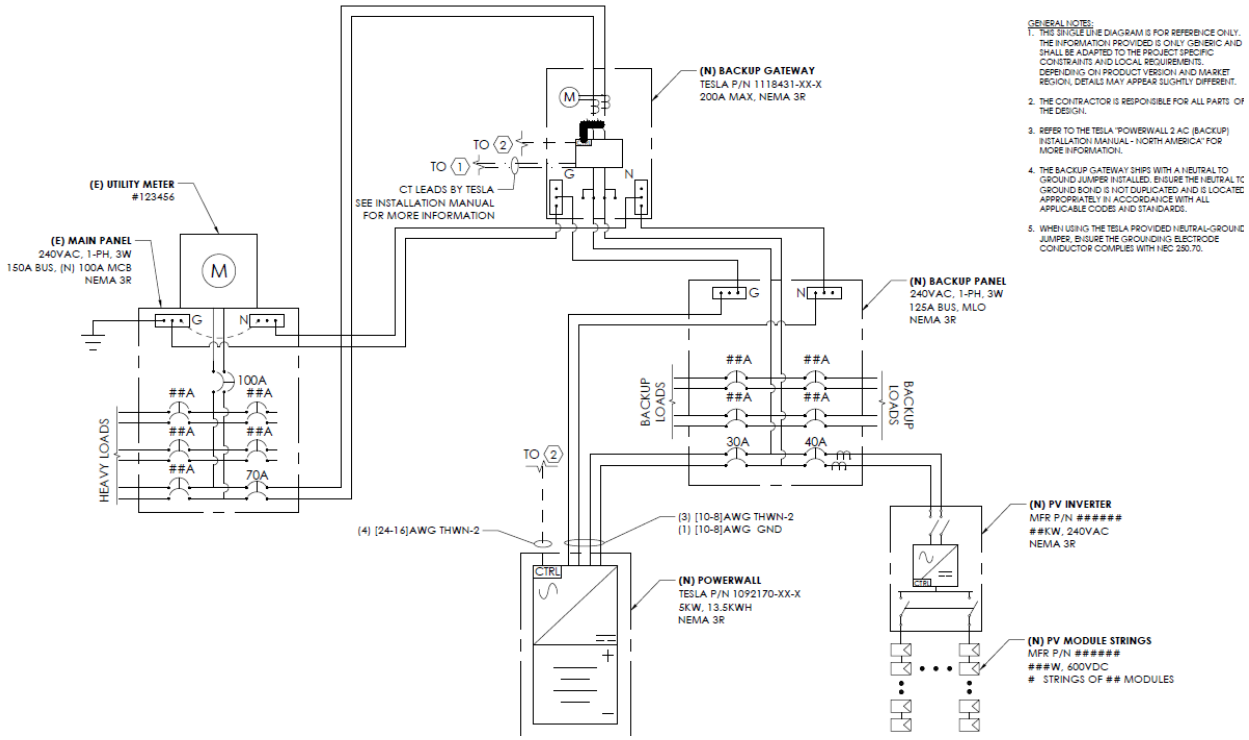
A. **Whole Home Backup, Simple.** All loads can receive power from the Powerwall(s) during an outage. The Gateway is installed between the service entrance and the existing main service panel. The Gateway contains the main service disconnect (breaker).



B. **Whole Home Backup, "Short Ampacity."** All loads can receive power from the Powerwall(s) during an outage. Installing the breakers for the Powerwall(s) and PV in the main service panel will exceed the 120% rule, so a new electrical panel is installed to house those breakers - this is referred to as a "Generation panel."

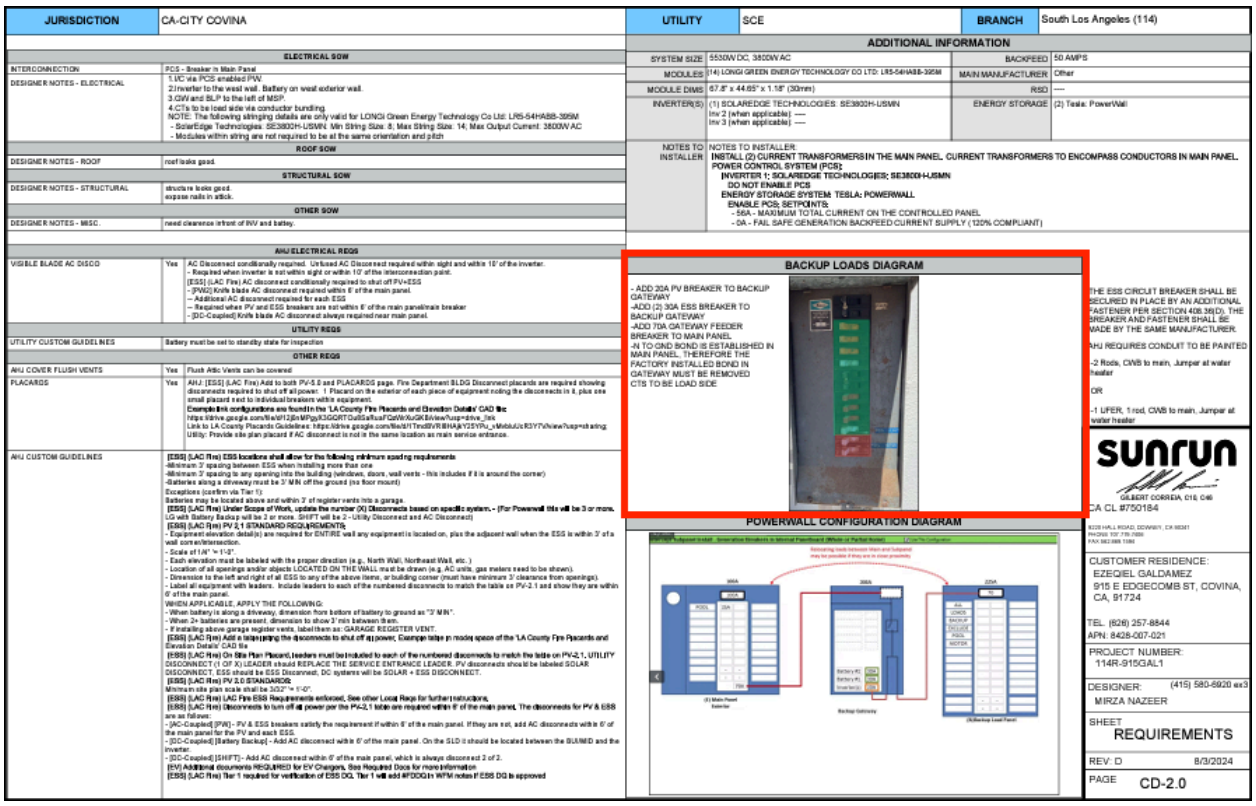


C. **Partial Home Backup, Heavy Loads.** The Powerwall(s) installed do not have enough amperage to cover the largest single load in the home. Heavy loads are left in the main panel and not backed up. All other loads are backed up.



Step 3: Review Loads to Be Backed Up

1. Review exactly which loads will be backed up



2. Pay attention to notes on the plan set - some AHJs require AFCI breakers if loads are extended for distances longer than 5-6 feet.

IMPORTANT: Identify any load breakers that have shared neutrals.

- Both loads on a shared neutral will need to be relocated to the backup loads panel.
- Loads that share a neutral must use a 2-pole breaker in the backup loads panel to provide simultaneous disconnect.

If an air conditioner or other appliance with a large motor will be backed up, the customer should have already had a Soft Starter device, such as Sure-Start installed. The Installation Coordinator should have confirmed this prior to scheduling the installation.

Step 4: Confirm Equipment Clearances

1. Compare the plan set to the actual site. Use a tape measure and confirm that there is enough wall space for all the equipment, including required clearances.
2. A single Tesla Powerwall 2 must have the following clearances (see diagrams on the following pages):
    - 2” on top
    - 2” on left side
    - 6” on right side

Appendix A. Powerwall Mounting Details

Powerwall Space Requirements

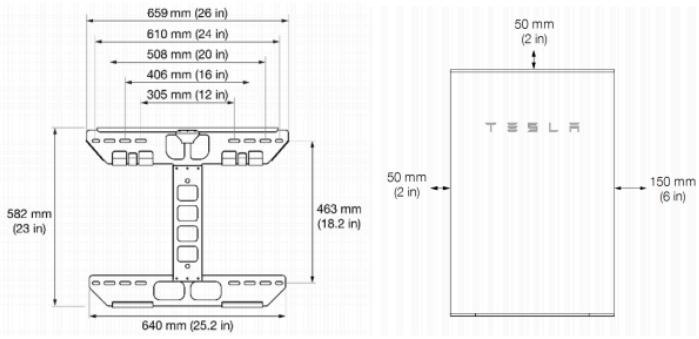


Figure 19: Powerwall 2 Mounting Bracket Dimensions and Space Requirements

Minimum lateral wall space	38 in (960 mm)
Minimum clearance from left side (air intake)	2 in (50 mm)
Minimum clearance from right side (air exhaust)	6 in (150 mm)
Minimum clearance above single Powerwall	2 in (50 mm)
Minimum clearance above side-by-side Powerwalls	12 in (300 mm)
Minimum clearance between side-by-side Powerwalls	10 in (250 mm)
Maximum height above ground	39.5 in (1 m) to bottom of unit
Maximum slope	+/- 2° side-to-side +/- 5° front-to-back

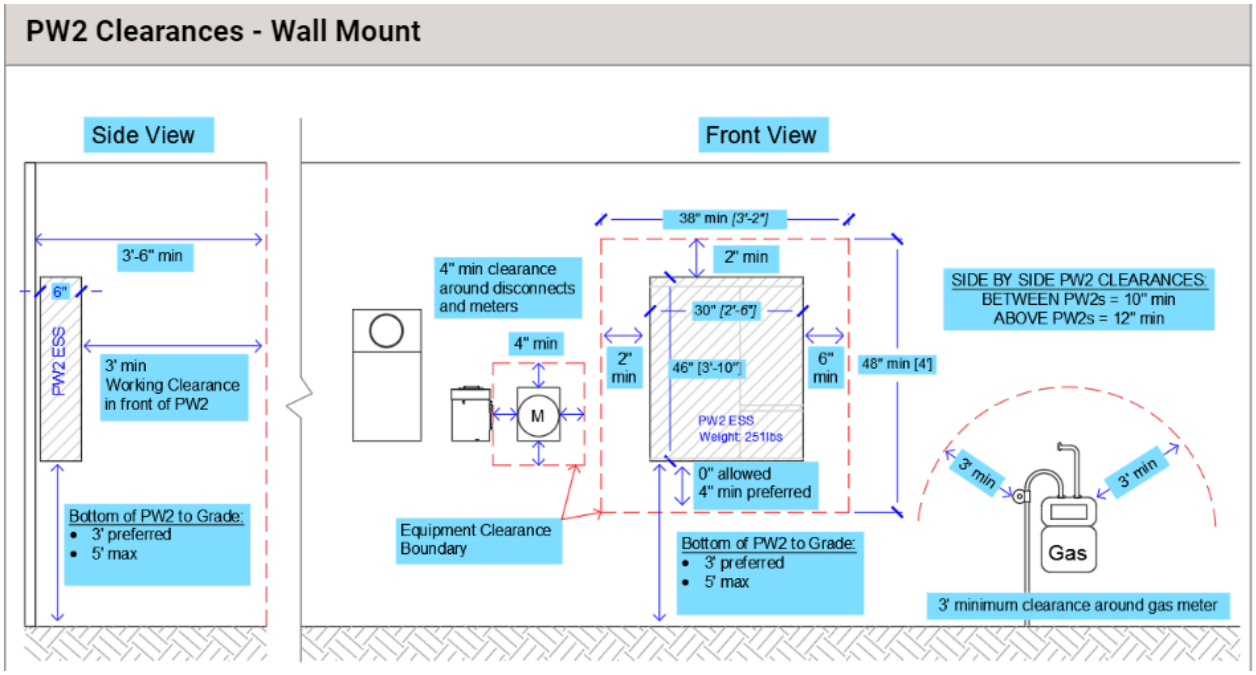
3. If mounting two Powerwalls side by side (as opposed to front-to-back with a stack kit), the following clearances must be observed:

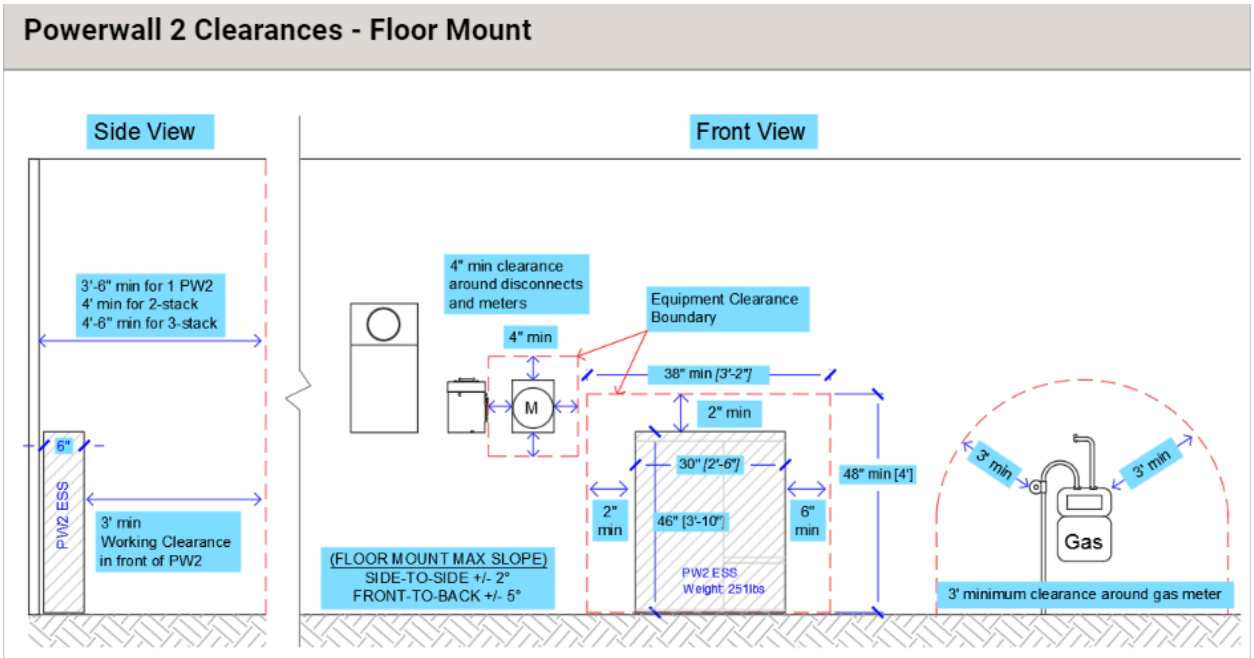
- 12” on top of the batteries
- 10” between adjacent batteries

4. Confirm that there is space for the clearances required by the inverter manufacturer.

5. Maintain proper clearances around gas meters, but always defer to the AHJ’s requirements.

6. For all other equipment - including wiring troughs - standard NEC requirements apply. See NEC 110.26, and SOP: Electrical Equipment Mounting and clearances - INS-SOP-0081.





Step 5: Make a Battery Mounting Plan

- Tesla Powerwall 2 batteries weigh over 250 pounds. Before attempting to move the battery, make a plan with the install team.
- If the battery is to be floor-mounted, confirm that the mounting surface is level.
- Is there a clear path to the battery mounting location? Will a hand truck be able to fit and navigate the terrain?
    - If possible, clear obstructions. Ask the customer before moving any of their belongings!
    - If a hand truck will not be able to navigate the terrain, arrange to have an Escalera lift from your branch with you for battery mounting.
- Double-check that the battery mounting location is a safe place for the battery:
    - No risk of water intrusion.
    - No risk of physical damage.
    - If mounted in a garage, make sure there is no risk of damage from vehicle bumpers/doors.
    - Battery will not obstruct doorways or other critical areas, once installed.
    - Battery is not mounted on the outside wall of a “living space” - the battery’s cooling system can make noise.

- If the mounting wall has metal studs (common with newer homes) or other irregular structure, consult Tesla's document: Powerwall 2_Anchorage_Details_USA_1-4.pdf

Step 6: Inventory: Required Materials

1. Take the time to do a detailed review of the Bill of Materials (BOM) for the job. Confirm that all required materials and tools are present.
2. Tesla installations require larger conduit sizes than typical PV only installs. Pay extra close attention to the inventory of large conduit, conduit bodies, and, connectors.
3. If installing multiple Powerwalls and stacking them, confirm that the appropriate stack kit(s) from Tesla are present - these ship separately from the Gateway and Powerwall.
4. Determine the appropriate size of communication wire for the communication wiring between the Powerwall(s) and Gateway:
    - If comm wire run is 100 ft or less, use 18 AWG.
    - If comm wire run is > 100ft, use 16 AWG.

Step 7: Before You Begin: Report Any Issues

1. If any of the issues listed below have been identified, report the issues and log them appropriately. Consult the Sunrun SOP, Installer Guidance for As-Built Design Changes - INS-SOP-0035.
    - CTs not fitting around conductors or bussing
    - Wall space issues - not enough space for all equipment including clearances
    - Concerns about loads to be backed up
    - Any other questions or situations that may require an as-built design change
2. If any materials, tools, etc. are missing, make a note of this in the FIC and discuss a plan with the crew or branch to obtain the required materials.

Equipment Mounting

IMPORTANT: When installing a Brightbox system in California, all batteries shall be installed on the exterior of the structure in order to avoid additional Scope of Work (SOW) required by the 2022 CA Intervening code

Step 1: Plan Equipment/Conduit Layout

- Before beginning installing, make sure the crew is clear on how the equipment will be installed, and how the conductors will be run between the various pieces of equipment. Double-check required equipment clearances before proceeding.

NOTE: When transporting a Powerwall 2, always leave it in the box until it is ready to mount. If transporting the battery with an Escalera or dolly, leave it in the box while doing so. This is important to avoid damaging the battery.

1. The Powerwall 2 and Gateway have multiple options for conduit entry points. Determine which entries will make the most sense to use.
    - Example: if the Powerwall 2 and Gateway will be mounted back-to-back on opposite sides of the same wall, it will make the most sense to use the back entries on both enclosures.
2. Plan all conduit runs and discuss the offsets needed.
    - Be sure to consider both aesthetics and the challenges of working with larger conduit when planning your conduit runs.

3. Site the location of the wiring trough, if one is to be used.

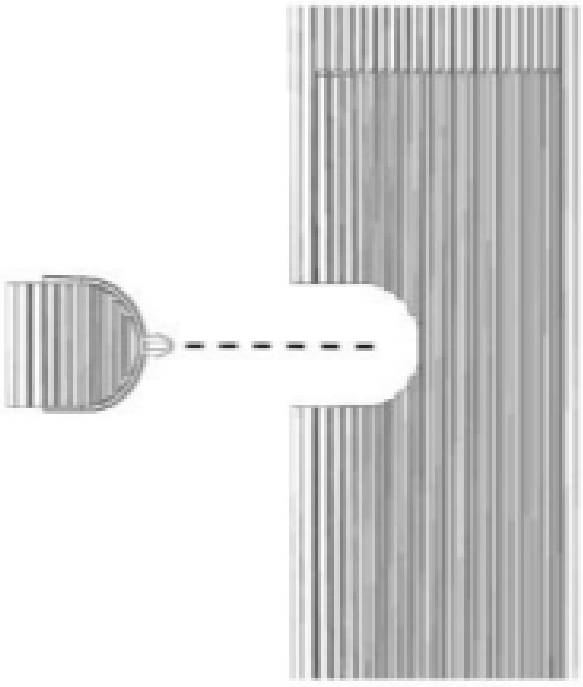
NOTE: The equipment does not necessarily need to be installed in the exact order presented in the following steps. Install the equipment in the most efficient/practical order for the job.

Step 2: Determine Battery Entry Point

1. Determine whether conductors will be routed into the battery's wiring compartment from the side or from the back of the unit.

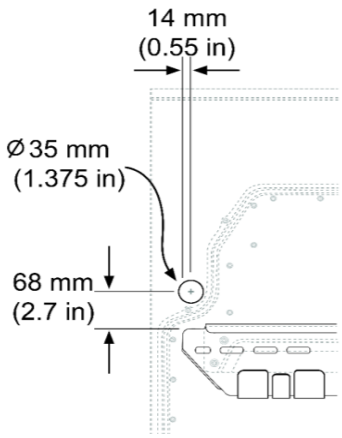
NOTE: The conduit entries on the battery are 1".

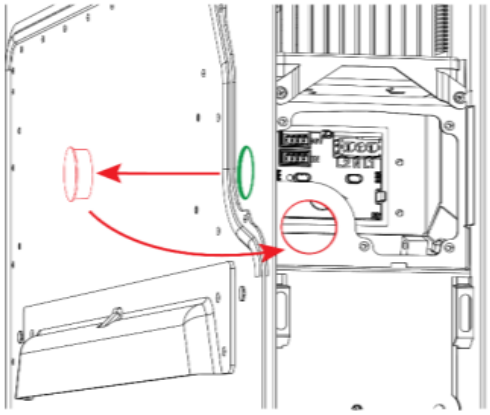
- For side entry:
  - Use the white plastic strips that come taped to the Powerwall; do not use other tools, as you will risk scratching the battery.
- A conduit fitting or cable gland must be used to seal the entry into the wiring compartment.



- For back entry:
    - For back entry, a rubber grommet or cable gland is used to seal the entry into the wiring compartment.
    - Drill a hole in the wall corresponding to the back cable entry port on the battery. See battery/rear entry dimensions (below left).
    - Remove the plug from the back cable entry port and place it in the side cable entry port (below right).

NOTE: If the battery is mounted on a wall with 24”-spaced studs, back entry may be blocked.

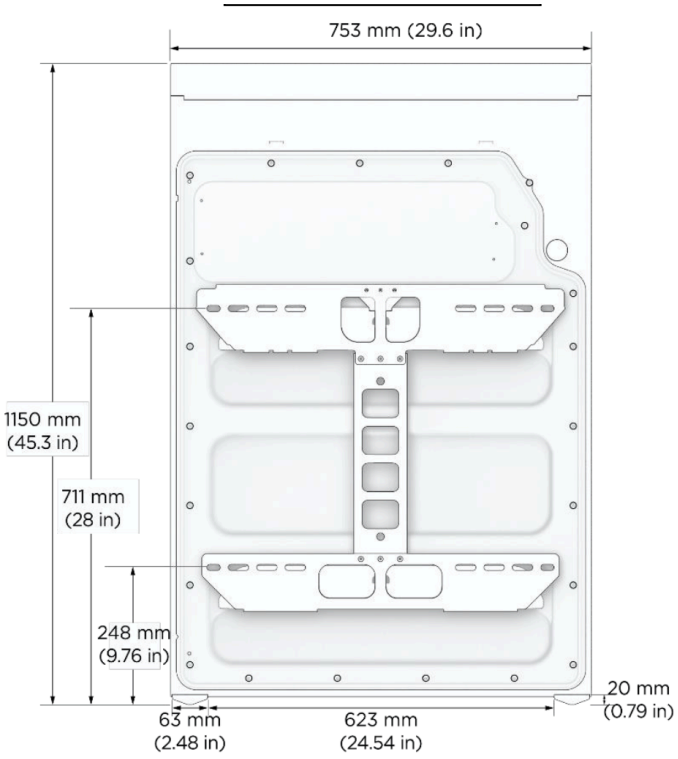




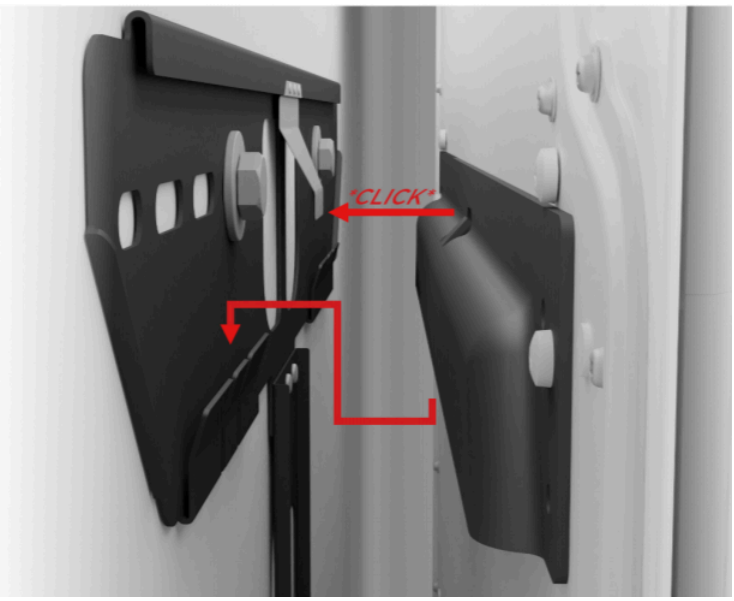
Step 3: Mount the Battery(s)

IMPORTANT: Depending on the type of material to be mounted on, requirements may differ. Consult Tesla's "Powerwall 2 Anchorage Details" document. Be sure to use the correct fastener hardware.

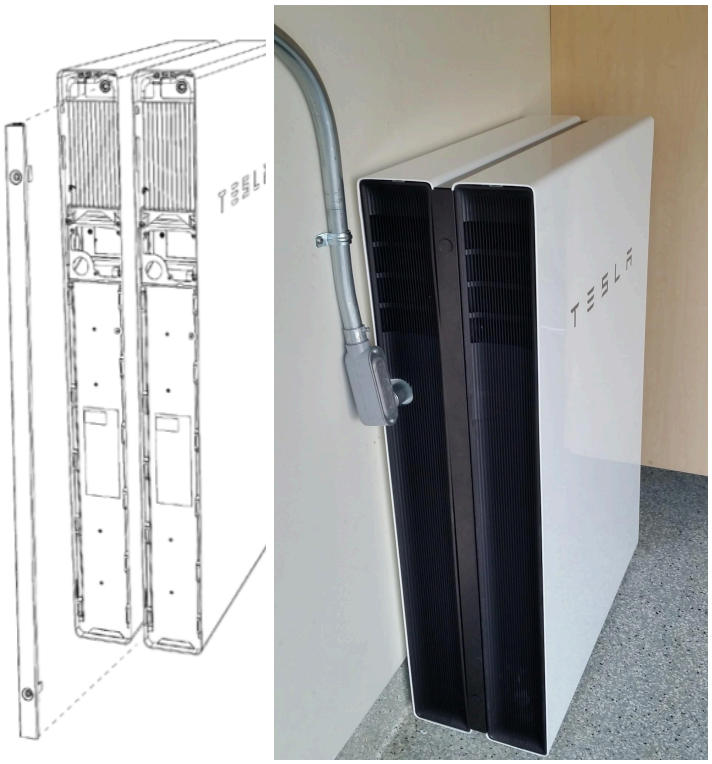
1. Locate two adjacent studs.
2. Measure 30" up from floor and mark the first screw location.
3. Drill a pilot hole to verify that you hit a stud.
4. Apply sealant, and install first screw into mounting bracket.
5. With level, mark second screw location (left or right of first).
6. Again, drill a pilot hole and verify that you hit the stud.
7. Apply sealant, and install 2nd screw.
8. Check bracket level.
9. Install the 3rd and 4th screws in the lower section of the mounting bracket, following the same process as above.



10. Pull on the bracket hard to ensure it is secure.
11. At least two people should participate while lifting the battery:
    - One person operating the battery lift
    - One person on either side of the battery, spotting
12. One person should help visually confirm that the bracket on the back of the battery is aligned with the teeth on the wall bracket, while their fellow installer(s) lift and guide it into position.
13. You should hear a “click” when the battery is in place.
14. Finally, check the battery once more with the level.
15. If you need to remove the battery, first disengage the locking clip on the bracket. A paint stick or similar thin, rigid object works well.



16. If installing multiple batteries and using the Tesla Powerwall 2 battery stack kit, carefully follow the instructions in Tesla's "Powerwall 2 Stack Kit Installation Manual."

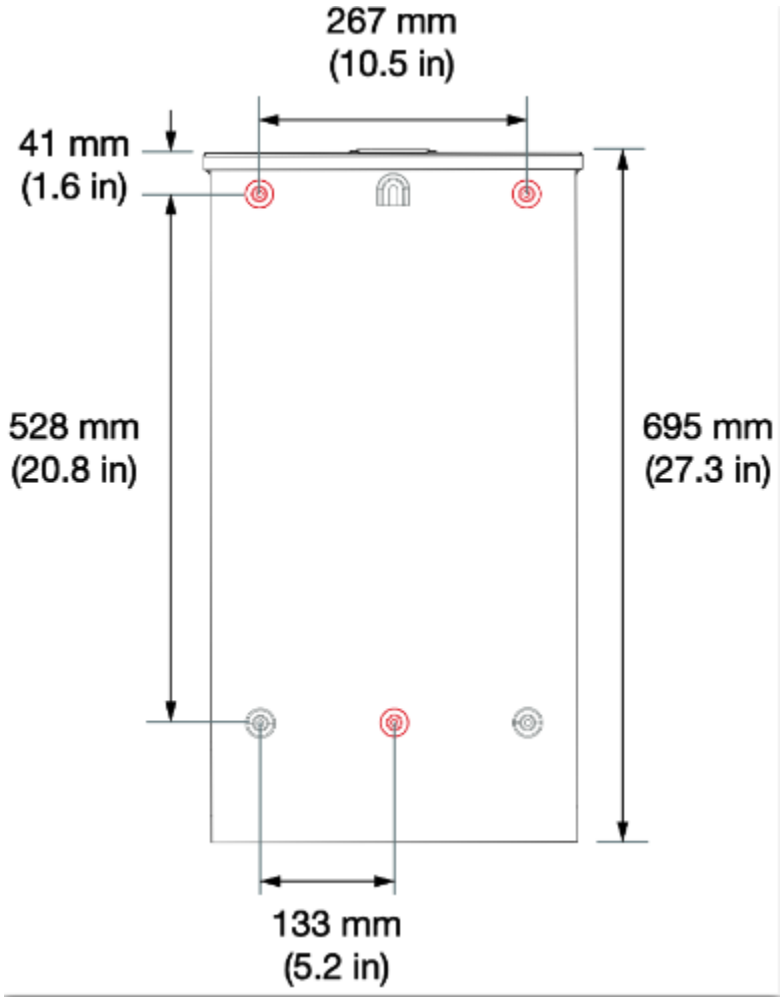


17. You may use the stack kits for mounting only up to three batteries back-to-back.

- Each PW2 weighs 251 lbs. If using a premade slab or base, the material must be rated for the weight of each battery in the stack. (ie, 2 PW2= 502 lbs. rating)

Step 4: Mount the Gateway

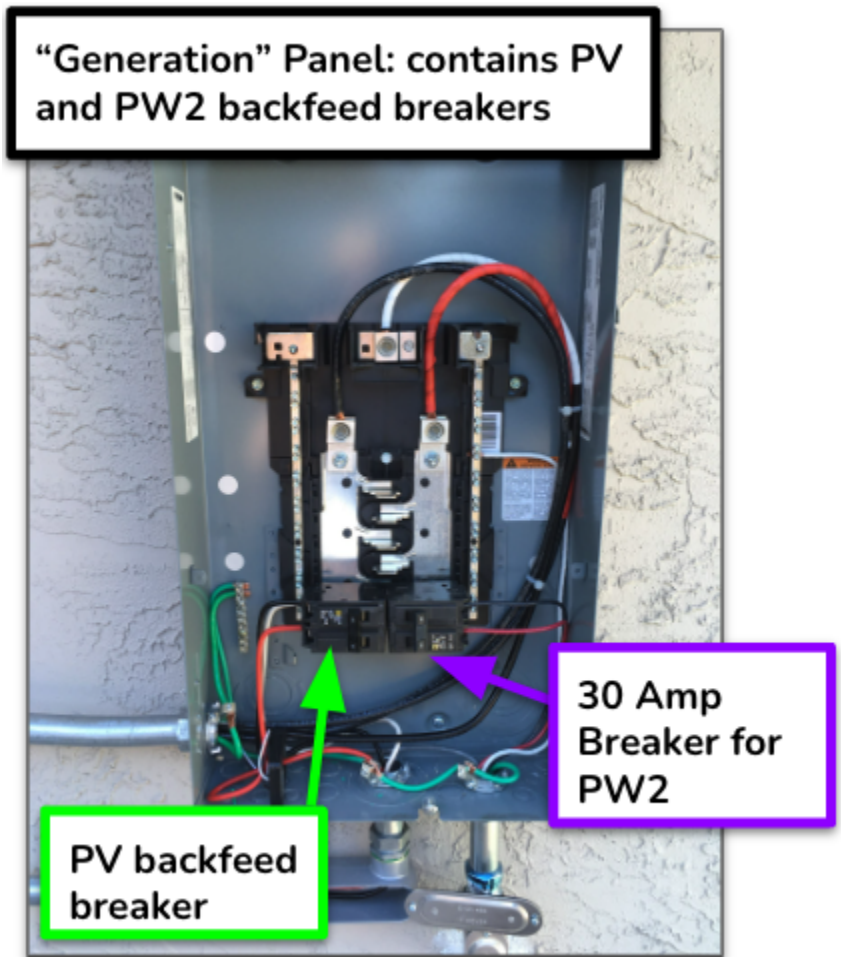
1. The Gateway must be located as close as possible to the main service panel to allow for ease of wiring and CT installation.
2. Mount the Gateway with three screws (shown in red).
3. If needed, you can drill additional mounting locations (shown in grey). You will need to remove the back panel electronics.



Step 5: Mount the Backup Loads Panel and Generation Panel

- When installing a “whole home backup” system, and you are unable to install the breakers for the PV system and battery(s) in the main service panel, you may be required to install a “Generation” sub-panel. The purpose of a Generation panel is to house the breakers for all non-utility generation sources: the PV inverter and the battery(s). Consult the plan set.
- If you are installing a “partial home backup” system, you will need to install a separate backup loads panel to house the load breakers you relocated. The Generation panel may also house the backed up loads, depending on system configuration.

- Mount the panels close to the Gateway, while observing all required equipment clearances.



Step 6: Install Disconnects & Meter Socket (If Applicable)

- AC disconnects may be required if…
  - There is equipment on both sides of a wall or fence
  - The equipment is installed out of line-of-sight from the main service panel
  - The AHJ requires it for any other reason

1. Install AC disconnects as needed, and double-check that they are rated to handle the amperage required by the specific system.

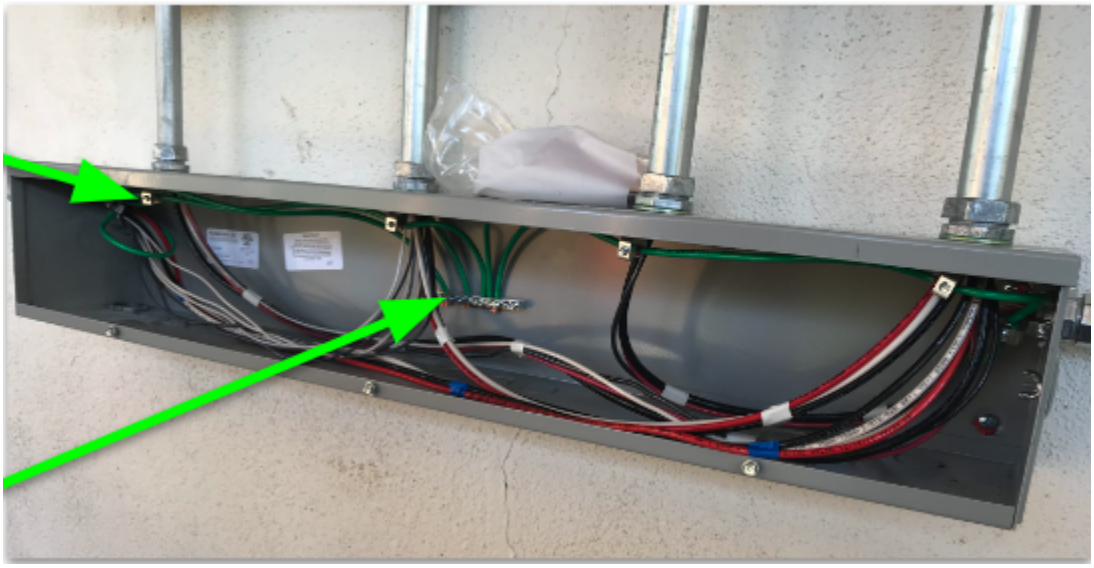
- **Only for certain CA systems with 3 or more batteries:** install a socket for the Net Generation Output Meter (NGOM). Consult the plan set. The utility will complete the NGOM meter wiring closer to PTO.



Step 7: Mount the Wiring Trough

1. Site the location for the wiring trough, taking conduit entries from all other enclosures into account.
    - Discuss offsets required - remember, larger conduit sizes will be more difficult to bend.
2. Ensure that each conduit entry into the wiring trough has a ground lug installed. These short conduit runs are only required to be grounded at one end - unless the AHJ requires otherwise.

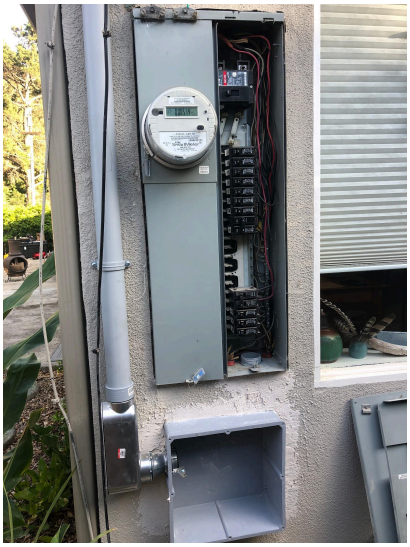
3. Ensure that the wiring trough itself is also bonded to ground! Use a ground bar or ground lug.



Step 8: Install Conduit Runs

1. Run the conduit between all enclosures.
2. Pay close attention to the conduit schedule in the plan set - Powerwall 2 systems require larger conduit sizes than your typical PV system.
3. Install ground lugs in all appropriate locations.





AC Wiring

Step 1: Pre-Wiring Checks

- Once all equipment is mounted, do the following before you begin wiring up the system:

1. Ensure the battery's on/off switch is in the OFF position.
2. Ensure the battery's left side cover is removed, to allow access to the wiring compartment.
    - To avoid damaging the battery, only use the white plastic strips that come taped to the battery to do this.
3. Ensure Make sure the PV overcurrent protection device is in the OFF position.
4. Remove the metal dead front and glass outer cover from the Gateway and set them aside.
    - Consult your design plans.
    - See Step 6 for instructions on removing the jumper.

5. If the Gateway will be used as a main service panel for whole home backup, make sure the correct Cutler Hammer / Eaton main breaker is installed in the Gateway.

Step 2: Pull Wire

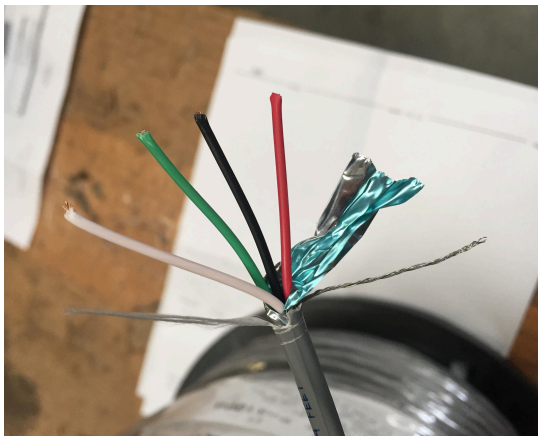
1. The connection clips on the CTs are bulky, pull the CT leads through the conduit prior to pulling any other conductors.



2. Determine the appropriate gauge for the comm wire:
    - If comm wire run is 100 ft or less, use 18 AWG.
    - If comm wire run is greater than 100ft, use 16 AWG.
3. Pull the EGC, AC conductors, and 4-conductor communication cable between the Powerwall and Gateway.
4. If multiple Powerwalls are installed, pull the comm cables between each pair of batteries as well.

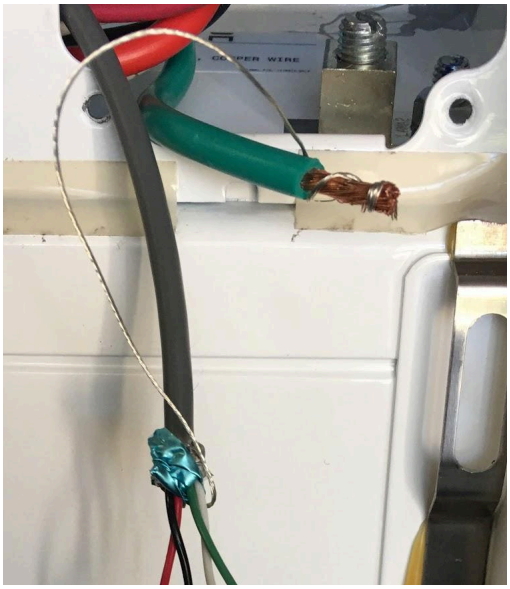



5. Strip ~ 2” of the outer sheathing off of either end of the comm cable to access the smaller wires inside.



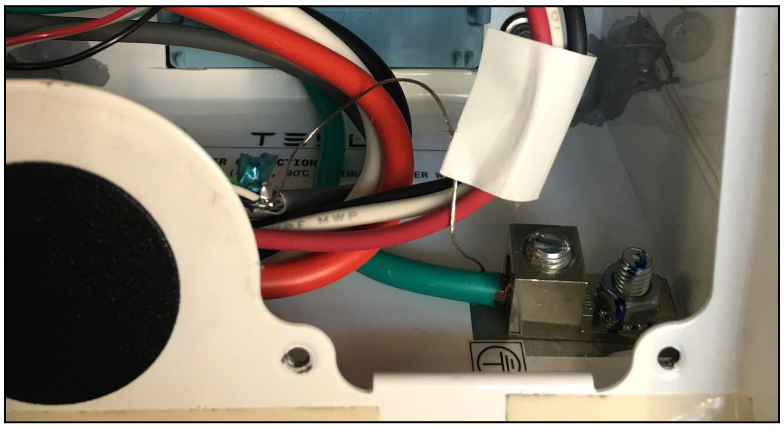
6. On the Powerwall end, strip the EGC’s insulation back about 3/8”.

7. Twist the “drain” wire from the communication cable around the exposed end of the EGC, as shown here.

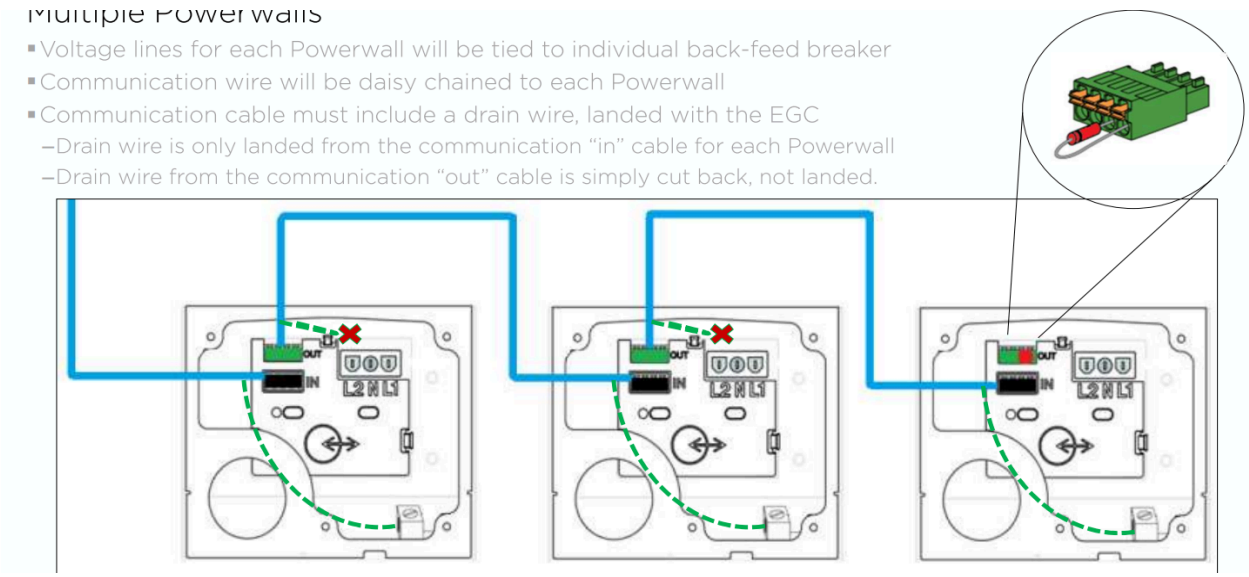


Step 3: Terminate Wire- Battery Ground

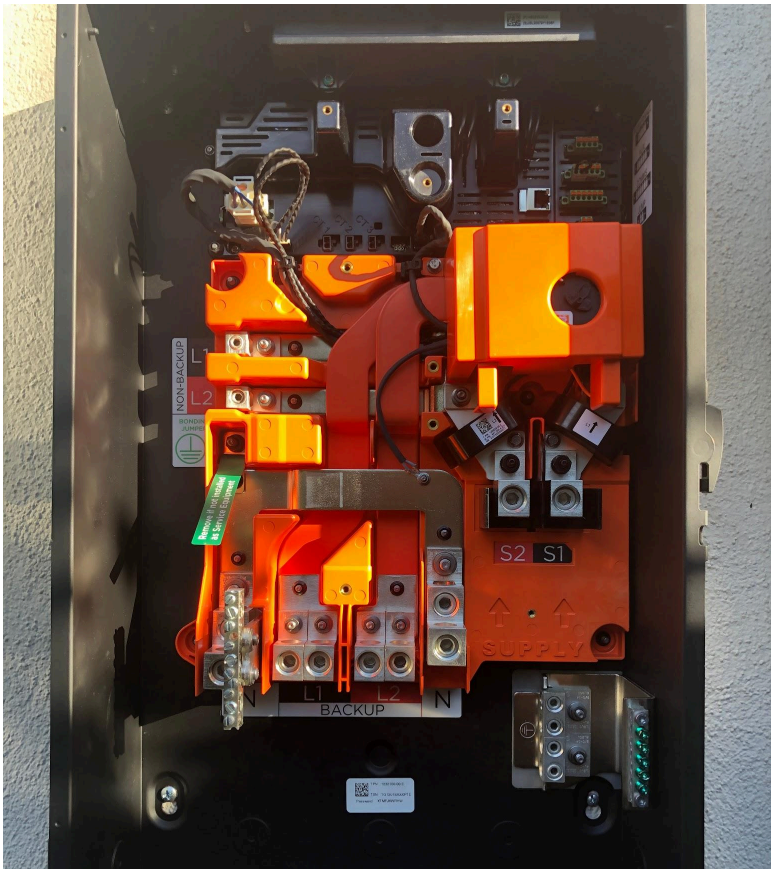
1. Land the end of the EGC with the wrapped drain wire in the Powerwall's ground terminal and tighten.



2. If installing multiple batteries, the Drain wire is only landed from the communication "in" cable for each Powerall. Drain wire from the "out" cable is simply cut back, not landed.



3. At the Gateway end, trim off the “drain” wire from the communication cable; it is not needed here.
4. Strip ~ 3/8” from the EGC insulation at the Gateway end.
5. Land the opposite end of the EGC (the end without the drain wire twisted around it) on the ground terminal inside the Gateway.



Step 4: Terminate Wire- Battery AC

1. In the Powerwall 2 accessory kit, find the WAGO lever nuts (Figure 1) and pre-wired AC power harness



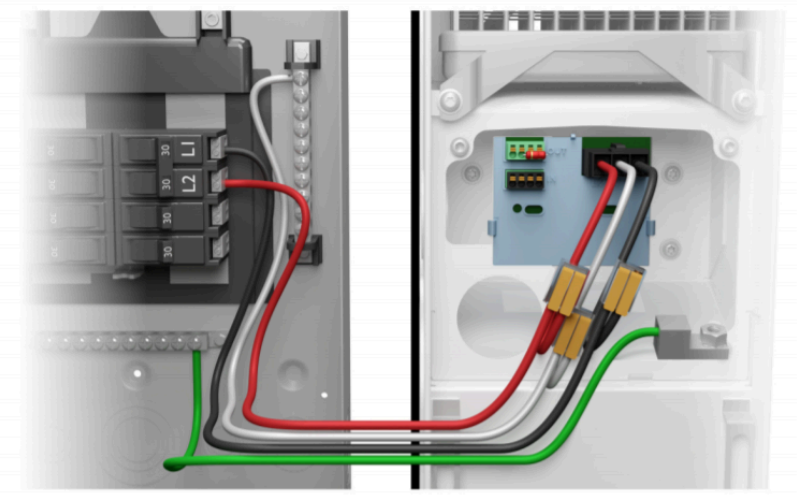


2. Install a WAGO lever nut on the end of each of the three harness conductors.
3. In the second port on the WAGO connect AC conductors (matching colors) to the corresponding conductor in the AC harness.
4. Tape the WAGOs to prevent opening of the levers



IMPORTANT: Tug test each connection to ensure it is secure.

5. Plug the black plastic connector at the end of the AC harness into the battery's AC wiring port.
6. Connect the AC conductors from the PW2 to a dedicated 30 Amp breaker in the panel where the battery output conductors will be landed.

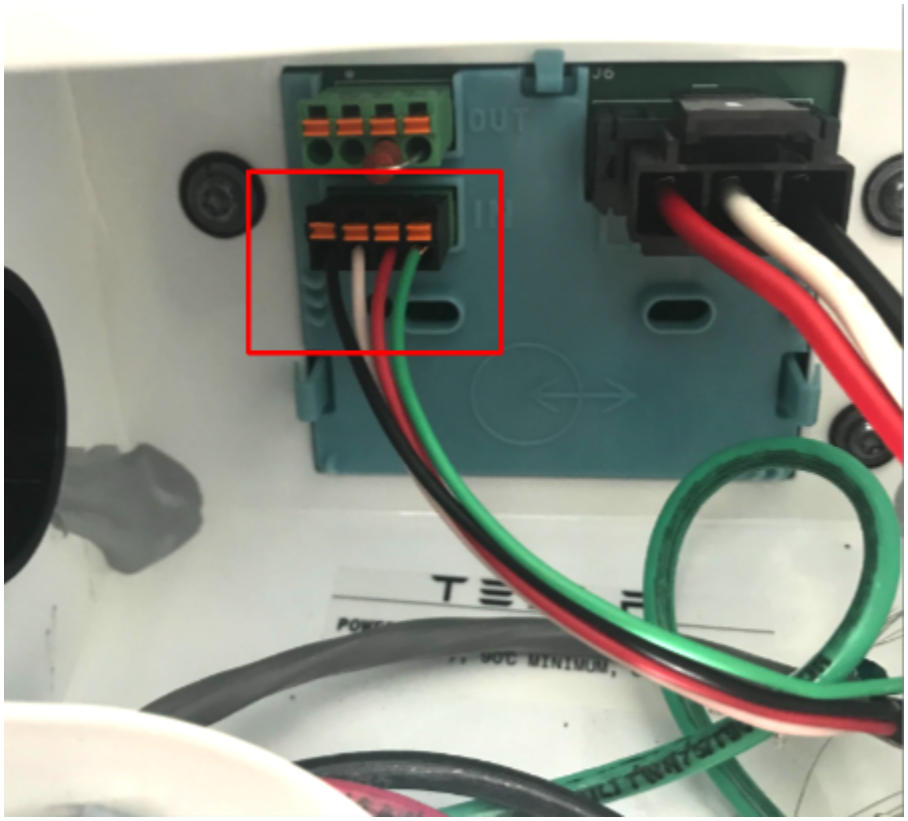


PANEL POWERWALL 2

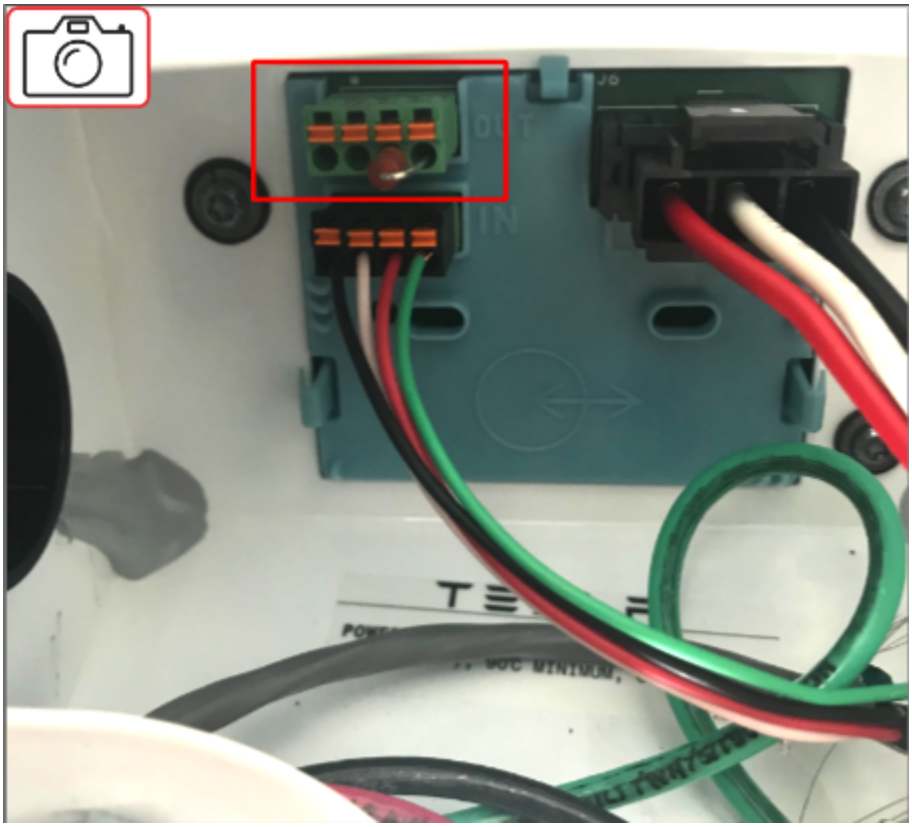
NOTE: Each Powerwall requires a dedicated 30 Amp, 2-pole breaker. If multiple Powerwalls are installed, wire each Powerwall to its own dedicated breaker.

Step 5: Terminate Wire- Battery Communication

1. Strip ~ 3/8” of each wire in the communication cable.
2. Land the four comm wires to the black connector provided in the accessory bag.
3. Use the following wire color convention from left to right: black, white, red, green
4. Plug the black connector (with comm wires connected) into the lower left “**IN**” port in the Powerwall.



5. For single-battery systems, install the green connector with termination resistor in the **OUT** port of the battery.



NOTE: If installing multiple batteries, connect the OUT port of the first battery to the IN port of the next battery, and so on.

IMPORTANT: If installing multiple batteries, the green connector with termination resistor must be installed only in the last battery (farthest from the Gateway) in the communication chain.

6. Connect the comm wires to the POWERWALL terminal in the Gateway.
7. Follow the same wire color convention as the battery (left to right: black, white, red, green).



IMPORTANT: The drain wire should be clipped off of the multi-conductor comm wire at the Gateway end only.

Step 6: Install Remote Disable Switch (If Required)

1. Install the switch (if required) in accordance with the plan set.
2. The External RSD switch shall be installed outdoors near the main service panel in an accessible location.
3. Identify the external disconnect switch as the system RSD and shown.



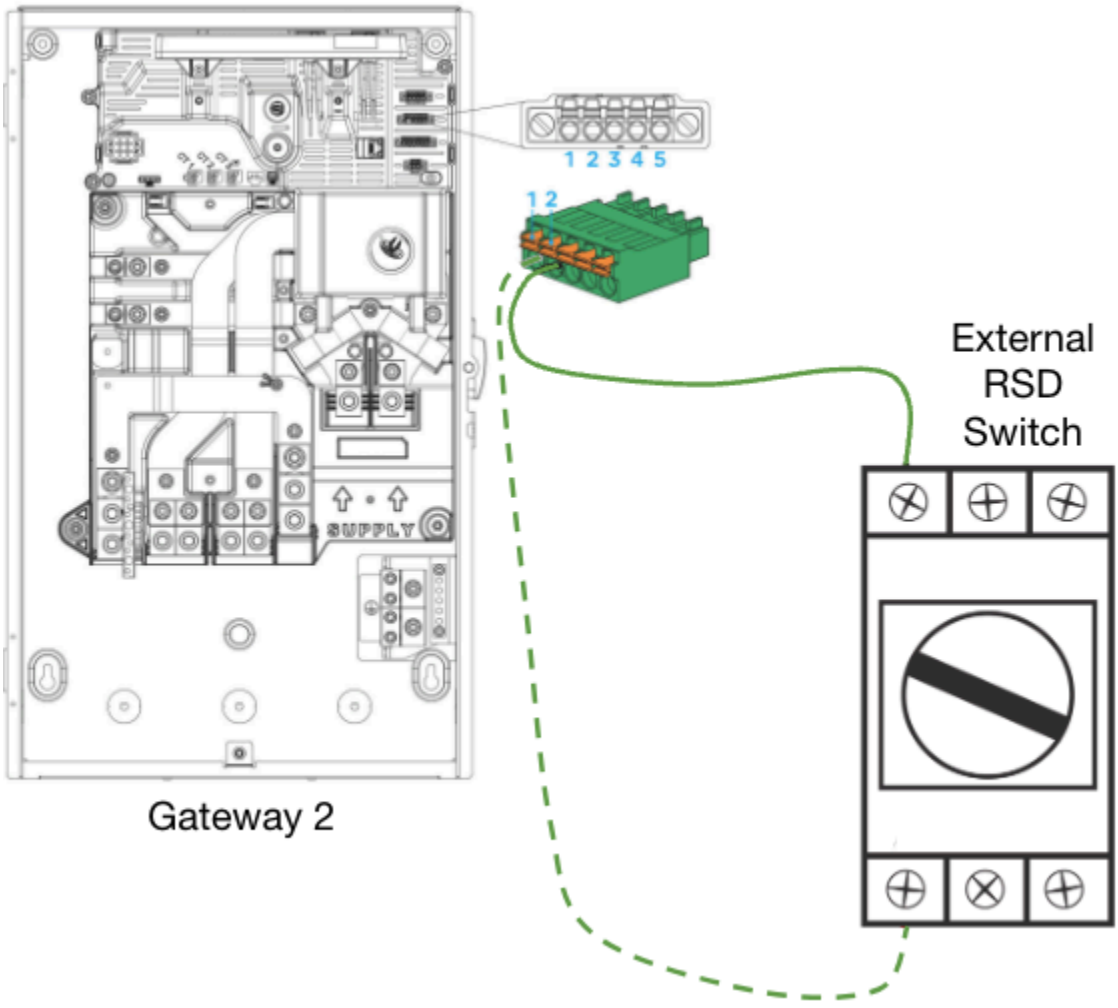
RSD Wiring

Gateway 2:

1. Remove the jumper from ports 1 and 2 of the AUX connector.
2. Replace the jumper with 600 V CAT5
    - Terminal 1 White/Green
    - Terminal 2 Green

Disconnect:

1. Connect the Green wire to the top of the first port and the White/Green to the bottom of the first port.

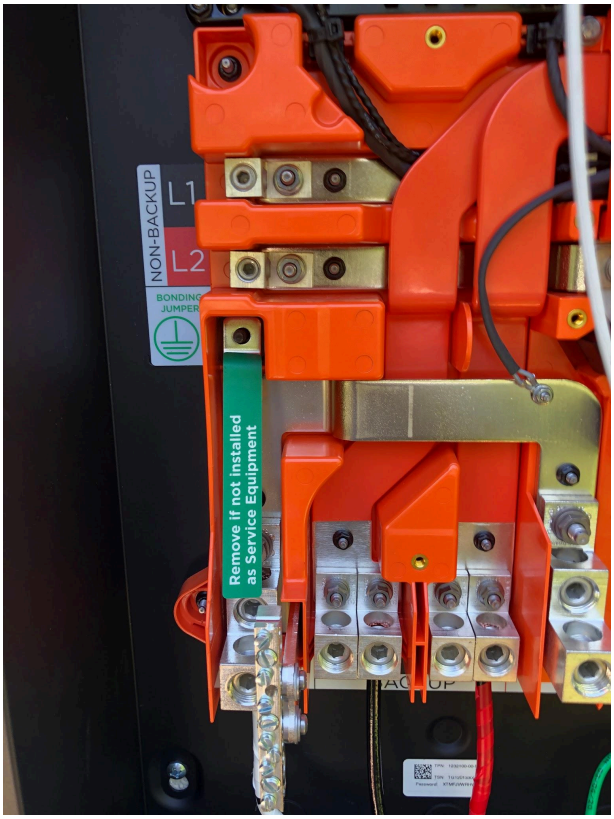


Step 7: Gateway 2 Neutral- Ground Bond

1. Neutral-Ground bonding strap located inside the Gateway. (marked with a green tag).

   Remove the bonding strap if the Gateway is not installed as Service Equipment.





2. If removing the strap, use a 7/16” socket to remove the two nuts attaching it to the Gateway.
3. If replacing the Neutral-Ground Bonding Strap, torque nuts to 65 lb-in (7.4 N-m).

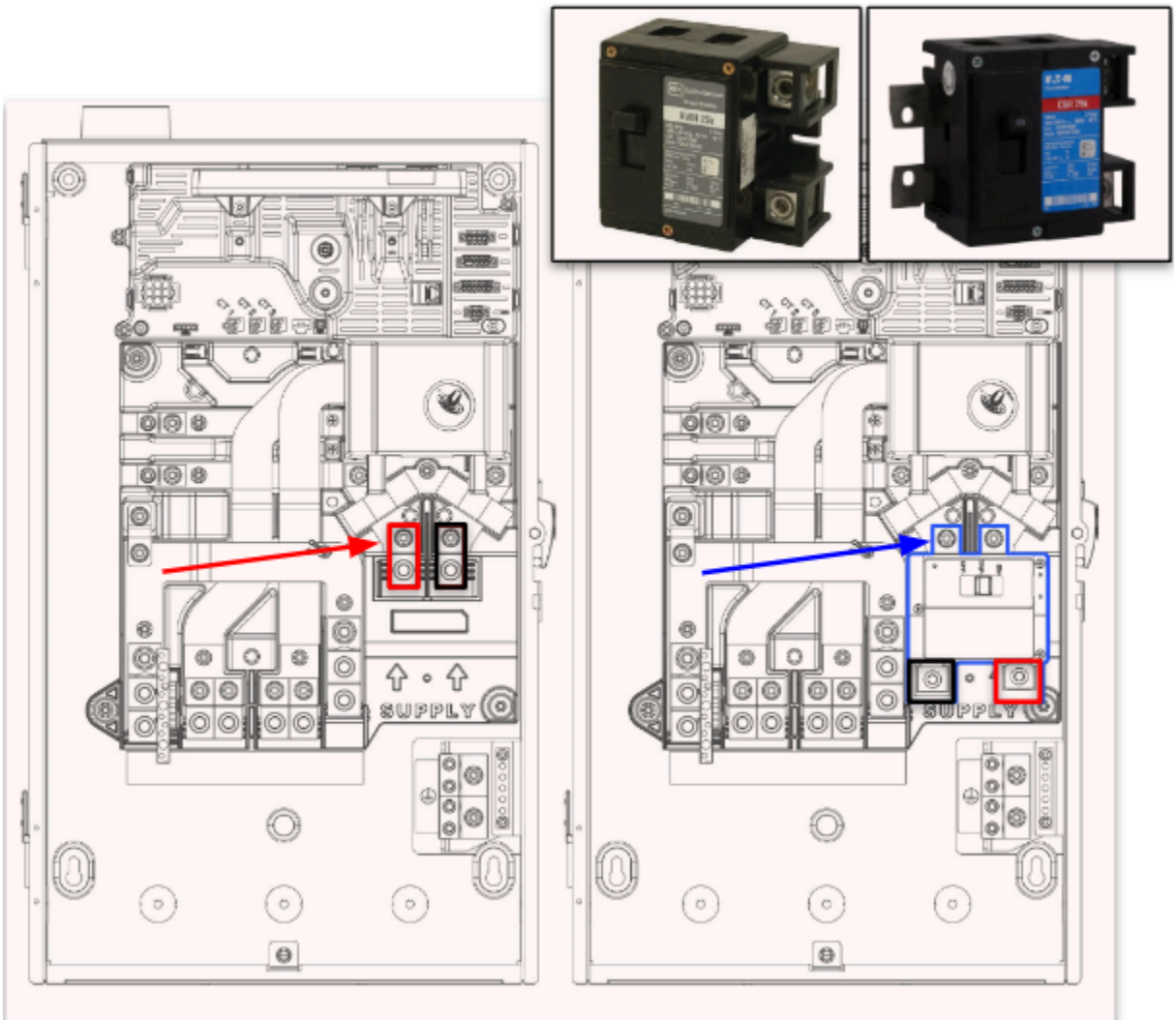
Step 8: Install Main Breaker In Gateway 2

NOTE:

- If the Gateway is installed as service equipment, an Eaton CSR or BW-type main breaker must be installed inside the Gateway.
- These breakers cross the phase of L1 and L2 as they pass through the breaker.

- If a main breaker is to be installed in the Gateway in accordance with the plan set:

- Remove the S1 and S2 supply lugs, using a 7/16” hex socket.
- Install the main breaker, torquing the two S1 and S2 nuts to 65 lb-in (7.4 N-m) using a 7/16” hex socket.



Step 9: Disconnect Utility Power

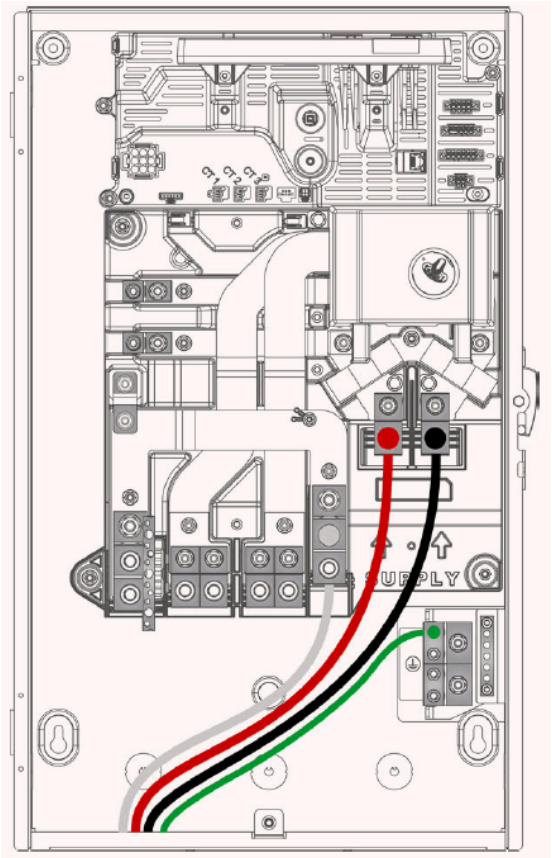
IMPORTANT: Confirm with the homeowner that it is OK to turn off the utility power.

1. Communicate clearly to them how long the power will need to be left off.

2. Turn off the main service disconnect.
3. Use a voltmeter to verify that there is zero voltage in the main service panel before starting work.

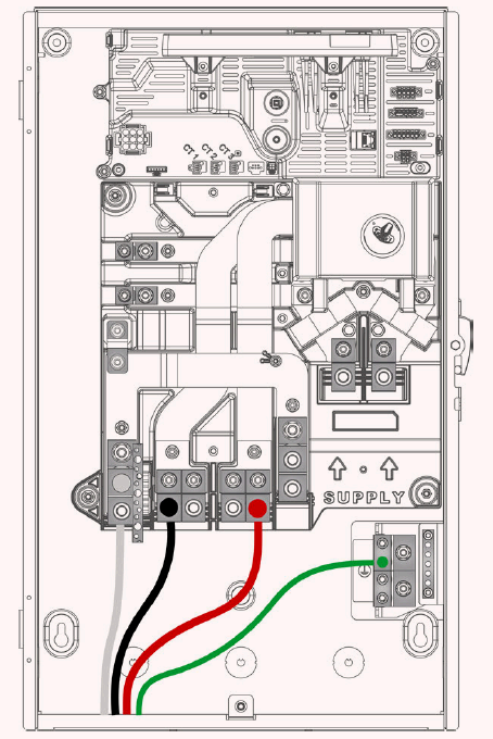
Step 10: Make Supply Connections

1. Strip the supply conductors to the following lengths:
    - L1, L2: 1.25 inches
    - Neutral: 1.25 inches
    - Ground: 3/4 inch
2. Land L1 and L2 at the Gateway's Supply terminal - or if you installed a main breaker in the Gateway, land them at the breaker's terminals.
3. Torque the Supply and Neutral lugs to 275 lb-in (31 N-m). Torque Ground lug to 120 lb-in (14 N-m).



Step 11: Make Backup Load Connections

1. Strip conductors from the backup load panel to the following lengths:
    - L1, L2: 1.25 inches
    - Neutral: 1.25 inches
    - Ground: 3/4 inch
2. Land L1 and L2 at the Gateway's Backup terminals.



NOTE: If locating backed up loads on the optional panelboard kit, the jumpers for the panelboard must be connected to the inner set of Backup terminals. If you are connecting an additional panel beyond that (e.g., a Generation panel), you will need to use the outer set of Backup terminals on the Gateway for that panel.

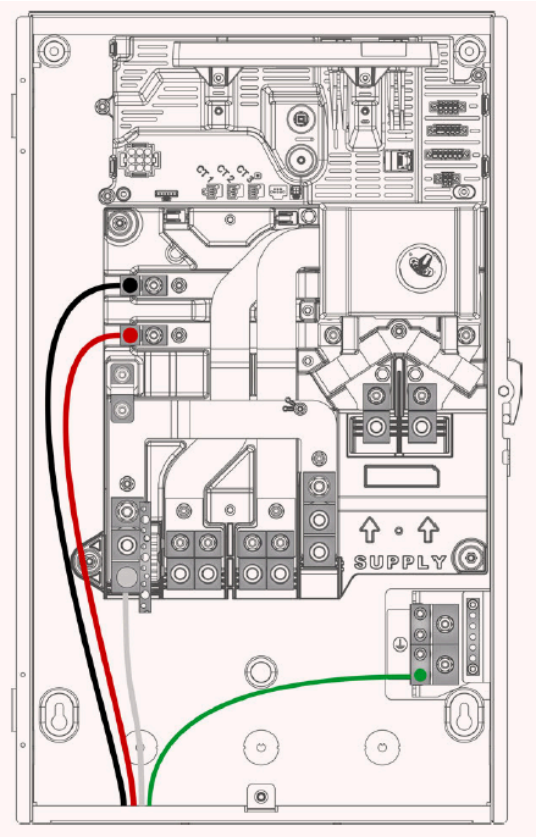
3. Land the Neutral and Ground conductors at the appropriate terminals in the Gateway, as shown at the right.

4. Torque L1, L2, and Neutral lugs to 275 lb-in (31 N-m). Torque Ground lug to 120 lb-in (14 N-m)

Step 12: Make Non-Backed-Up Connections

- Up to 100 A of non-backed up loads may be connected to the Gateway via the Non-Backup terminals.

1. Strip conductors from non-backed up loads/panels to the following lengths:
    - L1, L2: 3/4 inch
    - Neutral: 1.25 inches
    - Ground: 3/4 inch
2. Land L1 and L2 at the Gateway's Non-Backup terminals.
3. Land the Neutral and Ground conductors to the appropriate terminals in the Gateway.
4. Torque L1, L2 lugs to 120 lb-in (14 N-m). Torque Neutral lug to 275 in-lbs (31 N-m). Torque Ground lug to 120 lb-in (14 N-m).

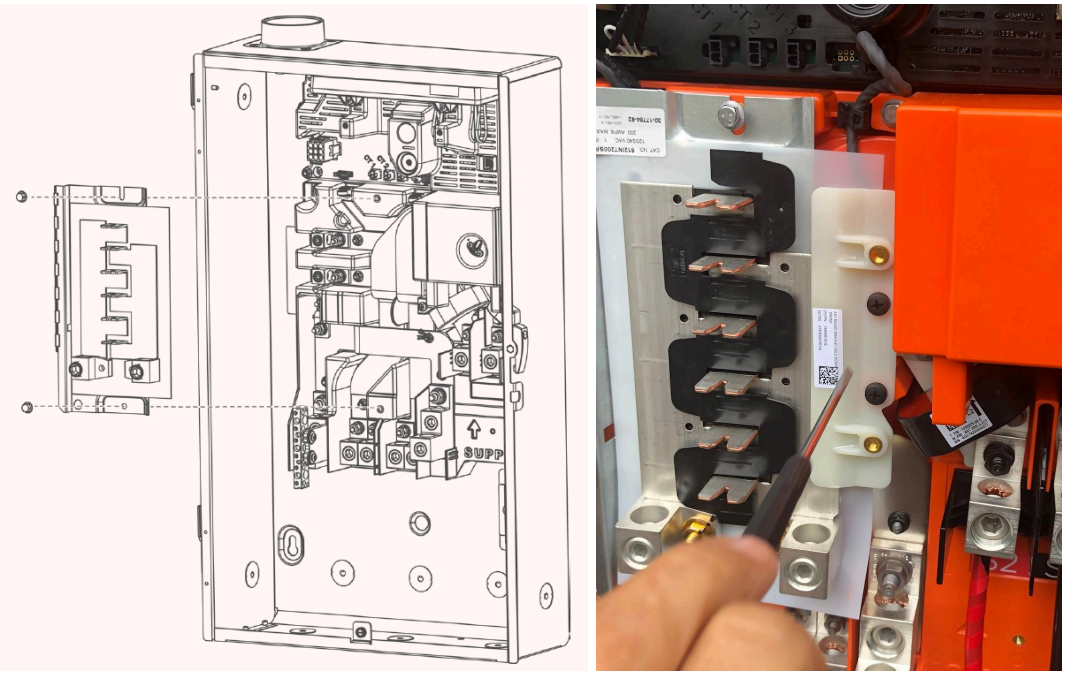


Step 13: Install Panelboard Kit

1. Consult the notes on the plan set to determine if the optional panelboard kit is needed. If not installing the panelboard kit, skip to the next step.
2. The panelboard kit may be installed in the Gateway 2 and connected to either the Backup or Non-Backup terminals by feeding a two pole breaker on the bussing.
3. The panelboard bus is rated 200 A and supports (6) 1” breaker spaces (12 circuits) using Eaton BR branch circuit breakers.



4. Mount the panelboard into the Gateway 2 using the provided mounting screws.

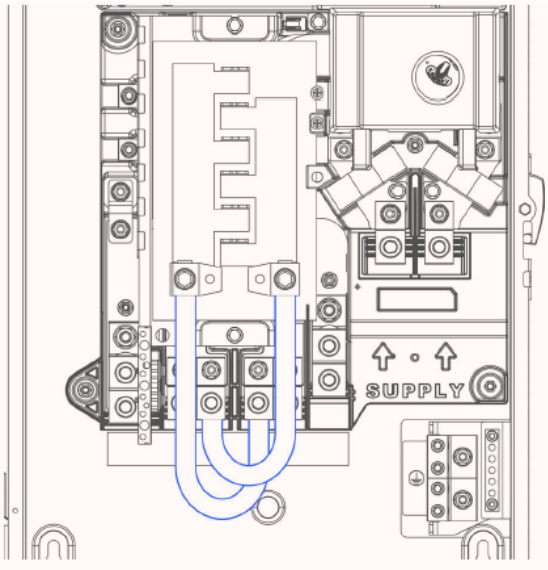


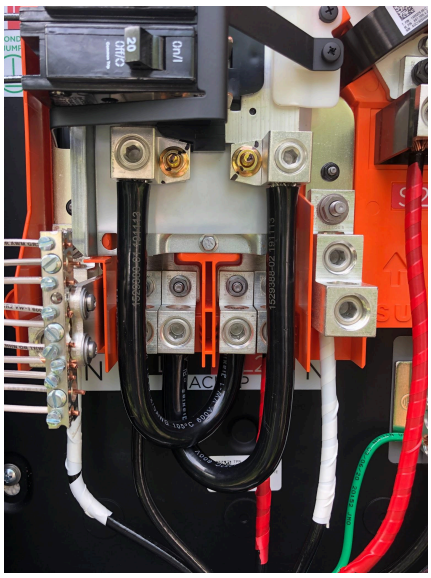
NOTE: The mounting screws are made of plastic - handle them gently and do not over-torque them.

Backed-Up Loads

- The panelboard may be wired to connect either backed up loads or non-backed up loads in the Gateway (one or the other; not both simultaneously).

1. Use the provided jumpers from the panelboard kit to connect the panelboard to the inside lugs of the Backup Terminals in the gateway.

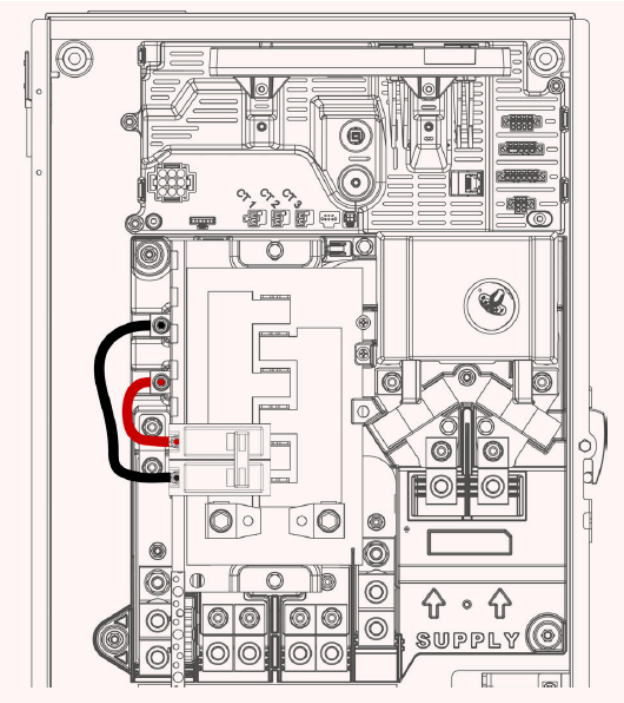




	Pro Tip: If additional backed up loads will be connected to the outer set of backup terminals, connect those first. The jumpers to the panelboard will block the outer terminals once installed.

Non-Backed-Up Loads

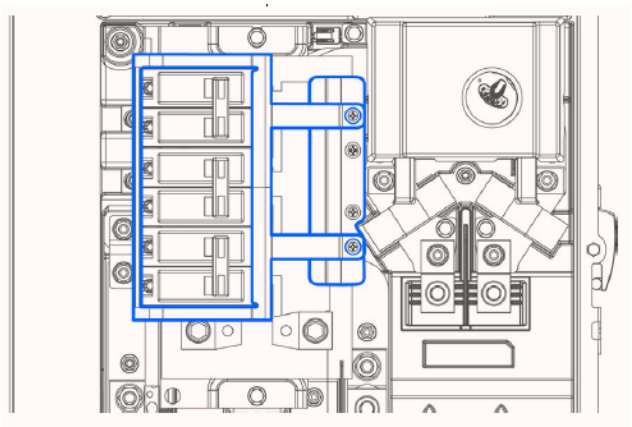
1. Verify that the non-backup loads you will connect to the Gateway Non-Backup terminals add up to less than 100 Amps.
2. Install an appropriately sized Eaton BR-type breaker on the panelboard bussing.
3. Use appropriately sized conductors to connect the breaker to the L1 and L2 Non-Backup terminals on the Gateway.
4. Torque the Non-Backup lugs to 120 lb-in (14 N-m).



5. Install all breakers on the panelboard.

NOTE: If installing breakers for backed up loads on the panelboard, consult Step 14A for important considerations.

6. Once all breakers have been installed, install the breaker hold-down bracket, using the provided (2) M5-0.8x12 Phillips head screws.





Step 14: Relocate Loads



Step 14A Relocating Home Loads	Step 14B Relocating Existing Solar

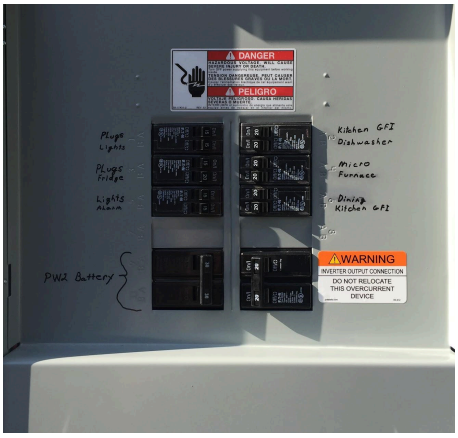
14A: Relocate Home Loads

1. Relocate home loads in accordance with the plan set.

IMPORTANT: Pay attention to loads that share neutrals.

- If two loads share a neutral, both of those loads will need to be relocated to the backup loads panel.
- Loads with a shared neutral must use 2-pole breakers in the backup loads panel to provide simultaneous disconnect.
- Ensure all loads are clearly labeled before they're relocated, documented on a reference sheet, and labeled on the deadfront of their new location.

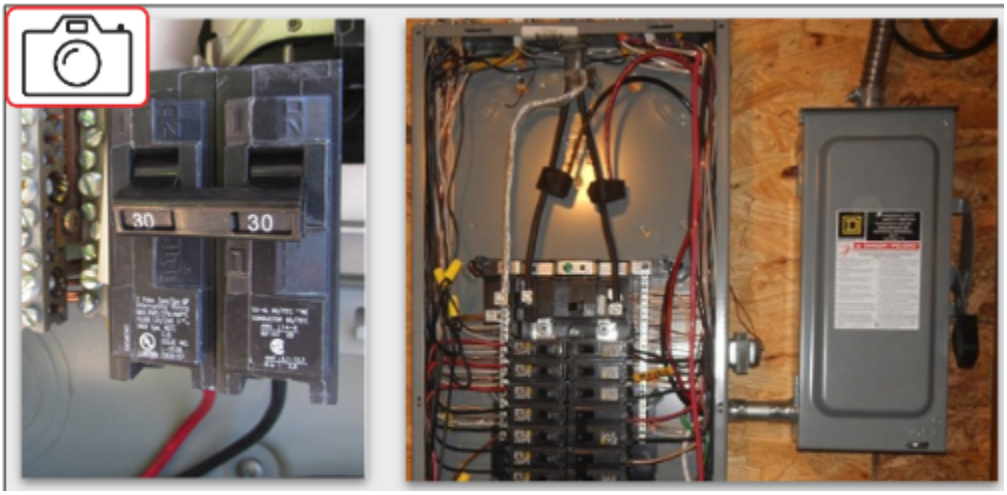
BACKUP LOADS		
LOAD	BREAKER RATING (AMPS)	LABEL
1	15A-1P	HALL BATH & MASTER BATH LIGHTS
2	15A-1P	FRONT PORCH ENTRY & LIVING ROOM LIGHTS
3	15A-1P	MASTER ROOM LIGHTS/PLUGS & HALL CLOSET
4	15A-1P	RM #2 LIGHTS/ PLUS & CLOSET
5	15A-1P	GARAGE GFIC
6	15A-1P	RM #3 LIGHTS/PLUGS & LAUNDRY
7	15/15A-1P	BATH GFCI/FURNACE
8	20A-1P	STOVE/HOOD
9	20A-1P	DINNING PLUGS
10	20A-1P	WASHER
11	20A-1P	KITCHEN PLUGS #2
12	20A-1P	REFRIGERATOR
13	20A-1P	GARBAGE DISPOSAL
14	20A-1P	DISH WASHER
15	20A-1P	KITCHEN PLUGS #1
16	15A-1P	SMOKE ALARMS
17	15A-1P	POWDER RM, KITCHEN, STAIRWAY LIGHTS



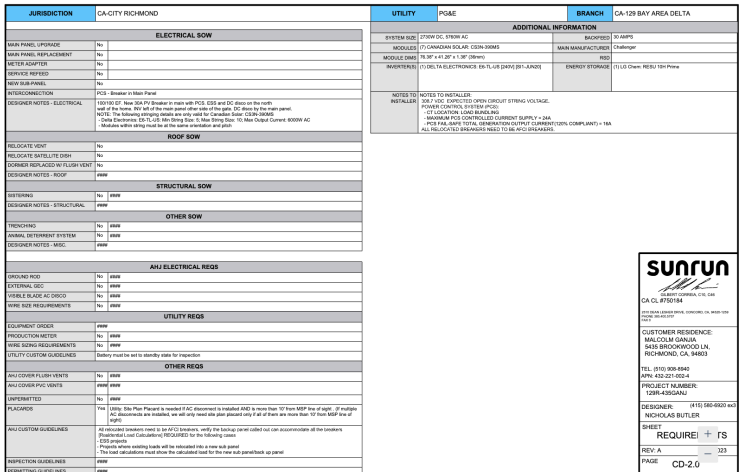
14B: Relocate Existing Solar

NOTE: This step applies to retrofits only (adding a PW2 to an existing PV system)

1. Take photos to document the existing system interconnection (breaker or tap) before any work is completed.



2. Relocate the existing solar to a breaker in accordance with the plan set and CD-2.0 page.



JURISDICTION	CA-CITY RICHMOND	UTILITY	PG&E	BRANCH	CA-129 BAY AREA DELTA

ELECTRICAL SOW

MAIN PANEL UPGRADE	No
MAIN PANEL REPLACEMENT	No
METER ADAPTER	No
SERVICE REFEED	No
NEW SUB-PANEL	No
INTERCONNECTION	PCS - Breaker in Main Panel
DESIGNER NOTES - ELECTRICAL	150/100 BT. New 30A PV Breaker in main with PCS. ESS and DC disco on the north wall of the home. INV left of the main panel other side of the gate. DC discs by the main panel. NOTE: The following stringing details are only valid for Canadian Solar: CS3N-390MS - Delta Electronics: E6-TL-US: Min String Size: 5; Max String Size: 10; Max Output Current: 8000W AC - Modules within string must be at the same orientation and pitch

ROOF SOW

RELOCATE VENT	No
RELOCATE SATELLITE DISH	No
DORMER REPLACED W/ FLUSH VENT	No
DESIGNER NOTES - ROOF	####

STRUCTURAL SOW

SISTERING	No	####
DESIGNER NOTES - STRUCTURAL	####	

OTHER SOW

TRENCHING	No	####
ANIMAL DETERRENT SYSTEM	No	####
DESIGNER NOTES - MISC.	####	

AHJ ELECTRICAL REQS

GROUND ROD	No	####
EXTERNAL GEC	No	####
VISIBLE BLADE AC DISCO	No	####
WIRE SIZE REQUIREMENTS	No	####

UTILITY REQS

EQUIPMENT ORDER	####	
PRODUCTION METER	No	####
WIRE SIZING REQUIREMENTS	No	####
UTILITY CUSTOM GUIDELINES	Battery must be set to standby state for inspection	

OTHER REQS

AHJ COVER FLUSH VENTS	No	####
AHJ COVER PVC VENTS	####	####
UNPERMITTED	No	####
PLACARDS	Yes	Utility: Site Plan Placard is needed If AC disconnect is installed AND is more than 10' from MSP line of sight . (if multiple AC disconnects are installed, we will only need site plan placard only if all of them are more than 10' from MSP line of sight)
AHJ CUSTOM GUIDELINES	All relocated breakers need to be AFCI breakers; verify the backup panel called out can accommodate all the breakers [Roadrental Load Calculations] REQUIRED for the following cases - ESS projects - Projects where existing loads will be relocated into a new sub panel - The load calculations must show the calculated load for the new sub panel/back up panel	
INSPECTION GUIDELINES	####	

ADDITIONAL INFORMATION

SYSTEM SIZE	2730W DC, 5760W AC	BACKFEED	30 AMPS
MODULES	(7) CANADIAN SOLAR: CS3N-390MS	MAIN MANUFACTURER	Challenger
MODULE DIMS	78.38" x 41.26" x 1.38" (39mm)	RSD	
INVERTER(S)	(1) DELTA ELECTRONICS: E6-TL-US [240V] [97–JUN20]	ENERGY STORAGE	(1) LG Chem: RESU 10H Prime
NOTES TO INSTALLER	NOTES TO INSTALLER: 308.7 VDC EXPECTED OPEN CIRCUIT STRING VOLTAGE. POWER CONTROL SYSTEM (PCS): - CT LOCATION: LOAD BUNDLING - MAXIMUM AVS CONTROLLED CURRENT SUPPLY = 24A - MAXIMUM AVS CONTROLLED BACKFEED OUTPUT CURRENT(CEN COMPLIANT) = 16A ALL RELOCATED BREAKERS NEED TO BE AFCI BREAKERS.		

SUNRUN

GILBERTO CORREA, CSI, CAE
CA CL #750184

CUSTOMER RESIDENCE:
MALCOLM GANJIA
5435 BROOKWOOD LN.
RICHMOND, CA, 94803

TEL: (510) 909-5940
APN: 452-221-002-4

PROJECT NUMBER:
129R-435GANJ

DESIGNER:
NICHOLAS BUTLER

(415) 580-6920 ex3

SHEET:
REQUIRE rs

REV: A

PAGE
CD-2.0

IMPORTANT: The relocated PV breaker must be on the backed-up side of the Gateway.

IMPORTANT: Removal of taps or insulated piercing connectors (IPCs) requires care to secure the conductors from which they were removed. De-energize the conductors before performing work.

- If removing taps:

1. Remove the tap and wipe away any grease from the conductor.
2. Take a picture to document the conductor condition.



3. Ensure the conductor is clean and dry.
4. Apply splicing tape over the pierced insulation and at least 3” on either side.



5. Apply a second layer of Super 33+ vinyl electrical tape (in the opposite direction).



NOTE: If damage from taps is questionable, cut the damaged section out and use a burndy block or equivalent to splice in new conductor.

Step 15: Install External Meter (If Required)

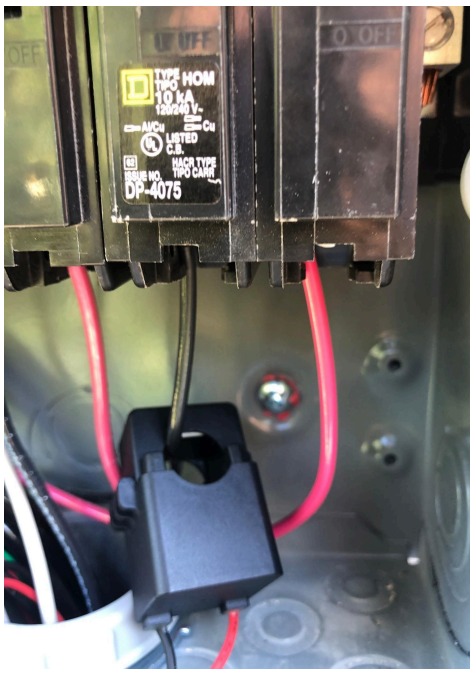
- If there are loads located upstream of the Gateway's Supply terminals and they cannot be relocated to the Gateway's Non-Backup terminals, an external Neurio meter must be installed to monitor those loads.

IMPORTANT: Follow the steps in these SOPs to install and wire a Neurio meter:

- W1 Version: Tesla PW2 / Gateway 2: Remote Metering - INS-SOP-0117
- W2 Version: W2 Neurio Remote Metering - INS-SOP-0215

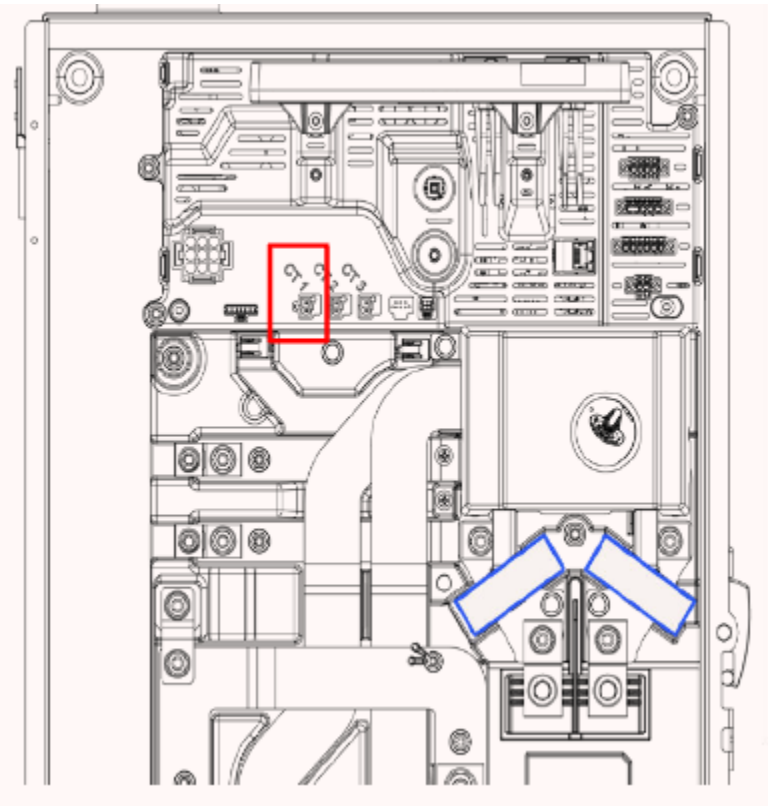
Step 16: Install CT For Solar Monitoring

1. Install the single Solar CT around only the L1 (black) solar output conductor.



IMPORTANT: The label on the CT must be facing toward the power source (toward the inverter).

2. Connect the end of the Solar CT lead to the “CT 1” Port in the Gateway.



- All solar circuits shall be monitored.
- When there is more than one solar circuit on site, the Gateway's Meter Y Solar CT can be used to monitor more than one inverter. The conductors passing through the Meter Y Solar CT must be of the same phase, L1, and total less than 100A of current (120 A of breakers).



Meter Y Solar CT Monitoring Two PV L1 Circuits - CT Facing The Source Inverter

- A Neurio meter can also be used for solar monitoring for systems that are landing upstream of the Gateway.



Remote Neurio Meter Monitoring PV L1 Circuit In MSP - CT Facing The Source Inverter

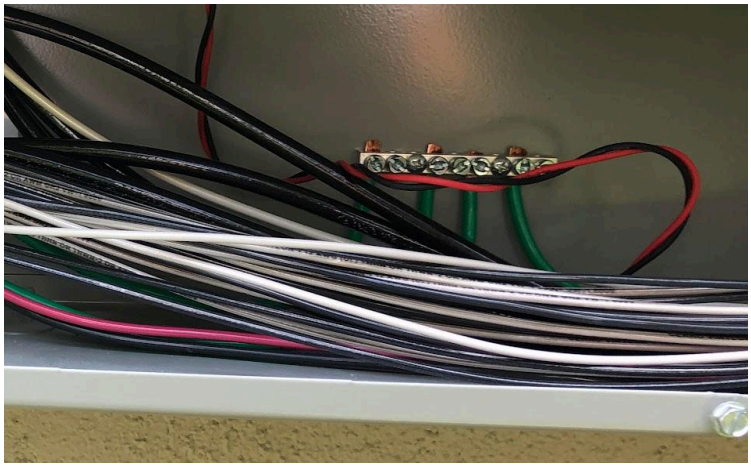
IMPORTANT: Existing solar and solar add-on systems must be monitored. Some of these systems may require Neurio metering.

Step 17: AC Wiring

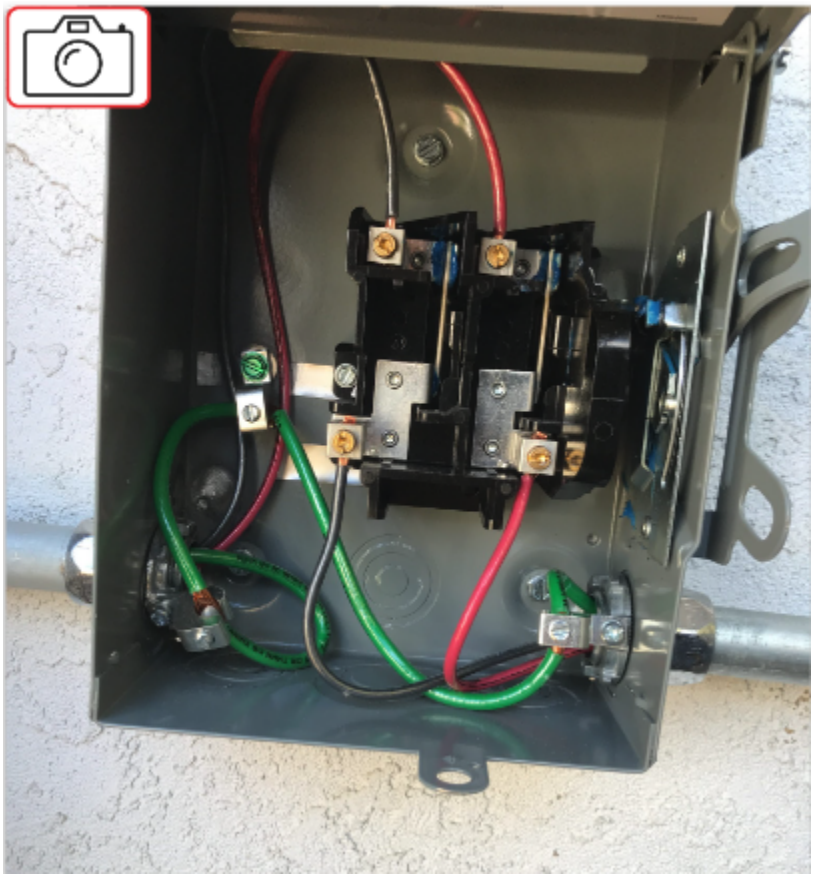
1. Complete the connections from the Gateway to the Generation panel, if one is installed.



2. If using a wiring trough/gutter, be sure to do the following:
    - Keep conductors orderly and be sure to group them and identify them clearly.
    - Install a ground bar inside the gutter and connect the EGC conductors to it.



3. If an AC disconnect is installed between the Powerwall 2 and the Gateway, you must wire the battery output conductors to the LOAD (bottom) terminals of the AC disconnect. This prevents the disconnect blades from being energized when the switch is opened - avoiding an electrical safety hazard.



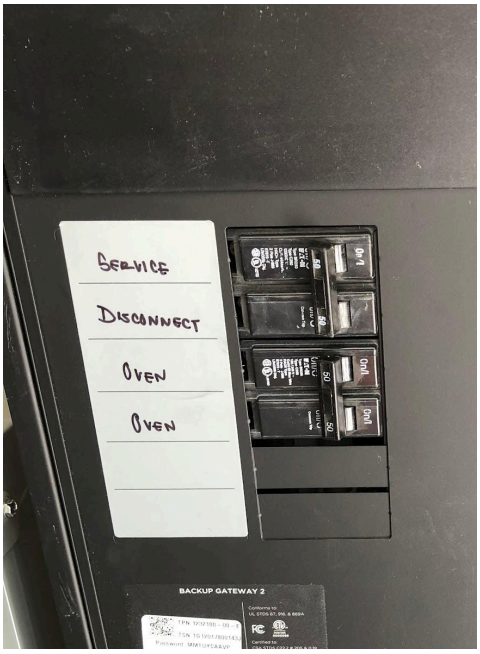
Step 18: Close Equipment

1. Install all dead fronts and covers:
    - Electrical panels
    - Powerwall 2 wiring compartment
    - Gateway 2 (including glass cover)
2. Notify the customer, then turn the main service disconnect back on.



Step 19: Install Labels

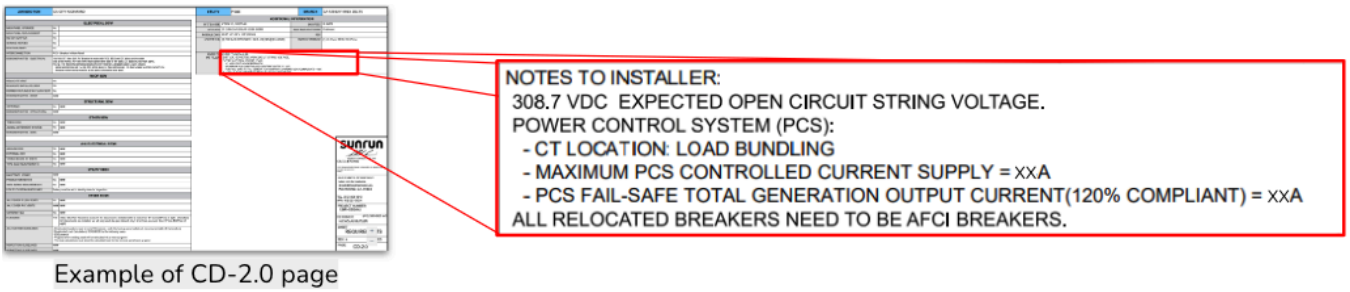
1. Install the supplied adhesive circuit label on the deadfront of the Gateway 2, and label all circuits.



2. Install all required NEC labeling:
    - Rapid shutdown label(s)
    - Warning: three sources of power (solar, battery, and utility).
    - Site diagram with power sources and disconnects (may not be required, depending on your AHJ).
    - AC output current and voltage



IMPORTANT: Follow the rest of step 19 if installing a PCS system (for busbar protection) is noted on the CD-2.0 page of the plan set.

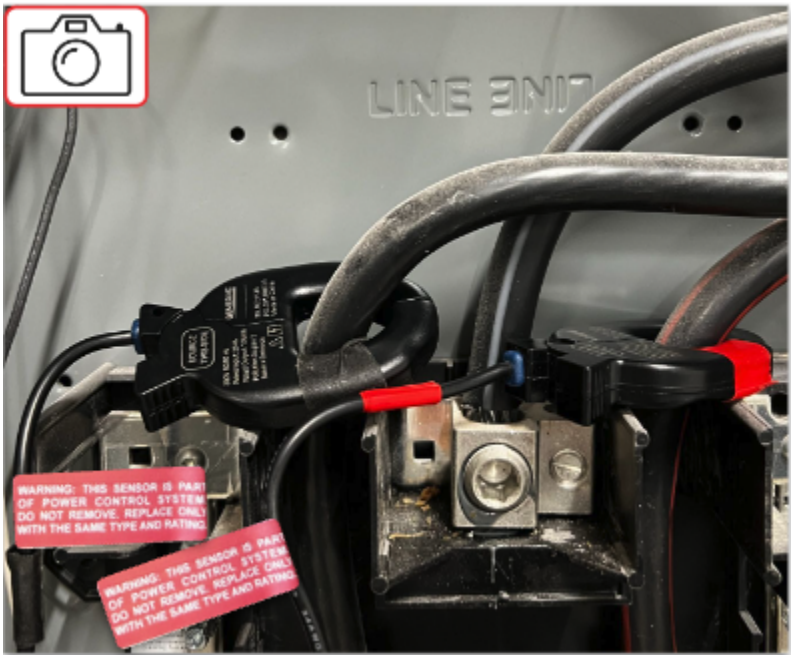


Example of CD-2.0 page

3. Place the warning label on CTs that will monitor main loads or grouped branch circuit conductors in PCS configurations

WARNING: THIS SENSOR IS PART OF POWER CONTROL SYSTEM. DO NOT REMOVE. REPLACE ONLY WITH THE SAME TYPE AND RATING. WARNING: THIS SENSOR IS PART OF POWER CONTROL SYSTEM. DO NOT REMOVE. REPLACE ONLY WITH THE SAME TYPE AND RATING.
Label to be placed on CT wires for PCS systems

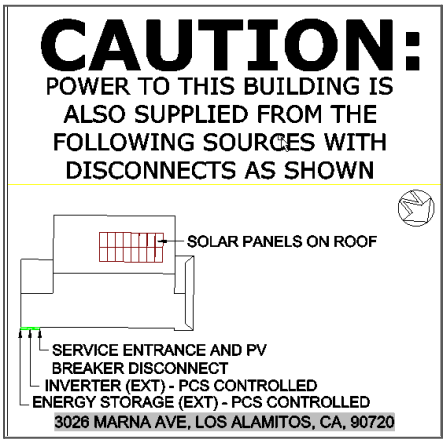
4. This label shall be folded around the CT wires on all CTs connected to the meter



5. Place the PCS label on the main panel that is PCS protected or inverter per plan set.

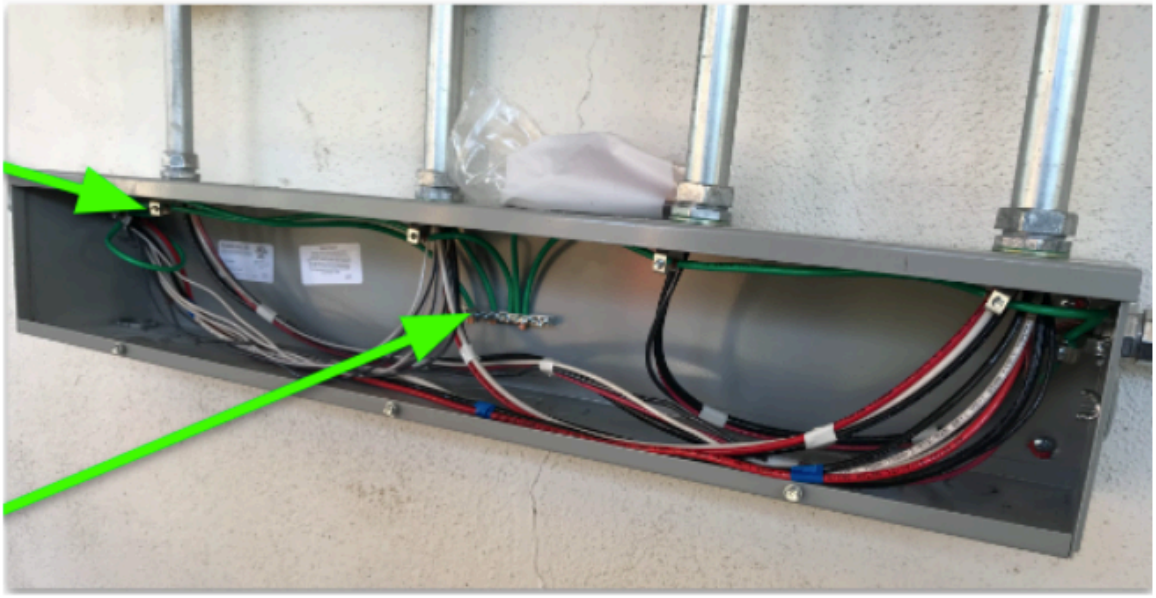
PCS CONTROLLED CURRENT SETTING: 80 A THE MAXIMUM OUTPUT CURRENT FROM THIS SYSTEM ISCONTROLLED ELECTRONICALLY. REFER TO THE MANUFACTURER'S INSTRUCTIONS FOR MORE INFORMATION.
Label to be placed on the main panel or inverter per plan set

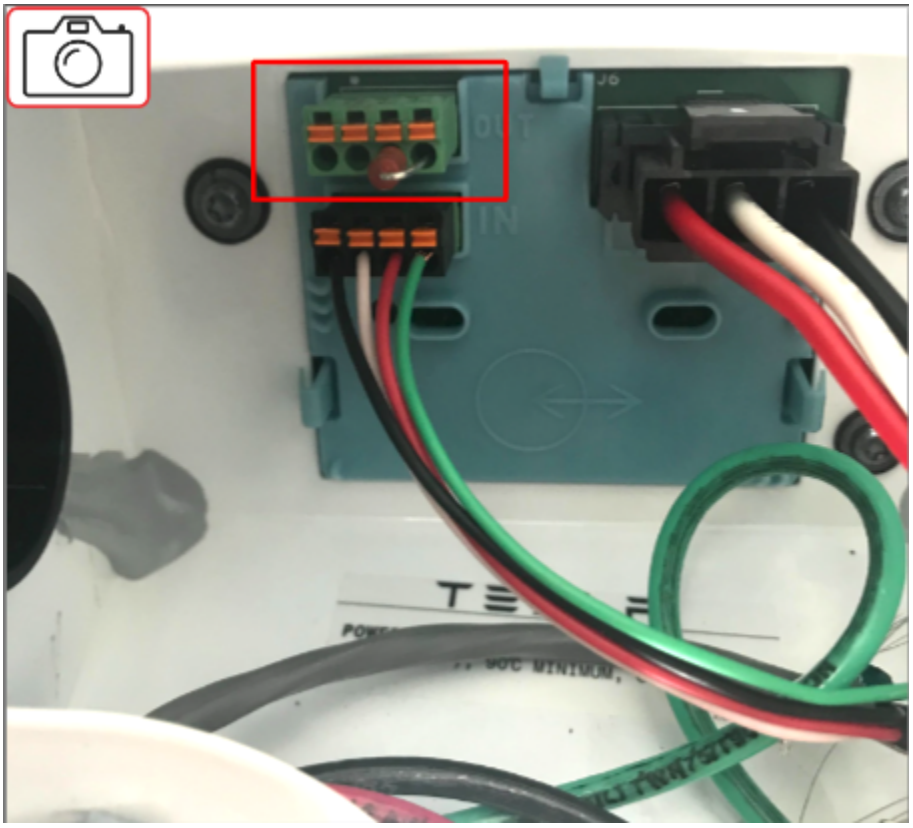
6. PCS CONTROLLED CURRENT SETTING = MAXIMUM PCS CONTROLLED CURRENT SUPPLY on the CD 2.0

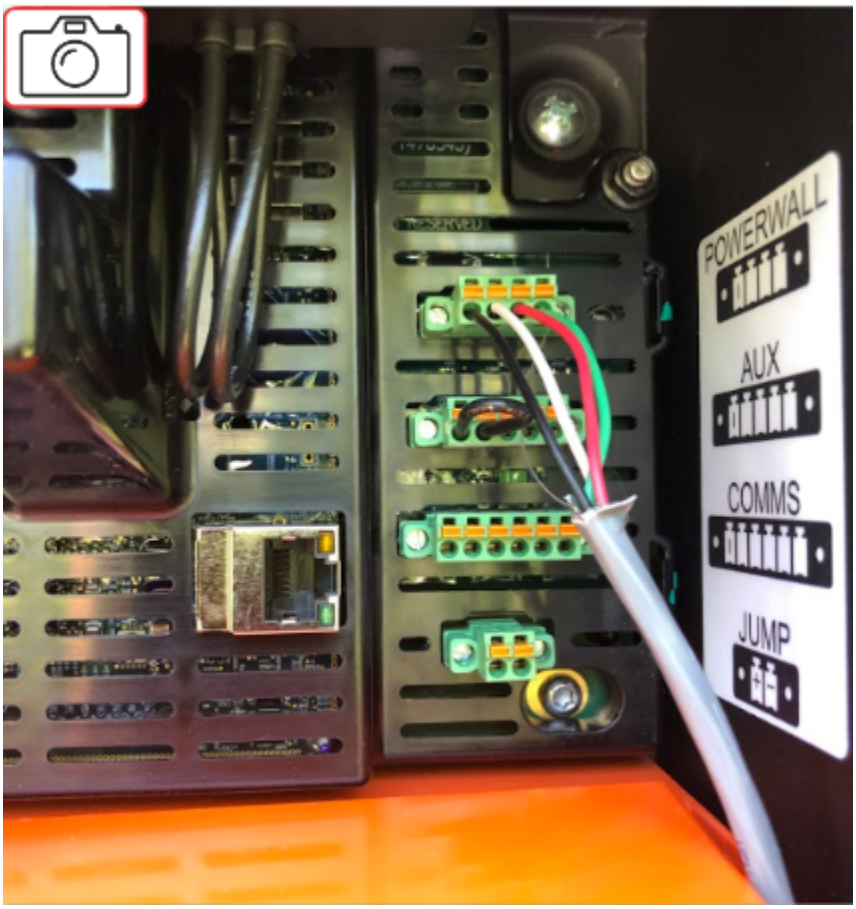
	
	Example of site placard to be placed at the main panel

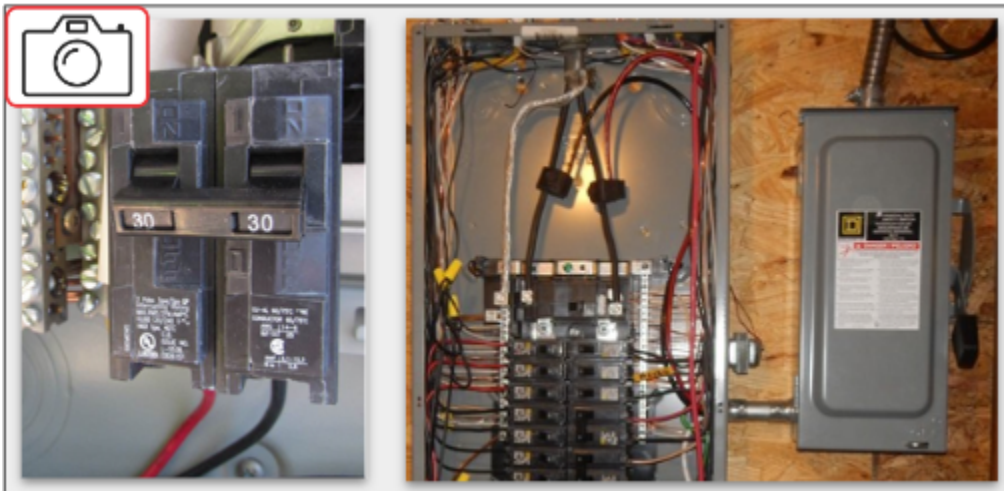
NOTE: Some AHJs will require a site placard to be placed at the main panel

Required Photos





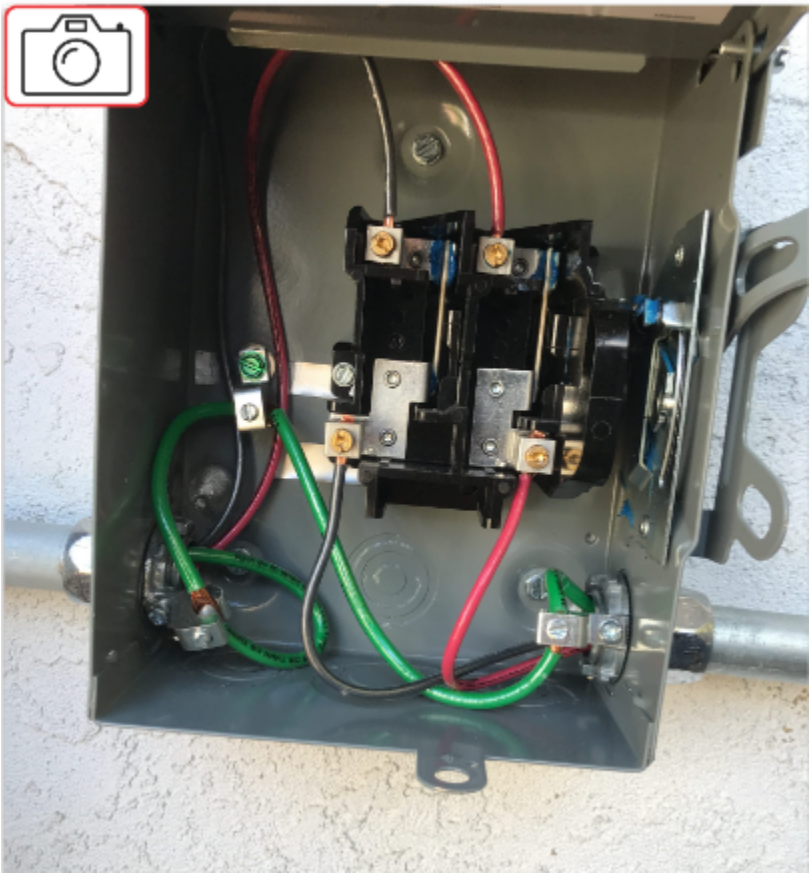

POWERWALL
AUX
COMMS
JUMP


30
30










TESLA
TESLA


WARNING
Customer Generating Facility
RAPID SHUTDOWN
SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN
RAPID SHUTDOWN
CUSTOMER GENERATOR SYSTEM DISCONNECT
PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN



Verification

- ☐ Verify that the installation matches the plan set.
- ☐ Verify that loads that share a neutral use a 2-pole breaker.
- ☐ Verify that large loads, such as an air conditioning unit have a soft starter installed.
- ☐ Verify proper equipment clearances.
- ☐ Verify that the battery is securely mounted.
- ☐ Verify multiple batteries use the Tesla Powerwall 2 battery stack kit
- ☐ Verify that all conductor terminations are properly done and secure. Tug test.
- ☐ Verify that breakers and disconnects are rated in accordance with the plan set.
- ☐ Wiring is in accordance with the plan set.
- ☐ All conductor terminations are properly done and secure. Tug test.
- ☐ Breakers and disconnects are rated in accordance with the plan set.
- ☐ All PV sources on site are monitored.
- ☐ All required labels are placed on the correct equipment in accordance with the plan set.

Product Feedback

- Tesla Gateway 1/2/3 Troubleshooting and Service - T/S-DOC-0033

Product Feedback

Use the links below to provide feedback on SOPs and/or products:

- SOP/Work Instruction Feedback
- Product Feedback

Approvals

Approvals			
Prepared by: J. Ferreira	08/22/2024	Training:	
Reviewed by:		Safety:	
Electrical:		Structural:	
Design:		CRT:	
Product:		Other:	
Quality:		Other:	

Revision History

Revision	Date	Description	Approval
1	03/30/2021	Initial Release	J. Costner
2	08/23/2024	Revised in accordance with CO-0078	J. Costner