



Village of Tinley Park - Building Department
Electric Vehicle Charging Station -
Permit Requirements

16250 S. Oak Park Avenue
Tinley Park, Illinois, 60477
(708) 444-5100
Email building@tinleypark.org
www.tinleypark.org

The following items are necessary to process your application. If anything is missing, your application will be considered incomplete and **will not** be processed.

- Date of Application
- Name, phone number, and email address of property owner
- Project address
- Description of project
- Cost of project
- Sign permit application
- Copy of charger manufacturer specifications
- Information requested in “Guideline for Electric Vehicle Charging Station - EVCS”
- **Complete - Attached Electrical Load Calculation Sheet**

Guideline for Electric Vehicle Charging Station - EVCS

Purpose: To provide a code compliance guideline for Electric Vehicle Charging Station (EVCS) installations.

1. TYPES OF ELECTRIC VEHICLE (EV) CHARGERS: There are 2 basic residential types of EVchargers for home use: **Level 1** and **Level 2**

- a. **LEVEL 1:** Level 1 chargers are smaller units that plug directly into a standard 120 volt receptacle outlet. These types of chargers typically require a longer period of time to recharge the vehicle. As long as the receptacle outlet being used to plug in the Level 1 charger exists, there is no requirement to secure a permit from the Building Department. If you are installing a new 120 volt receptacle outlet for the charger, you will need to obtain a permit and a single line diagram is required.
- b. **LEVEL 2:** Level 2 EV charging systems require a 240 volt electrical circuit and charges the vehicle battery much faster than a Level 1 charger. Level 2 charger installations require an electrical permit and inspections of the installation. In order to obtain the permit, you will need to provide some basic information such as a single line diagram and a load calculation sheet, to show that your existing electrical service can acceptably deliver the added load.

IMPORTANT NOTE: Verification shall be made that the existing main service panel and all panels in the electrical system used for the EVCS are safe and free of electrical hazards. *If electrical violations or hazards are present, the Contractor will be required to correct the violations and/or hazards. Altered equipment in the existing service panel will also require permits and inspections.*

1. The electric vehicle charging system shall be installed in accordance with manufacturer’s guidelines and shall be suitable for the environment (indoor/outdoor).
2. Electrical Vehicle Supply Equipment shall be protected against potential vehicle impact damage when located in the path of a vehicle. In order to avoid the installation of a substantial pipe bollard as an equipment guard, locate the Electrical Vehicle Supply Equipment on a garage side wall, out of vehicular path.

2. PLAN SUBMITTAL REQUIREMENTS:

- a. A **single line diagram** must be included in the submittal with the following information:

- Conductor types and sizes
- Size of the over current device (circuit breaker) supplying the EVCS
- Conduit size, type, and location
- The manufacturer and model of the charging stations
- The size of the main electric panel, distribution panels (sub panels), and disconnects.
- Type of charging station and **Indicate Maximum Charging Capacity**
- Charging station location and mounting heights.

b. Electrical Load Calculation Sheet: Provide the size of the existing electrical panel, existing load on the panel, and proposed load/circuits from the electric vehicle charging system in order to determine if there is adequate capacity in the existing panel. The EVCS shall be included in the load calculation.

3. ALL APPLICABLE SECTIONS OF THE 2017 NEC ARTICLE 625 SHALL BE MET INCLUDING:

a. 625.5 Listed: EVSE or WPTE shall be listed.

b. 625.10 Electric Vehicle Coupler: The electric vehicle coupler shall comply with **625.10(A) through (D).**

- (A) **Construction and Installation.** The electric vehicle coupler shall be constructed and installed so as to guard against inadvertent contact by persons with parts made live from the electric vehicle supply equipment or the electric vehicle battery.
- (B) **Unintentional Disconnection.** The electric vehicle coupler shall be provided with a positive means to prevent unintentional disconnection.
- (C) **Grounding Pole.** The electric vehicle coupler shall be provided with a grounding pole, unless provided as part of a listed isolated electric vehicle supply equipment system.
- (D) **Grounding Pole Requirements.** If a grounding pole is provided, the electric vehicle coupler shall be so designed that the grounding pole connection is the first to make and the last to break contact.

c. 625.15 Markings. The equipment shall comply with 625.15(A) through (C).

- (A) **General.** All equipment shall be marked by the manufacturer as follows:
FOR USE WITH ELECTRIC VEHICLES
- (B) **Ventilation Not Required.** Where marking is required by 625.52(A), the equipment shall be clearly marked by the manufacturer as follows:
VENTILATION NOT REQUIRED
The marking shall be located so as to be clearly visible after installation.
- (C) **Ventilation Required.** Where marking is required by 625.52(B), the equipment shall be clearly marked by the manufacturer, "Ventilation Required." The marking shall be located so as to be clearly visible after installation.

d. 625.16 Means of Coupling. The means of coupling to the electric vehicle shall be conductive, inductive, or wireless power transfer. Attachment plugs, electric vehicle connectors, and electric vehicle inlets shall be listed or labeled for the purpose.

e. 625.18 Interlock. Electric vehicle supply equipment shall be provided with an interlock that de-energizes the electric vehicle connector whenever the electrical connector is uncoupled from the electric vehicle. An interlock shall not be required for portable cord-and-plug-connected electric vehicle supply equipment intended for connection to receptacle outlets rated at 125 volts, single phase, 15 and 20 amperes. An interlock shall not be required for dc supplies less than 60 volts dc.

f. 625.19 Automatic De-Energization of Cable. The electric vehicle supply equipment or the cable-connector combination of the equipment shall be provided with an automatic means to de-energize

the cable conductors and electric vehicle connector upon exposure to strain that could result in either cable rupture or separation of the cable from the electric connector and exposure of live parts. Automatic means to de-energize the cable conductors and electric vehicle connector shall not be required for portable electric vehicle supply equipment constructed in accordance with 625.44(A).

g. 625.40 Electric Vehicle Branch Circuit. Each outlet installed for the purpose of charging electric vehicles shall be supplied by an individual branch circuit. Each circuit shall have no other outlets.

h. 625.41 Overcurrent Protection. Overcurrent protection for feeders and branch circuits supplying equipment shall be sized for continuous duty and shall have a rating of not less than 125 percent of the maximum load of the equipment. Where noncontinuous loads are supplied from the same feeder, the overcurrent device shall have a rating of not less than the sum of the noncontinuous loads plus 125 percent of the continuous loads.

i. 625.42 Rating. The equipment shall have sufficient rating to supply the load served. Electric vehicle charging loads shall be considered to be continuous loads for the purposes of this article. Where an automatic load management system is used, the maximum equipment load on a service and feeder shall be the maximum load permitted by the automatic load management system.

j. 625.43 Disconnecting Means. For equipment rated more than 60 amperes or more than 150 volts to ground, the disconnecting means shall be provided and installed in a readily accessible location. The disconnecting means shall be lockable open in accordance with 110.25.



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EVCS - Service Load Calculator Guide

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Level 2 Electric Vehicle Charger Service Load Calculator - Existing Service Only

INSTRUCTIONS: Review the list of electrical loads in the table below and check all that exist in the dwelling (Include the proposed Level 2 charger). For each item checked, fill in the corresponding "Watts Used" (refer to the "Typical Usage" column for wattage information). Add up all of the numbers that are written in the "Watts Used" column and write that number in the "TOTAL WATTS USED" box at the bottom of the table. Then go to the next page to determine if the existing electric service will accommodate the new loads.

(Loads shown are rough estimates; actual loads may vary. For a precise analysis, use the nameplate ratings for your particular appliances and other loads and consult with an electrical professional.)

Check all Applicable Loads (✓)	Description of Load	Typical Usage	Watts Used
GENERAL LIGHTING AND RECEPTACLE OUTLET CIRCUITS			
	Multiply the square footage of house x 3VA	3 watts/sq. ft.	
KITCHEN CIRCUITS			
	Kitchen circuits	3,000 watts	
	Electric Range	2,000 watts	
	Electric stove top	5,000 watts	
	Microwave	1,500 watts	
	Garbage disposal under kitchen sink	1,000 watts	
	Automatic dish washer	1,200 watts	
	Garbage compactor	700 watts	
	Other (describe)		
LAUNDRY CIRCUITS			
	Laundry circuit	1,500 watts	
	Electric clothes dryer	4,500 watts	
HEATING AND AIR CONDITIONING CIRCUITS			
	Central Furnace	2,400 watts	
	Window mounted air conditioning	1,000 watts	
	Whole-house or attic fan	500 watts	
	Other (describe)		
	Other (describe)		
OTHER ELECTRICAL LOADS			
	Electric water heater (storage type)	4,000 watts	
	Ejector Pump	1,500 watts	
	Sump Pump	1,500 watts	
	Other (describe)		
	Other (describe)		
	Other (describe)		
ELECTRIC VEHICLE CHARGER CIRCUIT			
	Level 2 electric vehicle charger wattage rating		
			TOTAL WATTS USED

INSTRUCTIONS: Using the “**TOTAL WATTS USED**” number from the previous page, check the appropriate line in column 1 and follow that line across to determine the minimum required size of the electrical service panel shown in column 3. In column 4, write in the size of your existing service panel (main breaker size). If your existing service panel (column 4) is smaller than the minimum required size of the existing service (column 3), then you will need to install a new upgraded electrical service panel to handle the added electrical load from the proposed Level 2 charger.

The table below is based on 2017 NEC 220.83(A), 230.42 and Annex D.

<u>Load (kVA)</u>	<u>Percent of Load</u>
First 8 kVA of load at	100
Remainder of Load at	40

1	2	3	4
Check the appropriate line (✓)	Total Watts Used (from previous page)	Minimum Required Size of Existing 240-Volt Electrical Service Panel (Main Service Breaker Size)	Identify the Size of Your Existing Main Service Breaker (Amps)*
	up to 48,000	100 amps	
	48,001 to 63,000	125 amps	
	63,001 to 78,000	150 amps	
	78,001 to 108,000	200 amps	
	108,001 to 123,000	225 amps	

**Note that the size of your existing service (column 4) MUST be equal to or larger than the Minimum Required Size (column 3) or a new larger electrical service panel will need to be installed in order to satisfy the electrical load demand of the EV charger.*

STATEMENT OF COMPLIANCE

By my signature/submittal, I attest that the information provided is true and accurate.

Job Address: _____
(Print job address)

Signature: _____
(Signature of applicant/contractor) _____
(Date)

In addition to this document, you will also need to provide a copy of the manufacturer’s installation information, specifications for the Level 2 charger you are installing, and one-line electrical drawing.

Note: *This is a code compliance alternative and you may wish to hire a qualified individual or company to perform a thorough evaluation of the electrical service capacity in lieu of this alternative methodology. Use of this electrical load calculation estimate methodology is at the user’s risk and carries no implied guarantee of accuracy. Users of this methodology and these forms are advised to seek professional assistance in determining the precise electrical capacity of a service panel.*