



Residential Electric Vehicle (EV) Charger Guidelines/Checklist

Purpose: This document provides all the needed links to forms and checklists necessary to utilize the City of Indian Wells Expedited Permitting Process for Electric Vehicle Charging Stations (EVCS). This process provides an expedited and streamlined permitting process for qualifying EVCS systems as required per AB 1236 & 970. Once all of the documentation is correctly and fully completed, and submitted, a permit will be processed and approved for issuance within the time frame as required by AB 970:

Application Completeness:

- 1-25 stations at a single site: 5 business days
- 26 or more stations at a single site: 10 business days

Application Approval:

- 1-25 stations at a single site: 20 business days
- 26 or more stations at a single site: 40 business days

Step 1: Download, review, and complete the Electric Vehicle Charging Stations (EVCS) Checklist below. Submit all information requested on the checklist.

Step 2: Fully complete and sign a building permit application.

Step 3: Submit all required documentation to

https://selfservice.indianwells.com/EnerGov_Prod/selfservice#/applicationAssistant?sectionName=Trending&showTemplates=false.

The Permit Center will notify you when the documents have been uploaded, applicable fees required, and when approved and the permit is ready to be issued.

Be aware that there are different types of Electric Vehicle (EV) Chargers. There are 2 basic types of EV chargers for home use (Level 1 and Level 2). 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 is existing, there is no requirement to secure a permit from the Building and Safety Division. On the other hand, if you will be installing a new 120 volt receptacle outlet for the charger, you will need to obtain a permit – but you will not need to provide any plans or electrical load calculations as would be required for the more powerful Level 2 type charging systems.

A Level 2 EV charging system requires a 240 volt electrical circuit and charges the vehicle battery much faster than a Level 1 charger. Level 2 charger installations typically require an electrical permit and inspections of the installation. In order to obtain the permit, you will need to provide some basic information to show that your existing electrical service can handle the added load.

What information do I need to provide in order to obtain the permit? This Residential EV Charger Permit Guideline has been developed to streamline the permit, installation and inspection process. In most cases, you or your contractor merely need to fill-in the blanks on this document, attach the manufacturer's installation instructions and charger specifications and submit it to the Building and Safety Department for an over-the-counter review and permit issuance. If all of the information is provided and the proposal complies with the applicable codes, the review and approval process can usually be performed over-the-counter or within

a day or two, depending upon workloads and staffing levels at the time of submittal. Once the permit is issued, the installation may begin. When the installation is complete, an inspection of the work must be scheduled with the Building Inspector. Inspections are typically performed on the work day following your request for inspection. Keep in mind that someone will need to be present during the inspection so that the Building Inspector can access the location of the electrical meter and EV charger (typically in the garage).

Installing a Level 2 EV Charging system often requires changes to building’s electrical wiring. Before installing the EV charging equipment and the associated wiring, talk to your EV manufacturer about the electrical requirements for the charger unit to be installed at your home.

When installing your EV charger, be sure to use a licensed Electrical contractor whose state contractor’s license and insurance are current. The contractor should follow the installation instructions of the EV charger manufacturer and the requirements of California Electrical Code.

Why is the Electric Utility concerned about your EV charger installation? Though an individual Level 2 EV charger may have a negligible impact on the utility electric system, the combined effect of several chargers in the same neighborhood could result in overloads on utility secondary wires and transformers. It is important that the Electrical Utility provider be notified of any Level 2 charger installations to ensure that utility electrical system components are adequately sized to maintain high levels of service reliability.

Submittal Requirements Checklist for Permitting of Electric Vehicle Charging Stations (EVCS)

- 1) A Building Permit Application is required for all EVCS installations.**
- 2) One copy of this checklist must be completed and submitted along with the Building Permit Application.**

Use the following checklist items and tables below for preparation and submittal of your plans. All applicable checklist items must be noted or specified on the plans. NOTE: The level of detail and the specific plan requirements will depend upon the extent, nature, and complexity of the work to be done.

3) Type of EVCS (check one)

Check One	Type of Charging Station(s) Proposed	Power Levels (proposed circuit rating)
	Level 1	110/120 volt alternating current (VAC) at 15 or 20 Amp
	Level 2 - 3.3 kilowatt (kW) (low)	208/240 VAC at 20 or 30 Amps
	Level 2 - 6.6kW (medium)	208/240 VAC at 40 Amps
	Level 2 - 9.6kW (high)	208/240 VAC at 50 Amps
	Level 2 - 19.2kW (highest)	208/240 VAC at 100 Amps
	DC Fast Charging	440 or 480 VAC:
	Other (Specify and provide details:	

4) Permit Application

Yes	No	<p>The permit application is complete with the following information:</p> <ul style="list-style-type: none"> • Project address and parcel number, • Owner name, address and phone number; • Contractor name, address and phone number and contractor's license number; and • Other information requested on the permit application form?
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5) Electrical Load Calculation Worksheet

Yes	No	N/A	An electrical load calculation is included with the permit application. (CEC1 220)
			Based on the required load calculation, is an electrical service panel upgrade required? If yes, do plans show and specify the electrical service panel upgrade?
			The EVCS branch circuit conductor is appropriately sized for a continuous load of 125% of the EVCS equipment plus any non-continuous loads per CEC 210.19?
			The plans identify the amperage and location of the existing (or new) electrical service panel and the service panel is sized in accordance with the electrical service load calculations?(CEC 220)
			The plans indicate the size of the service entrance conductors?
			The plans indicate that the charging equipment shall have a Nationally Recognized Testing Laboratory (NRTL) approved listing mark? (UL 2202/UL 2200)
			The single-line electrical diagram shows and specifies the required overcurrent protection for the proposed EVCS?
			Conduit and conductor size and type are specified and the routes and requirements for their installation (i.e. within framing, mounted to structures, underground, etc.) are shown?
			The plans specify that the electric vehicle charging system shall be installed in accordance with manufacturer's installation instructions and shall be suitable for the environment (indoor/outdoor) in which they will be installed?
			The plans specify where the labeling of the EVCS equipment is required? (CEC 625.15)
			An approval letter from SCE is provided to the building department if a dedicated electrical meter is to be installed for the electric vehicle charging system?
			If the EV charging equipment is rated more than 60 amps or more than 150V to ground, the plans specify that the disconnecting means shall be lockable open and shall be provided in a readily accessible location? (CEC 625.42)
			The plans specify that the EVCS equipment disconnecting means shall be identified with a durable label stating "Emergency Power Off – Electric Vehicle Charging Station"?(CEC 110.21)
			The plans specify that the main service conductors and the equipment for the protection of electrical service (i.e. disconnecting means, overcurrent protection, etc.) will be installed in accordance with CEC Article 230?

			If trenching is required, a trenching detail is provided on the plans showing compliance with the minimum cover requirements pursuant to CEC 300.5?
			An Electrical Floor Plan is included with the permit application (see Page 9)
			A Single-Line Electrical Diagram is included with the permit application and includes the following information? (Not required for Level 1 charging station installations) <ul style="list-style-type: none"> • List and label all EVCS supply equipment; • Conductor and conduit size, type and location; • Size of the over current device (circuit breaker) supplying the EVCS; • The size and location of the main electric panel, distribution panels (sub panels), overcurrent protection, disconnects, additional meters, and EVCS equipment; • The type (level), voltage and ampacity for each charging station; • All equipment labeling requirements per CEC 625.15.
			A digital copy of the EVCS Manufacturer Installation Details and Specifications are included with the permit application?
			A digital set of Electrical Service Load Calculations are provided for sizing of the electrical service panel pursuant to CA Electrical Code (CEC) Article 220? (NOTE: Include 125% of the EV charging station load in the calculation)
			If the EVCS equipment is listed for charging electric vehicles that require ventilation for indoor charging, is a Mechanical Plan showing and specifying all of the ventilation requirements prescribed by CEC 625.52 included with the permit application
			The plans indicate that the installation shall meet all requirements of the 2022 California Electrical Code - Article 625 for Electric Vehicle Charging Systems.

6) Plans

Yes	No	
		1. The digital drawings are: <ul style="list-style-type: none"> • to scale or fully dimensioned; • Document Properties of no less than 17" wide by 11" high (36" x 24" preferred); • A landscape orientation;
		2. The plans include a Title Page with property information including, but not limited to: <ul style="list-style-type: none"> • address of property; • name, address, phone number of the property owner; • name, address, phone number and license number of the person responsible for the EVCS system design; signed and stamp if a licensed design professional is used. • 2022 California Model Codes applicable to the project; • narrative description and scope of the proposed work?
		3. A Site Plan and/ or Electrical Floor Plan is included with the permit application and includes the following information? (Not required for interior installations) <ul style="list-style-type: none"> • Location and name of structure(s) on the site; • Property lines, streets, lot dimensions, north arrow, the distance from property lines to structures and the proposed EVCS equipment; • Dimensioned parking improvements, driveways, etc.; • EVCS equipment, main electric service panel, disconnects and overcurrent protection locations; • Underground conduit locations and routing; • Location of additional meter, if applicable

LEVEL 2 ELECTRIC VEHICLE CHARGER - SERVICE LOAD CALCULATION

INSTRUCTIONS: Review the list of electrical loads in the table below and check () all that exist in your home (don't forget to include the proposed Level 2 EV 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 your existing electric service will accommodate the new loads.

(Loads shown are rough estimates; actual loads may vary – for a more precise analysis, use the nameplate ratings for appliances and other loads and consult with a trained 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 3	watts/sq. ft.	
KITCHEN CIRCUITS			
	Kitchen Circuits	3,000 watts	
	Electric Oven	2,000 watts	
	Electric Stove Top	5,000 watts	
	Microwave	1,500 watts	
	Garbage Disposal under Kitchen Sink	1,000 watts	
	Automatic Dish Washer	3,500 watts	
	Garbage Compactor	1,000 watts	
	Instantaneous Hot Water at Sink	1,500 watts	
LAUNDRY CIRCUIT			
	Laundry Circuit	1,500 watts	
	Electric Clothes Dryer	4,500 watts	
HEATING AND AIR CONDITIONING CIRCUITS			
	Central Heating (gas) and Air Conditioning	6,000 watts	
	Window Mounted AC	1,000 watts	
	Whole-house or Attic Fan	500 watts	
	Central Electric Furnace	8,000 watts	
	Evaporative Cooler	500 watts	
OTHER ELECTRICAL LOADS			
	Electric Water Heater (Storage type)	4,000 watts	
	Electric Tankless Water Heater	15,000 watts	
	Swimming Pool or Spa	3,500 watts	
	Other: <i>(describe)</i>	watts	
	Other:	watts	
	Other:	watts	
ELECTRIC VEHICLE CHARGER CIRCUIT			
	Level 2 Electric Vehicle Charger Wattage Rating*		
(Add-up all of the watts for the loads you have checked)			
TOTAL WATTS USED -+			

*** Use name plate rating in watts or calculate as: (Ampere rating of circuit X 240 volts = Watts)**

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 EV Charger.

Table based on CEC 220.83(A), 230.42, and Annex D.

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	

Please 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, I attest that the information provided is true and accurate.

Job Address: _____
(Print job address)

Signature: _____
(Signature of applicant) (Date)

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

Note: This is a voluntary compliance alternative and you may wish to hire a qualified individual or company to perform a thorough evaluation of your 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 electrical capacity of a service panel.

OTHER HELPFUL INFORMATION FOR EV CHARGER INSTALLATIONS:

The Table below illustrates the type and size of wire and conduit to be used for various Electric Vehicle Charger circuits.

Size of EV Charger Circuit Breaker	Required minimum size of Conductors (THHN wire)	Conduit Type and Size***		
		Electrical Metallic Tubing (EMT)	Rigid Nonmetallic Conduit – Schedule 40 (RNC)	Flexible Metal Conduit (FMC)
20 amp	#12	1/2"	1/2"	1/2"
30 amp	#12	1/2"	1/2"	1/2"
40 amp	#10	1/2"	1/2"	1/2"
50 amp	#8	3/4"	3/4"	3/4"
60 amp	#6	3/4"	3/4"	3/4"
70 amp	#6	3/4"	3/4"	3/4"

*****Based on 4 wires in the conduit (2-current carrying conductors, 1-grounded conductor, 1-equipment ground).**

*****NOTE: IWMC 16.24.010: Aluminum conductor limitations. No aluminum wiring shall be used. Exception: Aluminum wiring in sizes 1/0 and larger may be used for main feed to sub-panels only and shall be enclosed in a raceway.**

As an alternate, Nonmetallic Sheathed Cable (aka: Romex Cable or NMC) may be used if it is protected from physical damage by placing the cable inside a wall cavity or attic space which is separated from the occupied space by drywall or plywood.

Conduit Support	Electrical Metallic Tubing (EMT)	Rigid Nonmetallic Conduit – Schedule 40 (RNC)	Flexible Metal Conduit (FMC)	Nonmetallic Sheathed Cable (NMC)
Conduit Support Intervals	10'	3'	4-1/2'	4-1/2'
Maximum Distance from Box to Conduit Support	3'	3'	1'	1'

In addition to the above noted requirements, the California Electrical Code contains many other provisions that may be applicable to the installation of a new electrical circuit. Installers are cautioned to be aware of all applicable requirements before beginning the installation. For additional information or guidance, consult with the Building and Safety Division staff or a qualified and experienced Electrical Contractor.

GENERAL INSTALLATION GUIDELINES FOR LEVEL 2 RESIDENTIAL EV CHARGERS

1. **GENERAL REQUIREMENTS** - All Electrical Vehicle Charging Systems shall comply with the applicable sections of the California Electrical Code, including Article 625.
2. **EQUIPMENT HEIGHT** - The coupling means of the Electric Vehicle Supply Equipment shall be stored at a height of 18 – 48 inches above the finished floor. (CEC Art 625.29(B)).
3. **LISTED EQUIPMENT** - All Electric Vehicle Supply Equipment shall be listed by a nationally recognized testing laboratory.
4. **FASTENED IN PLACE** - Level 2 Electric Vehicle Supply Equipment must be permanently connected and fastened in place in accordance with the manufacturer's installation instructions (CEC Art. 625.13).
5. **PROTECTION FROM PHYSICAL DAMAGE** - Electrical Vehicle Supply Equipment shall be protected against 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. (see sample drawing below) (CEC Art. 110.27(B))
6. **IF MORE THAN 60 AMPS**- When EV charging equipment is rated at more than 60 amps, the disconnect means shall be provided and installed in a readily accessible location and shall be capable of being locked on the open position. (CEC Art. 625.23)

