



# SUPERCHARGER

## EMERGENCY RESPONSE GUIDE

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# INTRODUCTION AND SCOPE

## Product Specifications

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, because continuous improvement is a goal at Tesla, we reserve the right to make product or documentation modifications at any time, with or without notice.

The images provided in this document are for demonstration purposes only. Depending on product version and market region, details may appear slightly different.

This document does not create contractual obligations for Tesla or its affiliates and is provided without warranty of any kind, except to the extent expressly agreed in a contract.

## Latest Revisions

Documents are periodically updated. To ensure you have the latest revision of this document, visit the Tesla Fire Responders page at: <https://www.tesla.com/firstresponders>.

## Errors or Omissions

To communicate inaccuracies or omissions in this document, reach out to your Tesla representative.

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## DISCLAIMER


This guide is intended only for use by certified rescuers and first responders. It assumes that readers have a comprehensive understanding of how safety systems work and have completed the appropriate training and certification required to safely handle rescue situations. Therefore, this guide provides only the specific information required to understand and safely handle the Tesla Supercharger equipment in an emergency. It describes how to identify the Supercharger equipment and provides the locations and descriptions of its high voltage components. This guide includes the high voltage disabling procedure and any safety considerations specific to the Supercharger equipment. Failure to follow recommended practices or procedures can result in serious injury or death. The Supercharger equipment is constantly evolving and multiple generations of hardware exist. The images in this guide may not match the equipment you are working on. Any major changes regarding high voltage components across equipment generations will be explicitly outlined in this guide.


 **NOTE:** The guidance in this publication applies to Supercharger only and may not extend to the entire site's structures or equipment. As each site differs, accordingly each site's requirements for first responders differ, and this guide does not replace a site-wide plan.




## General Safety Information

This document contains important instructions and warnings that should be followed when handling Urban, V2, V3, and V4 Supercharger systems in an emergency situation.

 **WARNING:** Always use appropriate tools. Utilize insulated tools, if available. If using non-insulated tools, use extreme caution when interacting with live electrical components. Always wear appropriate personal protective equipment (PPE) while working around Supercharger equipment, switchgear, and breakers. Failure to follow these instructions can result in serious injury or death.

 **WARNING:** Regardless of the disabling procedure you use, ALWAYS ASSUME THAT ALL HIGH VOLTAGE COMPONENTS ARE ENERGIZED! Cutting, crushing, or touching high voltage components can result in serious injury or death.

 **WARNING:** Always use appropriate Personal Protective Equipment (PPE) when handling high voltage equipment.



# COMPANY, CONTACT, AND PRODUCT INFORMATION

## Identification of Company and Contact Information


Products	Tesla Commercial Energy products, designed for commercial energy applications, and modules and sub-assemblies that can be installed in such products. Descriptions and specific part numbers are listed in <a href="#">Identifying Supercharger Variant on page 8</a> .	
Locations	Headquarters (USA)	1 Tesla Road  Austin, TX 78725 USA  Tel. No. +1 512-516-8177 (do not use for emergencies; see below)
	Europe and Africa	Burgemeester Stramanweg 122  1101EN Amsterdam, The Netherlands  Tel. No. +31 20 258 3916 (do not use for emergencies; see below)
	Australia and Asia	Level-14, 15 Blue Street  North Sydney NSW, 2060, Australia  Tel. No. 1800 686 705 (do not use for emergencies; see below)
	Manufacturer (USA)	1 Tesla Road  Austin, TX 78725 USA  Tel. No. +1 512-516-8177 (do not use for emergencies; see below)
Emergency Contacts	CHEMTREC (Transportation)	For hazardous materials (or dangerous goods) incidents during transportation such as spill, leak, fire, exposure, or accident, call CHEMTREC, day or night.  Contract Number: CCN204273  Within USA and Canada: 1-800-424-9300  Outside USA and Canada: +1 703-741-5970 (collect calls accepted)
	Tesla Energy Technical Support Contacts	Hotline telephone numbers: <ul style="list-style-type: none"><li>• Asia (24x7): +1 571 573 9163</li><li>• Australia/New Zealand (24x7): +61 2 432 802 81</li><li>• Europe/Middle East/Africa: +31 2 08 88 53 32</li><li>• France: +33 173218702</li><li>• Japan: +0120 312-441 / (24x7) +1 571 573 9163</li></ul>

- |  |  |  |
|--|--|--|
|  |  | <ul style="list-style-type: none"><li>• North America (24x7): +1 650-681-6060</li><li>• Slovenia: +38 617778699</li><li>• South Africa: +27 213004878</li><li>• Switzerland: +41 445155607</li><li>• The Netherlands: +31 208885332</li><li>• United Kingdom: +44 1628450645</li></ul> |
|--|--|--|

## SDS Information

Safety Data Sheets (SDS) are a requirement of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an “article.” OSHA has defined “article” as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities (e.g., minute or trace amounts) of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Tesla Energy Products referenced herein meet the OSHA and EU CLP definition of “article.” Thus, they are exempt from the requirements of the Hazard Communication Standard and do not require an SDS per OSHA or EU CLP.



**NOTE:** For projects in Australia or New Zealand, contact your Tesla representative for the product’s safety data sheet.

Table 1. Thermal Contents

Non-Cell Materials with SDS found in Tesla Energy Products	Approximate Quantity
Ethylene glycol 50/50 mixture with water	V2 Cabinet: 5 - 15 L, 50/50 mixture V3 Cabinet: 15 - 19 L, 50/50 mixture V3 Charge post: 0.5 - 1 L, 50/50 mixture V4 Charge post: 3 -5 L, 50/50 mixture



## Identifying Supercharger Variant

Supercharger systems have two main components - the cabinet and the charge post. There are four main variants of Supercharger systems, in addition to special products (e.g., semi charger, PSU) and auxiliary systems.

**V4 Supercharger**



**V3 Supercharger**



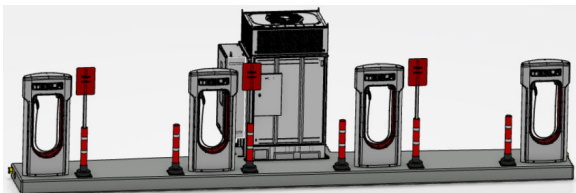
**V2 Supercharger**



**Urban Supercharger**



**Pre-Assembled Supercharger Unit (PSU)**



**Semi Charger Cabinet and Post**



## Autotransformer



**NOTE:** Autotransformers are not present at every Supercharger site.

## Transformer



## Switchgear





# PLANNING

## Switchgear/Transformer Safety Considerations

ALWAYS BE AWARE OF ELECTRICAL HAZARDS.



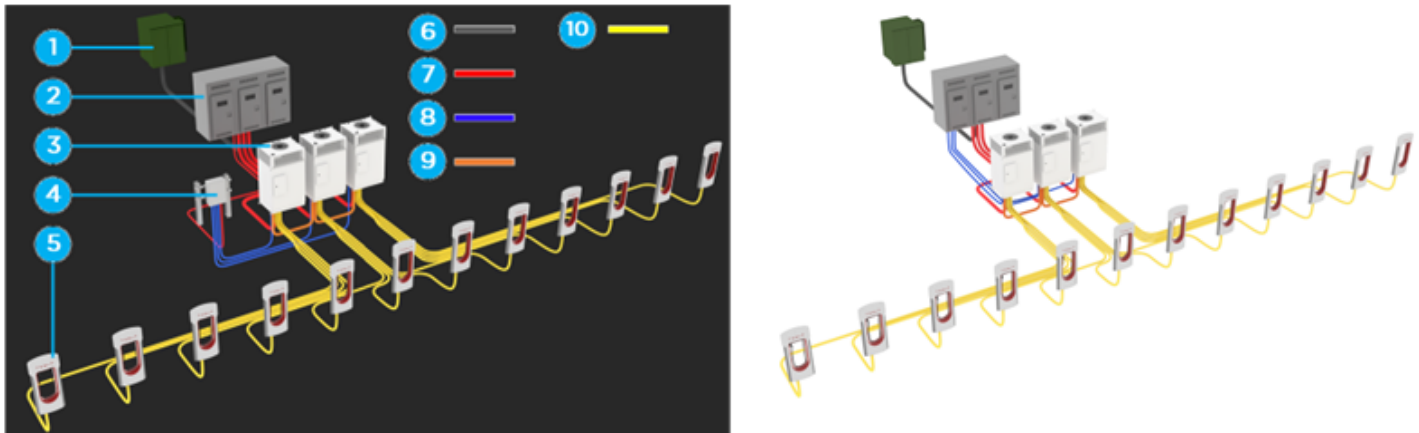
**WARNING:** Use caution around switchgear and transformers. Responders should utilize their existing standard operating procedures or guidelines regarding high voltage emergency incidents.



## V3 Supercharger Site Layout

**NOTE:** No two sites are identical, but the switchgear and Supercharger cabinets are typically inside an enclosure or in a closed off area with limited visibility to the public, and within 100 feet (~30 meters) of the Supercharger stalls.

**NOTE:** For Pre-Assembled Supercharger Unit (PSU) sites, the V3 cabinets are co-located with the posts and each one has a disconnect mounted to the side of the cabinet. There may or may not be a switchgear upstream of the cabinets with a main disconnect. In some cases, the individual PSUs are fed directly from the utility transformer. For a visual reference of the PSU, see [Identifying Supercharger Variant on page 8](#).



1. Transformer
2. Switchgear - contains main breaker, 1 branch breaker per V3 Cabinet on site, and Ground Electrode Conductor
3. V3 Cabinet
  - AC side: Inputs 3-phase AC power from grid (~380-480 V)
  - Shared bus DC side: Inputs and outputs DC power (~900 V)
  - V3 Charge Post DC side: Outputs DC power (vehicle pack voltage)
4. Tesla System Controller or Charging Gateway - provides site connectivity and cabinet control.
  - The Tesla System Controller can be a stand-alone, represented as #4 in the image on the left or integrated into switchgear/disconnect, as represented in the image on the right.
  - Whether standalone or integrated into switchgear, one conduit must run from the Tesla System Controller to every V3 Cabinet (see 8 in table below).
5. V3 Charge Post - receives DC power from V3 Cabinet and charges vehicle.

### Conduits:

6	Conduit from Transformer to Switchgear	AC conductors, Equipment Grounding Conductor
7	Conduit from switchgear to each V3 Cabinet and Tesla System Controller or Charging Gateway	AC conductors, Equipment Grounding Conductor
8	Conduit from Tesla System Controller or Charging Gateway to each V3 Cabinet	Ethernet




9	Conduit between V3 Cabinets for shared DC bus	DC conductors, DC Mid conductors, Equipment Grounding Conductors
10	Conduit from each V3 Cabinet to its V3 Charge Post (maximum 4 posts per V3 Cabinet)	DC conductors, communication cables, Equipment Grounding Conductor



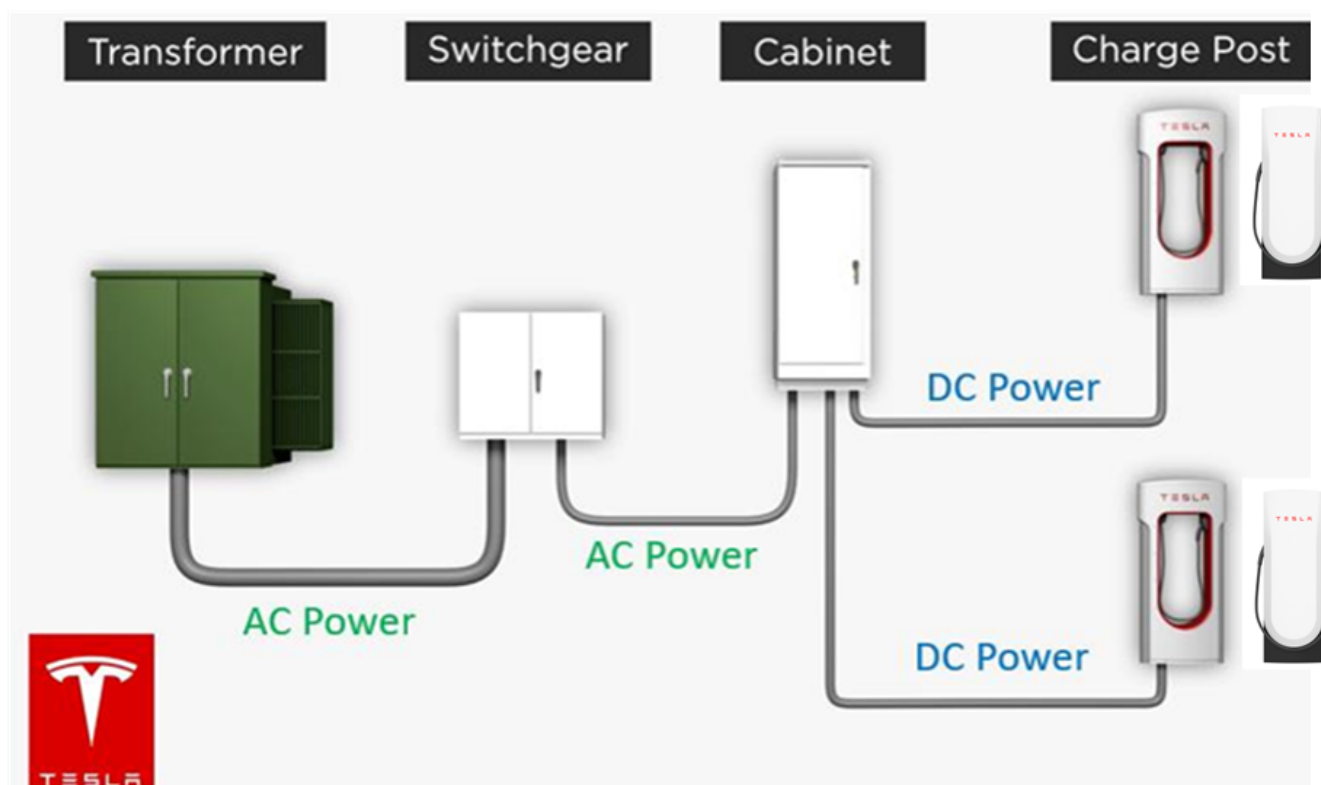
## V2 and Urban Superchargers Site Layouts

Exact layout and configuration may vary by site.

 **NOTE:** No two sites are identical, but the switchgear and Supercharger cabinets are typically inside an enclosure or in a closed off area with limited visibility to the public, and within 100 feet (~30 meters) of the Supercharger stalls.

Each V2 Supercharger site is supplied by a utility transformer. The AC power is split by branch breakers to each cabinet within the switchgear. Each V2 cabinet supplies two charge posts.

Here is an example of a V2 supercharger site where each cabinet supplies power to two charge posts. Note that the utility transformer and switchgear are not shown in this image.





## RESPONSE



## Firefighting

Fires on Supercharger equipment are considered "electrical fires", while fires on vehicles are considered "vehicle fires".

If a fire/thermal event involving:	Reference:	Disconnect by:	After event:
Vehicle - Non Charging	See appropriate vehicle ERG visit <a href="https://tesla.com/firstresponders">tesla.com/firstresponders</a> and consult the Firefighting chapter in the Emergency Response Guide (ERG) for the specific Tesla vehicle or NFPA.org/EV for a non-Tesla ERG.	N/A	Remove Vehicle
Vehicle - Charging	See appropriate vehicle ERG visit <a href="https://tesla.com/firstresponders">tesla.com/firstresponders</a> and consult the Firefighting chapter in the Emergency Response Guide (ERG) for the specific Tesla vehicle or NFPA.org/EV for a non-Tesla ERG.	N/A for initial approach	De-energize supercharger site - See <a href="#">Turning Off Power to the Entire Supercharger Site on page 20</a> .
Charging post - non connected to vehicle	De-energize supercharger site - See <a href="#">Turning Off Power to the Entire Supercharger Site on page 20</a> .	Site transformer station	N/A
Charging post - connected to vehicle	De-energize supercharger site - See <a href="#">Turning Off Power to the Entire Supercharger Site on page 20</a> .	Site transformer station	N/A
Cabinet/Transformer	De-energize supercharger site - See <a href="#">Turning Off Power to the Entire Supercharger Site on page 20</a> .	Site upstream breaker or contact utility	Standard electrical response procedures.
ESS (Megapack/Powerpack)	See appropriate ESS ERG visit: <a href="https://tesla.com/firstresponders">tesla.com/firstresponders</a>	Site main breaker and any connected ESS	De-energize supercharger site, if required - See <a href="#">Turning Off Power to the Entire Supercharger Site on page 20</a> .

Electrical fires should be extinguished by de-energizing the electrical source, if possible, then using CO2 (or other appropriate electrical fire suppression). Vehicle fires can be extinguished with water if the standard combustible materials on the vehicle are on fire (i.e., *not* the battery).

Extinguish small fires that do not involve a high voltage battery or electrical, using a CO2, ABC or water extinguisher.

During overhaul, do not make contact with any high voltage components or wiring. Use insulated tools and appropriate HV PPE, if available. If using non-insulated tools, use extreme caution when interacting with live electrical components.

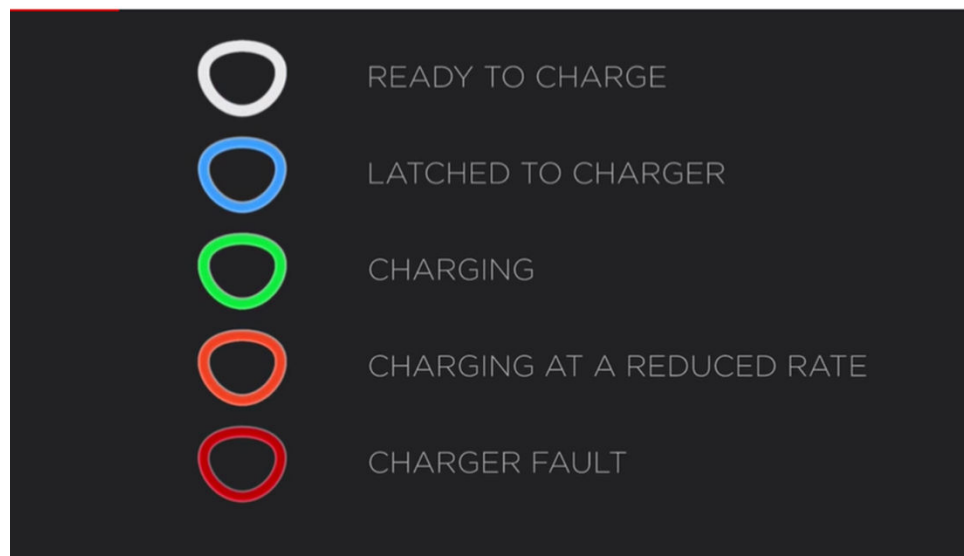
## Firefighter PPE

Firefighters should wear self-contained breathing apparatuses (SCBAs) and structural firefighting gear. Industry testing has shown that standard structural firefighting gear provides adequate protection.



## Charging Status

The charging status of the vehicle can be seen by the color of the indicator next to the plug. The below figure describes the different states that the charger may be found in.




## Warning Labels

Examples of labels associated with high voltage equipment are shown below. Depending on the region, other labels may be present, and these may be translated into other languages.


**WARNING**  
**AVERTISSEMENT**

- HAVE DEFECTIVE CORDS OR WIRES REPLACED BY QUALIFIED SERVICE PERSONNEL**  
*FAIRE REMPLACER LES CÂBLES OU LES FILS DÉFECTUEUX PAR DU PERSONNEL QUALIFIÉ*
- DO NOT USE THIS EQUIPMENT IF DAMAGED**  
*NE PAS UTILISER CE MATÉRIEL S'IL EST ENDOMMAGÉ*
- DO NOT USE EQUIPMENT WHERE EXPOSED TO FLAMMABLE VAPOURS**  
*NE PAS UTILISER CE MATÉRIEL EN PRÉSENCE DE VAPEURS INFLAMMABLES*


**FOR USE WITH ELECTRIC VEHICLES**

TRANSMITTER MODEL: 1023049  
 FCC ID: 2AEIM-1023049    CMIIT ID: 2015DJ4358    IC: 20098-1023049

☐ CS-350-A1  
☐ CS-350-A2



RATED VOLTAGE	500 VDC
RATED CURRENT	350 A
DUTY CYCLE	100%
OPERATING TEMP.	-30°C to +35°C
ENCLOSURE IP-CODE	IP44; RAINPROOF

TESLA, INC.  
 3500 DEER CREEK ROAD PALO ALTO, CA 94304 U.S.A.





High Voltage and Risk of Electric Shock.  
 Disconnect from power before servicing.


Arc Flash and Shock Hazard. For safe work practices and for personal protective equipment, follow all requirements specified in NFPA 70 E.


## Site Disconnect Considerations


REVIEW ALL NOTES AND WARNINGS BEFORE ATTEMPTING TO DISCONNECT POWER TO A SUPERCHARGER SITE.


 **WARNING:** Do not attempt to reset the breaker to disconnect.

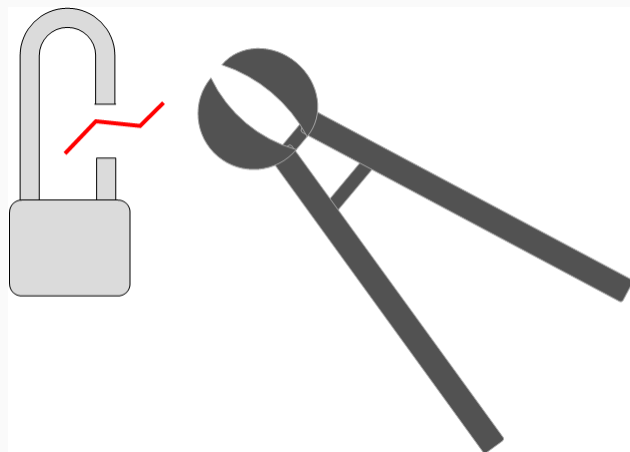
 **WARNING:** Do not attempt to disconnect power to the site via the Supercharger cabinets. Supercharger cabinets must only be shut off via the branch breakers in the switchgear. Switchgear configurations and equipment may vary by site.


 **NOTE:** Switchgear is typically within 100 feet of the Supercharger posts and may be inside an enclosure. However, the location may vary by site.

 **NOTE: If the main breaker is inoperable or malfunctioning:** Locate every branch breaker and turn them downward to the OFF position. Energy may still be present between the branch breaker and main breaker.

 **NOTE: If the switchgear is inoperable or appears to have major damage:** Contact the utility company to disconnect power from the grid.

 **NOTE:** If entering an enclosure, use bolt cutters to cut the locks. Do not cut into any Tesla products unless absolutely necessary.




 **NOTE:** Switchgear typically consists of two or three bays, each with their own door. Exact configurations vary by site.

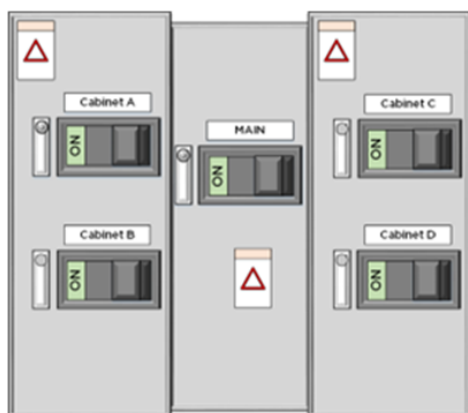
## Turning Off Power to the Entire Supercharger Site


**WARNING:** ALWAYS ASSUME THAT ALL HIGH VOLTAGE COMPONENTS ARE ENERGIZED. Cutting, crushing, or touching high voltage components may result in serious injury or death.

1. Enter the locked enclosure, using bolt cutters to cut padlocks if needed. Do not open the locks on the Supercharger cabinets. Locate the main disconnect for the site; it may be in the transformer station.

 **NOTE:** Sites may not have an enclosure around the equipment.

2. Locate the electrical switchgear associated with the Supercharger cabinets on site.

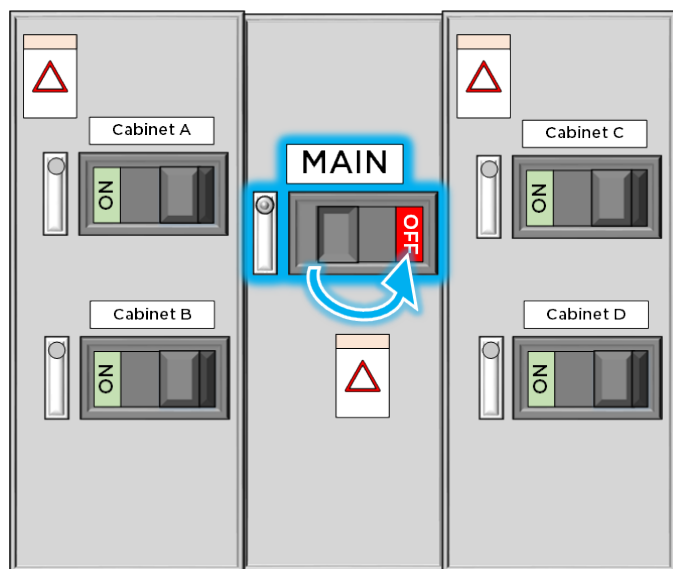


 **NOTE:** Some sites may not have a single switchgear with a main breaker. Sometimes, there is a collection of individual disconnects for each V3/V4 cabinet. This applies to standard sites and PSU sites.



### 3. To disconnect all power to the site:

- If there is an E-Stop device, engage the E-stop. This will trip the main feeder breaker and other auxiliary equipment.
- Locate the main feeder breaker (typically in the middle bay of the switchgear or in the transformer station) and turn the handle downward to the OFF position. If the main breaker cannot be safely disconnected, contact the local Utility company to remotely de-power the site. Note that this may de-power adjacent power stations.
- De-power all downstream breakers feeding the cabinets, as well as any upstream breakers feeding into the site.
- If the cabinets have a breaker box attached to their side, open the breaker box and de-power the breaker for each cabinet.



**WARNING:** If the site is connected to an ESS (e.g., Megapack, Powerpack), isolate the ESS from the charging system using an e-stop and ensure all breakers feeding from the ESS are disconnected.

**NOTE:** If both the main breaker and branch breakers are inoperable or have major damage, contact the utility company to disconnect power from the grid.

**NOTE:** Turn off all breakers on sites with no main breakers.

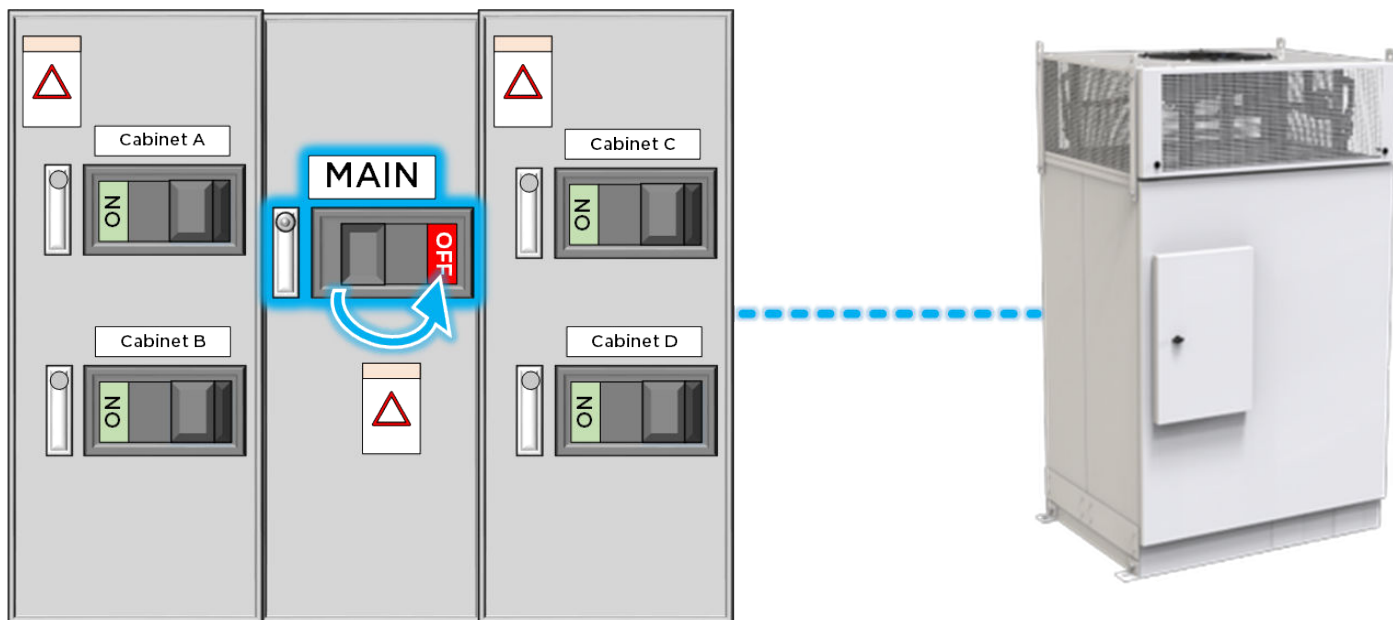


## Turning Off Power to Supercharger Cabinet

**WARNING:** Turning the DC Disconnect handle on a V3 Supercharger cabinet to the OFF position alone will **NOT** de-energize the cabinet.



The only way to disconnect power to a single V3 Supercharger cabinet is to disconnect power to the whole site via the site's main breaker (or the cabinet's individual breaker, depending on site). The reason for this is due to the shared DC bus connecting the cabinets.



# BACK COVER



Revision	Date	Changes
1	February 2020	Publication
2	March 2023	Added E-Stop information
3	October 2023	Added V4 SDS information.
4	December 2023	Added link to NFPA article for responding to non-Tesla vehicles.
5	May 2024	Updated the whole document based on subject matter experts' guidance.