

**Research Regarding PEV Outlet Requirements in
Various California Municipalities**

July 1, 2013

Table A: Specifications for PEV outlet capability requirements in new construction

Municipality	Building Type	Level Required	Conduit Required	Wiring/outlet Required	Panel Capacity Required	# Spaces
Sunnyvale	Single family detached or townhouse	Level 2 (240 V)	Yes	Yes	Yes	2 vehicle outlets per unit
	Residential shared Parking Facility	Level 2 (240 V)	Yes	Yes	Yes	12.5% of total parking
	Industrial/Office	Level 2 (240 V)	Yes	Yes	Yes	3% of each 100 parking spaces
Los Angeles	One & two family dwellings & townhouses	Level 2 (208/240 V 40 amp, grounded AC outlet)	Yes	No	Yes	1 vehicle outlet per unit
	High rise residential & non-residential buildings	Level 2 (208/240 V)	Yes	Yes	Yes	5% of total parking
	All other residential (not high rise or single family/townhouse)	Level 2 (208/240 V)	Yes	No	Yes	5% of total parking
Beverly Hills	All dwelling units except apartments	One Level 1 (120V) and one Level 2 (240 V)	Yes	No	Yes	1 vehicle outlet per 50 parking spaces
Rolling Hills Estates	Residential buildings	Level 2 (220 V)	Yes	Yes	Yes	1 vehicle outlet per unit
Temecula	One & two family dwellings & townhouses	Level 1	Yes	No	Yes	1 outlet box per unit

The cities of Sunnyvale, Los Angeles, Beverley Hills, Rolling Hills Estates, and Temecula are the only municipalities in California to have passed ordinances requiring conduits and panel capacity for Plug-in Electric Vehicle (PEV) outlets in new construction.

In Sunnyvale, all new single family detached homes or townhouses, residential shared parking facilities, and industrial/office facilities with over 100 parking spaces are required to be equipped with Level 2 PEV outlets.¹

The city of Los Angeles requires that all new high rises, new residential building, buildings alterations with building permit alterations of over \$200,000, and building additions contain panel capacity and conduits for Level 2 PEV outlets. High rises are required to possess the wiring and outlets as well.²

Beverley Hills is the only city to require both a Level 1 and a Level 2 outlet capacity for new residential construction. The Beverley Hills municipal code exempts apartment buildings from this requirement³

Rolling Hills Estates Municipal Code stipulates that all new residential construction, including an addition to a residential structure of greater than 50% of the existing floor area, and/or any demolition of greater than 50% of the lineal walls of a residential structure within a 12-month period, require installation of a 220 V electrical outlet in the garage for the purpose of PEV charging.⁴

Temecula requires new residential non-shared garages to contain a minimum ¾ inch metal flex conduit that runs from the meter box to a metal box 42 inches above the finished floor for a future PEV charging station.⁵

All specifications for ordinances regarding PEV outlet capabilities passed in Sunnyvale and Los Angeles are located in Table A (above).

¹Electric Vehicle Chargers. City of Sunnyvale. *Building Permit Application Requirements*.
<http://sunnyvale.ca.gov/Portals/0/Sunnyvale/CDD/Residential/Electrical%20Car%20Chargers.pdf>

² Ordinance No. 181480. City of Los Angeles. 99.04.106.6.
http://ladbs.org/LADBSWeb/LADBS_Forms/PlanCheck/2011LAAMendmentforGreenBuildingCode.pdf

³ Beverley Hills Municipal Code 2011. City of Beverley Hills.
<http://www.beverlyhills.org/business/constructionlanduse/apartmentscondominiums/electricvehiclecharging/>

⁴ Rolling Hills Estates Municipal Code. City of Rolling Hills Estates. *Ordinance No. 671*.
<http://ci.rolling-hills-estates.ca.us/Modules/ShowDocument.aspx?documentid=5736>

⁵ Temecula Municipal Code. City of Temecula. 15.04.040 California Electrical Code.
<http://www.qcode.us/codes/temecula/>

**Research Regarding PEV Requirements in
Santa Clara County Cities**

July 1, 2013

Table B: PEV chargers in the County of Santa Clara

Municipality	Construction Requirements for PEV outlets	Streamlined electrical permit for PEV outlets	City installation of public charging stations
San Jose⁶	No	Yes	Yes
Campbell⁷	No	No	Yes
Cupertino⁸	No	Yes	Yes
Gilroy	No	No	No
Los Altos⁹	No	No	Yes
Los Altos Hills¹⁰	No	No	Yes
Los Gatos¹¹	No	Yes	Yes
Milpitas¹²	No	Yes	Yes
Monte Sereno	No	No	No
Morgan Hill¹³	No	Yes	No
Mountain View¹⁴	No	Yes	Yes
Palo Alto¹⁵	No	Yes	Yes
Santa Clara¹⁶	No	Yes	Yes
Saratoga¹⁷	No	No	Yes
Sunnyvale¹⁸	Yes	Yes	Yes

As indicated by Table B, the only municipality within the County of Santa Clara that has passed ordinances regarding PEV charging capability in new buildings is Sunnyvale. However, 9 out of 15 municipalities have streamlined the process to install PEV outlets in residential units. City installation of public charging station in 12 out of 15 municipalities indicates that cities are aware of the need for PEV charging stations within their jurisdictions.

⁶ <http://www.sanjoseca.gov/DocumentCenter/View/1744>

⁷ <http://www.cityofcampbell.com/AgendasMinutes/2010/ca12072010/Item%2012.pdf>

⁸ <http://www.cupertino.org/Search.aspx?q=electric+vehicle>

⁹ <http://www.ci.los-altos.ca.us/citycouncil/online/index.html>

¹⁰ <http://www.losaltoshills.ca.gov/city-government/departments/building-and-planning>

¹¹ http://www.losgatosca.gov/documents/8/12/187/9_Environment_Sustainability.PDF

¹² http://www.ci.milpitas.ca.gov/government/building/permit_res_elect_vehicle.asp

¹³ <http://www.morgan-hill.ca.gov/index.aspx?nid=165>

¹⁴ <http://www.mountainview.gov/civica/filebank/blobdload.asp?BlobID=4730>

¹⁵ http://www.cityofpaloalto.org/gov/depts/utl/residents/sustainablehome/electric_vehicles/default.asp

¹⁶ <http://siliconvalleypower.com/index.aspx?page=2377>

¹⁷ <http://www.saratoga.ca.us/civicax/filebank/blobdload.aspx?blobid=6940>

¹⁸ <http://sunnyvale.ca.gov/Portals/0/Sunnyvale/CDD/Residential/Electrical%20Car%20Chargers.pdf>

**CALGreen Recommendations for
PEV Readiness**

July 1, 2013

The current consensus by PEV charging installation guidebooks is that Level 2 (240 volt) charging stations are the most efficient and economical stations for residential use, compared to Level 1 and Level 3. Below are some recommendations by CALGreen regarding how to prepare a municipality for PEVs. The recommendations include ideas such as requiring conduits, panel capability, and wiring for Level 2 charging stations in new construction of various building types, as well as allotted amounts of PEV charging parking spaces.

Recommendations for local governments to prepare of PEV charging:

- Zoning¹⁹
 - Examine land use mix and determine in which zoning classification to prioritize for explicit permission in the zoning ordinance for different types of charging (Levels 1 through 3)
 - Local governments should allow charging as an accessory use that does not require more than a simple planning clearance (as long as it is not the main purpose of the site)
 - Installation of chargers should be allowed as an outright permitted or accessory use
 - Charging spaces designated for PEVs should be able to be used to meet minimum parking requirements for land owner and developers
 - Local governments should require that a minimum percentage of parking spaces in new construction be PEV-ready
 - Zoning ordinances that allow charging as a permitted or accessory use should tailor any additional conditions of installation to the type of building specified in the ordinance
- Building Codes²⁰
 - Allow charging capability to satisfy PEV readiness requirements
 - Consider present PEV charging demand in determining whether to require percentage of spaces with ready to use charging equipment in addition to PEV-ready wiring for new single and multi-unit dwellings
 - Require a certain minimum percentage of parking spaces in new construction to be wired to be PEV ready
 - Consider future PEV charging demand and require the layering of conduit capable of carrying future wires or cables. Require insets for additional panels and pads for future transformers
 - Require a minimum percentage of parking spaces in new construction be wired to be PEV ready in commercial or industrial buildings
 - Address accessibility requirements
 - Consider updating electrical codes to allow the sizing of electrical service for charging systems to reflect the load permitted by an automated energy management system
- Work with utilities for PEV readiness in regards to planning for increased electrical loads and possible special rates for PEV users²¹
- Streamline the PEV outlet permitting process²²

¹⁹ Zero-Emissions Vehicles in California: Community Readiness Guidebook (draft). *CALGreen*. Page 35.

²⁰ Zero-Emissions Vehicles in California: Community Readiness Guidebook (draft). *CALGreen*. Page 36.

²¹ Zero-Emissions Vehicles in California: Community Readiness Guidebook (draft). *CALGreen*. Page 55.

²² Zero-Emissions Vehicles in California: Community Readiness Guidebook (draft). *CALGreen*. Page 41.