City of Duarte
Community Development Department
1600 Huntington Drive
Duarte, CA 91010
(626) 357-7931

Eligibility Checklist for Expedited Electric Vehicle Charging Station Permitting – Single Family Residential

PROJECT INFORMATION	
JOB ADDRESS:	**Permit No.**
CONTRACTOR'S LICENSE NUMBER AND TYPE:	
Location: ☐ RESIDENTIAL-SFR ☐ RESIDENTIAL-MFR ☐ COMMERCIAL ☐ PUBLIC RIGHT-OF-WAY	
PROJECT DESCRIPTION:	

APPLICANT INFORMATION	
NAME:	**COMPANY NAME:**
ADDRESS:	**CITY, STATE, ZIP:**
PHONE NUMBER:	**EMAIL:**
SIGNATURE:	**DATE:**

CHARGING STATION INFORMATION	
CHARGING TYPE: ☐ LEVEL 1 (120V) ☐ LEVEL 2 (240V) ☐ LEVEL 3 (480V)	
LOCATION AND NUMBER OF STATIONS TO BE INSTALLED: **Garage _____ Parking Level(s) _____ Parking Lot _____ Street Curb _____**	
Maximum Rating (Nameplate) of EV Service Equipment = _____ kW	
Voltage EVSE = _____ V	**Manufacturer of EVSE: _____**
Mounting of EVSE: ☐ **Wall Mount** ☐ **Pole Pedestal Mount** ☐ **Other _____**	
System Voltage: ☐ **120/240V, 1φ, 3W** ☐ **120/208V, 3φ, 4W** ☐ **120/240V, 3φ, 4W** ☐ **277/480V, 3φ, 4W** ☐ **Other _____**	
Rating of Existing Main Electrical Service Equipment = _____ Amperes	
Rating of Panel Supplying EVSE (if not directly from Main Service) = _____ Amps	
(Connected/Calculated/Demand) Load of Existing Panel Supplying EVSE = _____ Amps	
Total Load (Existing plus EVSE Load) = _____ Amps	
EVSE Rating _____ Amps x 1.25 = _____ Amps = Minimum Ampacity of EVSE Conductor = # _____ AWG	

City of Duarte
Community Development Department
1600 Huntington Drive
Duarte, CA 91010
(626) 357-7931

Eligibility Checklist for Expedited Electric Vehicle Charging Station Permitting – SFR

GENERAL REQUIREMENTS			
A.	Permit application is completed and attached	☐ Y	☐ N
B.	Does the application include two (2) sets of EVCS manufacturer's specs and installation guidelines?	☐ Y	☐ N
C.	The applicant has reviewed the attached Zero-Emissions Vehicles in California: Community Readiness Guidebook checklist published by the Governor's Office of Planning and Research.	☐ Y	☐ N
ELECTRICAL LOAD CALCULATION			
A.	Two (2) sets of electrical load calculation worksheets are included. (**CEC 220**)	☐ Y	☐ N
B.	Based on the load calculation worksheet, is a new electrical service panel upgrade required?	☐ Y	☐ N
	1) If yes, do plans include the service panel upgrade?	☐ Y	☐ N
C.	Do the plans identify the amperage and location of any existing electrical service panels?	☐ Y	☐ N
	1) If yes, does the existing panel show room for additional breakers?	☐ Y	☐ N
D.	Is the charging circuit appropriately sized for a continuous load of 125%?	☐ Y	☐ N
SITE PLAN AND SINGLE LINE DRAWING			
A.	Is the project a Level One or Level Two ECVS equipment installed within an existing one or two-family residential structure (ie. Garage or carport).	☐ Y	☐ N
B.	If you chose **no** to the previous question, is a site plan included with the permit application?	☐ Y	☐ N
	1) Site Plan shows location, size, and use of all structures.	☐ Y	☐ N
	2) Site Plan shows location and size of all electrical panels, equipment, and conduit.	☐ Y	☐ N
	3) Site Plan shows type of charging system and mounting.	☐ Y	☐ N
	4) Site Plan shows all property lines, streets, lot dimensions, north arrow, setbacks, and electrical and mechanical equipment.	☐ Y	☐ N
C.	Is a separate electrical plan with a single-line diagram included with the permit application?	☐ Y	☐ N
	1) Electrical plans are completed, stamped, and signed by a California Licensed Electrical Engineer or a C-10 electrical contractor.	☐ Y	☐ N
	2) Electrical plans list and labels all EVCS supply equipment.	☐ Y	☐ N
	3) Electrical plans specify conductor and conduit size, type, and location.	☐ Y	☐ N
	4) Electrical plans specify the size of the circuit breaker supplying the EVCS.	☐ Y	☐ N
	5) Electrical plans specify the size and location of the main electric panel, distribution panels, overcurrent protection, disconnects, additional meters, and EVCS equipment.	☐ Y	☐ N
	6) Is an electrical floor plan included with the permit application? (If required)	☐ Y	☐ N
	7) Is a mechanical plan included with the permit application? (If required)	☐ Y	☐ N
DESIGN STANDARDS			
A.	Installation maintains minimum parking space requirements defined in Chapter 19.38 of the Duarte Development Code.	☐ Y	☐ N

B.	Anchorage of floor or wall mounted electric vehicle charging stations meet the requirements of the California Building or Residential Code as applicable per occupancy, and the provisions of the manufacturer's installation instructions. Mounting of charging stations do not adversely affect building elements.	☐ Y	☐ N
D.	Stations have appropriate NEMA rated enclosures (NEC 110.28) based on environment and customer needs, such as weatherization or greater levels of resistance to water and corrosive agents.	☐ Y	☐ N
F.	Electrical Vehicle Supply Equipment is protected against vehicle impact damage when located in the path of a vehicle. Bollard(s) and/or wheel stop(s) are proposed as needed.	☐ Y	☐ N

ELECTRICAL CODE COMPLIANCE – MINIMUM REQUIREMENTS			
A.	Plans indicate that the installation shall meet all electrical code requirements – Article 625		
B.	If charging equipment is rated at more than 60 amps, or more than 150V to ground, the disconnect is installed in a visible and readily accessible location and shall be capable of being locked on the open position.	☐ Y	☐ N
C.	Stations meets UL requirements and are listed by UL or another nationally recognized testing laboratory. (UL 2202/ UL 2200)	☐ Y	☐ N
D.	Conductors are sized to support 125% of the rated equipment load (NEC 625.21)	☐ Y	☐ N
E.	If trenching is required, is the trenching detail called out?	☐ Y	☐ N

CALIFORNIA GREEN BUILDING STANDARDS REQUIREMENTS			
A.	If applicable, project meets all EV Readiness requirements set by the most recent California Green Building Standards Code.	☐ Y	☐ N

Notes:

1. *These criteria are intended for expedited electric vehicle charging station process.*
2. *If any items are checked NO, revise design to fit within Eligibility Checklist, otherwise permit application may go through standard process.*

RESIDENTIAL
ELECTRICAL LOAD CALCULATIONS

Lighting Loads

220-12	Living area sq. ft._____x 3 volt amperes per sq. ft.	=_____VA
220.52A	Two small appliance circuits (required) x 1500VA	=__3000__VA
220.52B	Laundry circuit(s) _____x 1500VA	=_____VA
220.52A	Additional small appliance circuit(s) _____x 1500VA	=_____VA
	Lighting Load Sub-total	=_____VA

220.42	First 3000 volt-amperes of lighting loads @ 100%	=__3000__VA
	From 3001 to 120000 VA @ _____ 35%	=_____VA
	Remainder over 120000 VA @ _____ 25%	=_____VA
	Lighting Load Total Volt-Amperes	=_____VA (A)

220.55	Household Cooking Appliances	
	(Use table 220-55) Number of Appliances _____	=_____VA
	Cooking Units Total Volt-Amperes	=_____ (B)

220-53	Appliance Loads (nameplates)		
	Microwave	1500 VA x _____	=_____ VA
	Compactor	1200 VA x _____	=_____ VA
	Disherwasher	1200 VA x _____	=_____ VA
	Disposal	600 VA x _____	=_____ VA
	Central Vacuum	1800 VA x _____	=_____ VA
	_____	____ VA x _____	=_____ VA
	_____	____ VA x _____	=_____ VA
		Appliance Sub-Total	=_____ VA
	Appliance Sub-Total_____ x _____% =_____ Volt-Amperes (C)		
	(Less than 4 units x 100%, 4 or more units x 75%)		
220-54	Dryer-5000 VA or nameplate (whichever is greater)		=_____ VA (D)
422-10A	Water Heater (nameplate) x 125%		=_____ VA (E)
220-14	Pool/Spa motor loads: Sum all plus 25% of largest		=_____ VA (F)
	Add totals of (A) (B) (C) (D) (E) (F) Total Volt-Amperes		=_____
	Total Volt-Amperes/240		=_____ Amps (G)
220-14C	Largest cooler, A/C or heating load		
	_____ KVA _____ Volts x 125%		=_____ Amps (H)

Total Service (G) + (H) =_____ AMPS

City of Duarte

ELECTRICAL LOAD CALCULATIONS

HELP FOR THE HOMEOWNER
DUARTE BUILDING AND SAFETY

2/18/13
Building Official Date

Date: 4/5/11	Sheet 1 of 1	E-2

Permitting Checklist

	Residential	Non-Residential
Phase 1 **Pre-Work** **Contractor**	✓ Understands intended use of the EVSE (i.e. personal)	✓ Obtain an address for the location ✓ Determine the ownership of the site and/or authorization to install equipment at site ✓ Understands intended use of the EVSE (i.e., fleet, employee, customer, visitor, etc.) ✓ Determine number of vehicles charging and connectors per charging station ✓ Determine source of power and authorization to use source
	✓ Determine type of vehicle(s) to be charged at EVSE ✓ Evaluate mounting type options (i.e., bollard, pole-mount, wall-mount, ceiling-mount) ✓ Clarify communication requirements (i.e., Ethernet, cellular, Wi-Fi, none or other) ✓ Determine the NEMA Enclosure type ✓ Determine the physical dimensions of the space(s) ✓ Inspect the type of circuit breaker panel board intended for the installation	
Phase 2 **Pre-Work** **Customer**	✓ Identify incentives or rate structures through the utility ✓ Determine size of electrical service at the site ✓ Identify and contact applicable local permit office(s) to identify specific requirements, including local fire, environmental, construction, building, concealment and engineering requirements ✓ Identify incentives available through local, state or federal programs ✓ Contact insurance company to acquire additional insurance or separate coverage as needed ✓ Hire the contractor and verify credentials with all subcontractors; ensure electrical contractor's license for electrical work is current	
Phase 3 **On-Site** **Evaluation**	✓ Verify EVSE meets UL requirements and is listed by UL or another nationally recognized testing laboratory ✓ Verify EVSE has an appropriate NEMA rated enclosure (NEC 110.28) based on environment and customer needs, such as weatherization or greater levels of resistance to water and corrosive agents ✓ Determine the level or charger meets customer's PEV requirements (most vehicles require the maximum of a 240V/32A (40A breaker) ✓ Based on proposed EVSE location, determine if cord length will reach a vehicle's charging inlet without excessive slack and does not need to be more than 25' in length (NEC 625.17) ✓ Cord management methodologies have been considered to reduce the risk of tripping hazards and accidental damage to the connector ✓ Mounting type selection based on requirements to meet site guidelines ✓ Determine whether EVSE communication options are beneficial to customer and/or local utility	

Phase 4 **On-Site Survey**	✓ Ensure overhead doors and vehicle parking spot do not conflict with EVSE location ✓ Place EVSE in a location convenient to charging port on vehicle and typical orientation of the vehicle in garage (i.e., backed in or head-first) ✓ Ensure functionality of lighting in the garage to meet NEC code 210-70	✓ Space(s) should be visible to drivers and pedestrians ✓ Determine proximity to building entrance (could be considered an incentive for PEV use) ✓ Select spaces proximate to existing transformer or panel with sufficient electrical capacity ✓ EVSE installation should maintain a minimum parking space length to comply with local zoning requirements ✓ If available, use wider spaces to reduce the risk of cord damage and minimize the intersection of cords with walking paths ✓ Ensure sufficient lighting at proposed space(s) to reduce the risk of tripping and damage to charging station from vehicle impact or vandalism; light levels above two foot candles are recommended ✓ Address accessibility requirements (refer to the Plug-In Electric Vehicle Infrastructure and Equipment Accessibility section of the Guidebook for more information) ✓ Determine availability of space for informative signing ✓ EVSE with multiple cords should be placed to avoid crossing other parking spaces ✓ All available charging station mounting options should be considered and optimized for the space ✓ Determine if hazardous materials were located at the site PARKING DECKS ✓ Place EVSE towards the interior of a parking deck to avoid weather-related impacts on equipment PARKING LOTS ✓ Avoid existing infrastructure and landscaping to mitigate costs, potential hazards and other negative impacts ON-STREET ✓ Install on streets with high foot and vehicle traffic to mitigate vandalism ✓ Avoid existing infrastructure to mitigate costs, potential hazards and other negative impacts ✓ Address accessibility requirements (refer to the Plug-In Electric Vehicle Infrastructure and Equipment Accessibility section of the Guidebook for more information)

		✓ For pull-in spaces, EVSE should be placed in front of the space and either centered on the space if placed between two spaces (if two connectors are available); EVSE with more than two connectors should not be used in on-street applications ✓ For parallel parking locations, the charging station should be installed at the front third of the parked vehicle and based on the direction of traffic flow; EVSE with a single connector is recommended to reduce potential trip hazards
	✓ Mount the connector at a height between 36" and 48" from the ground (NEC 625.29) unless otherwise indicated by the manufacturer ✓ Install wall or pole-mount stations and enclosures at a height between 36" and 48" ✓ Ensure sufficient space exists around electrical equipment for safe operation and maintenance (NEC 110.26); recommended space is 30" wide, 3' deep and 6'6" high ✓ Minimize tripping hazards and utilize cord management technologies when possible ✓ Equipment operating above 50 volts must be protected against physical damage (NEC 110.27); ensure the vehicle is out of the line of vehicle travel and use wheel stops or other protective measures ✓ EVSE must be located such that ADA routes maintain a pathway of 36" at all times	
Phase 4 **Contractor Installation Preparation**	✓ Price quote submitted to customer and approved including utility upgrades ✓ Order equipment ✓ Provide stamped engineering calculations as needed ✓ Provide site plan modification with diagrams as necessary ✓ Complete all necessary service upgrades and/or new service assessments ✓ Complete permit applications as required by local permitting department ✓ Ensure permit is approved and collected ✓ Schedule all necessary contract work (i.e., boring, concrete and/or paving restoration) and utility work (i.e., utility marking, service upgrade, new service and/or meter pull) ✓ Ensure utility marking of existing power lines, gas lines or other infrastructure is completed and utilize "call before you dig" services	
Phase 5 **Installation**	✓ Residential garages may permit the use of nonmetallic-sheathed cable in lieu of conduit	✓ Run conduit from power source to station location ✓ For EVSE greater than 60 amperes, a separate disconnect is required (NEC 625.23) and should be installed concurrently with conduit and visible from the EVSE
	✓ Post permit at site in visible location ✓ Remove material to run conduit and/or wiring (i.e., drywall, insulation, pavers, concrete, pavement, earth, etc. ✓ Contractors are encouraged to examine requirement for installation sites and types of wiring in Chapter 3 of the NEC ✓ Pull wiring; charging stations require a neutral line and a ground line and equipment is considered to be a continuous load	

	✓ Conductors should be sized to support 125% of the rated equipment load (NEC 625.21) ✓ Preparing mounting surface and install per equipment manufacturer instructions ✓ Floor-mount: typically requires a concrete foundation with J-bolts on station base; place with space to allow conductors to enter through the base ✓ Wall/pole/ceiling-mount: install brackets for mounting of the equipment ✓ Install bollard(s) and/or wheel stop(s) as needed ✓ Install informative signage to identify the EVSE and potential trip hazards ✓ Install additional electrical panels or subpanels as needed ✓ Install service upgrades, new service and/or new meter as needed; utility may also pull a meter to allow for charging station wires to be connected to a panel ✓ Make electrical connection ✓ Perform finish work to repair existing infrastructure, surfaces and landscaping
Phase 6 **Inspection**	✓ An initial electrical inspection by applicable building, fire, environmental and electrical authorities should occur after conduit has been run and prior to connecting equipment and running wires; if necessary, contractor should correct any issues and schedule a second rough inspection ✓ If required, the inspector will perform a final inspection to ensure compliance with NEC and other codes adopted within the jurisdiction by inspecting wiring, connections, mounting and finish work ✓ Contractor should verify EVSE functionality
Additional Resources	✓ National Codes and Standards ✓ American National Standards Institute (ANSI) ✓ National Fire Protection Association (NFPA) ✓ Underwriters Laboratories, Inc. (UL) ✓ International Association of Electrical Inspectors (IAEI) ✓ International Code Council (ICC) ✓ NECA-NEIS Standards ✓ NECA and NFPA Webinars ✓ Electrical Vehicle Infrastructure Training Program (EVITP) Installer Training Course/Certification