

# Mendocino County Zero Emission Vehicle (ZEV) Regional Readiness Plan



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**Mendocino County  
Air Quality Management District**

with

**Mendocino Council of Governments**  
[www.mendocinocog.org](http://www.mendocinocog.org)



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## Introduction

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### Purpose of the Plan

Since 2011 Californians have bought more than 35,000 electric plug-in vehicles – more than a third of all the plug-ins in the US. As of early 2013, California was home to 1,276 publicly accessible charging stations, or more than one-fifth of the country's total, according to the US Energy Department. With the increasing demand for electric charging stations, the Mendocino County Air Quality Management District, in partnership with the Mendocino Council of Governments (MCOG), has developed these guidelines for creating electric charging stations to serve the Zero Emission Vehicle (ZEV) and Plug-in Electric Vehicle (PEV) demand.

The purpose of this effort is to provide regional transportation planning to build on previous work and participate in ongoing statewide and nationwide transitions to new vehicle technologies and renewable energy infrastructure in response to health and environmental impacts, energy issues, and climate change. The goal of Mendocino County regional readiness is to implement appropriate plug-in electric vehicle (PEV) charging infrastructure for public use as part of a network of neighboring regions and beyond, supporting regional and interregional use of electric and plug in hybrid vehicles.

While private PEV charging networks are becoming more available, it is a responsibility of appropriate public agencies to ensure that infrastructure is provided to all feasible, prioritized locations in the region. Many parts of Mendocino County are remote and sparsely populated, unlikely to attract comparable investment in charging stations by private companies. It is recommended that Mendocino County establish a basic public network, encourage private networks to add density of PEV charging infrastructure, and invite partnership opportunities wherever beneficial to the public interest.

This plan focuses on stations for “opportunity charging” as opposed to “primary charging” locations. Opportunity charging stations are generally available to the public and not as the primary location for individual owners while primary charging locations would be at an EV owner’s home. Although there may be efforts to develop electric fueling stations by private interests to serve opportunity charging, the the focus of this effort is on public sites to ensure an initial network of charging stations becomes available.

This project responds to Goals, Objectives and Policies on Climate Change & the Environment in the *2010 Mendocino County Regional Transportation Plan*, including the following:

**Objective:** “invest in transportation projects that will help Mendocino County residents to proportionately contribute to the California greenhouse gas reduction targets established by Assembly Bill 32 and Senate Bill 375.”

California Sustainable Communities Policy Objectives addressed include:

- Quantifiable reduction in greenhouse gas emissions
- Transportation/transit improvements
- Reduce fuel consumption
- Energy efficiency, conservation or renewable energy
- Protection of natural resources
- Reduction in toxic threats
- Creation of green jobs and/or industries
- Efficient use of existing infrastructure
- Promote public health and healthy communities

This project is consistent with at least five of the six Livability Principles of the Federal Partnership for Sustainable Communities: 1) Provide More Transportation Choices, 2) Enhance Economic Competitiveness, 3) Support Existing Communities, 4) Coordinate Policies & Leverage Investment, and 5) Value Communities & Neighborhoods.

## **Previous Efforts**

MCOG previously completed Zero Emission Vehicle (ZEV) Demonstration Projects in 1997 and 1999 that led to the development of two charging station locations in Ukiah and Willits. Following is a summary of those efforts:

Zero Emission Vehicle (ZEV) Demonstration Project, Phase I Final Report (MCOG, 1997): The purpose of this project was to conduct a feasibility study for the Zero Emission Vehicle (ZEV) Demonstration Project. The first phase focused on evaluating and comparing production ZEV's availability on the consumer market, specifically for performance in the Mendocino County region. Study results were intended to provide a recommendation for Phase II. This study concluded that use of an electric vehicle (EV) for commuting and across-county travel is feasible in Mendocino County, especially utilizing advanced EVs entering the market. Other EVs may have uses in towns and municipal fleets. It is to the County's advantage to begin to plan for and construct EV infrastructure, since it is likely that some EVs will be acquired and used within the county. The usefulness of EVs is enhanced by construction of charging stations throughout the county, such that more travel by EVs around the county is possible. It was recommended that appropriate entities begin planning for safe, code-compliant charging infrastructure. It was also recommended that planners responsible for traffic and roads become familiar with EVs through hands-on experience.

Zero Emission Vehicle (ZEV) Demonstration Project, Phase II Final Report (MCOG, 1999): The two-year ZEV Demonstration Project, an element in MCOG's Overall Work Program, evaluated the practicality of using commercially produced zero emission vehicles in the rural setting of Mendocino County. The project addressed infrastructure issues by installing charging stations to provide hands-on experience for local government agency and planning personnel. Use of renewable energy was demonstrated through solar net metering, which directly interfaces with power grids to produce electricity locally. This rural demonstration dealt with pollution prevention in a relatively pristine environment, and with the challenges of rugged and mountainous terrain, a somewhat colder climate, and remote locations.

EVs for Education Program sponsored by Mendocino County Air Quality Management District and State of California Air Resources Board, assisted by Mendocino Clean Air Transportation Coalition, 2000-2001.

## **Other Guidelines**

Mendocino County is not alone in its efforts to serve the demand for electric vehicles. The County of Sonoma has developed an *Electric Vehicle Charging Station Program and Installation Guidelines*, July 2011, [http://www.sonoma-county.org/prmd/docs/misc/ev\\_prog\\_guidelines.pdf](http://www.sonoma-county.org/prmd/docs/misc/ev_prog_guidelines.pdf). Humboldt County is also in the process of developing a plan to serve the Eureka Bay Area. Mendocino County should follow the lead of other ZEV plans, especially related to installation standards. The State of California has recently published its *2013 ZEV Action Plan*, February 2013, [http://opr.ca.gov/docs/Governor's\\_Office\\_ZEV\\_Action\\_Plan\\_\(02-13\).pdf](http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf), which identifies specific strategies and actions needed to establish a roadmap towards a goal of serving 1.5 million zero-emission vehicles on California roadways by 2025.

## **Plan Components**

Existing Infrastructure: Existing electric vehicle charging facilities in the County, both public and private, are summarized.

Travel Characteristics: Mendocino County resident and work travel characteristics, trip travel purposes, traffic volumes on State Highways, connections to neighboring counties, and the potential connection with tourism travel are discussed.

Recommended Charging Station Sites: Criteria for station site selection was developed and specific sites were identified throughout the County.

Phasing Plan: A priority ranking score for each potential station was developed and a recommended phasing plan is presented should funding not allow for full system development.

Technical Station Issues: The array of technical issues and details at a ZEV charging station are summarized including the types of charging equipment, required power sources, tracking usage data, payment methods, cost to users, installation, monitoring and maintenance, impact to the power grid, signage, installation standards and costs.

Implementation Plan: The next steps in developing a network of ZEV charging stations are presented.

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## Travel Characteristics

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### Conditions in the Region

Mendocino County, on the north coast of California, is a rural county noted for its distinctive Pacific Ocean coastline, Redwood forests and wine growing region within an area of approximately 3,500 square miles. It is bordered by Sonoma County on the south, Lake County to the east, Humboldt County on the north and the Pacific Ocean to the west. Transportation within and through the County is constrained by the mountainous terrain and limited highways. US 101 and State Route (SR) 1 are the only continuous north-south corridors, and SR 20 and SR 128 are major east-west corridors. The majority of residents live within the communities of Ukiah, Willits and Fort Bragg; however, there are numerous residents who live in smaller towns and remote locations with transportation needs and a desire to utilize alternative fuels. Over the past four decades, Mendocino County residents have been leaders in renewable energy and alternate-fuel transport, with a spirit of innovation and self reliance, local community identities, and strong environmental values. The Mendocino County State Highway system is shown in Figure 1.

### Mendocino County Residents and Workers

The *Wine Country Travel Demand Model Project Model Development Report (WCTDM)*, 2011, prepared by Parsons Brinckerhoff for Caltrans and the Wine Country Interregional Partnership, includes summaries of Mendocino County travel characteristics that are relevant to understanding the potential for ZEV usage at both the local and regional levels. Following are several key travel characteristics for Mendocino County residents and workers that were identified in the WCTDM through reference to the *2000-2001 California Statewide Household Travel Survey* and Journey-to-Work data obtained and analyzed during the 2000 Census.

- 62 percent of trips made by Mendocino County households originate at home, with the remaining 38 percent of trips being non-home based
- 12 percent of all trips originate or end at a school
- 94 percent of employed Mendocino County residents also work in the County; nearly 3 percent work in Sonoma County, and the remaining 3 percent are split among neighboring counties and beyond
- 94 percent of all employees in Mendocino County also live in the County
- 38 percent of home-based commute trips in Mendocino County are less than 10 minutes long, and 63 percent of trips are less than 20 minutes long

These statistics confirm that a substantial amount of the traffic on the regional roadway network begins and ends within Mendocino County, and that many of these trips are short in nature. The provision of electric vehicle charging stations at major employment centers and near schools could potentially increase the convenience and attractiveness of ZEV usage by the County's residents.

### Regional Travel Purposes

The WCTDM obtained trip purpose surveys in 2005 and 2009 at four major gateways to Mendocino County: SR 20 and SR 175 near the Lake County line, and SR 128 and US 101 near the Sonoma County line. A summary of the trip purpose results obtained at each of the surveyed County line locations is shown in Table I.



# MENDOCINO COUNTY ROAD AND STATE HIGHWAY SYSTEM



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**Table I  
WCTDM Trip Purpose Results at Regional Gateways**

<b>Gateway (County Line)</b>	<b>Commute</b>	<b>School</b>	<b>Personal Errands</b>	<b>Shopping</b>	<b>Recreation/ Tourism</b>
SR 20 (Lake)	22%	45%	21%	2%	10%
SR 175 (Lake)	75%	0%	17%	0%	8%
SR 128 (Sonoma)	44%	6%	13%	6%	31%
US 101 (Sonoma)	63%	1%	15%	6%	15%

Following are several key findings from the WCTDM regional trip surveys that may provide relevant insight to the potential for regional ZEV travel.

- Ukiah is likely providing urban services to residents of northern Lake County, many of whom are within a 35-mile distance of the City.
- Commute traffic comprises a substantial portion of regional peak period traffic, particularly on SR 175 and US 101.
- A substantial component of school-related traffic occurs during peak periods on SR 20, potentially related to the proximity of Mendocino College to northern Lake County.
- Recreational and tourism based traffic comprises 15 percent of traffic on US 101 and 31 percent on SR 128 at the Sonoma County line during peak periods, and 20 percent of traffic on a daily basis.
- On a regional basis, traffic originating from outside the four-county WCTDM region is much higher on Friday afternoons than on typical weekdays.

### **Traffic Volumes**

Existing traffic volumes on State Highways in Mendocino County were obtained from Caltrans. As shown in Table 2, US 101 carries the highest average traffic volumes of any road in the County with peak volumes of 36,000 vehicles per day in the City of Ukiah. SR 1 serves approximately 21,000 vehicles per day in Fort Bragg while SR 20 east of Highway 101 in Redwood Valley carries 12,400 vehicles per day.

**Table 2  
Existing Traffic Volumes on State Highways**

<b>Community</b>	<b>Highway</b>	<b>Postmile</b>	<b>Peak Month ADT</b>
Hopland	101	11.0	16,300
Ukiah	101	25.7	36,000
Willits	101	47.0	25,500
Laytonville	101	69.5	7,200
Leggett	101	91.1	7,500
Confusion Hill	101	99.7	7,500
Gualala	1	0.7	5,200
Point Arena	1	15.1	4,000
Elk	1	34.1	1,300
Mendocino	1	50.9	8,800
Fort Bragg	1	61.6	21,200
Westport	1	77.4	1,200
Jackson State Forest	20	17.2	3,200
Redwood Valley	20	35.3	12,400
Navarro	128	14.2	2,400
Boonville	128	29.1	6,000
Yorkville	128	40.3	2,200

Note: ADT = Average Daily Traffic  
Source: Caltrans

These volumes indicate that the most significant corridors which could benefit from ZEV stations include:

- US 101 between the Sonoma County line and Willits
- SR 1 between Fort Bragg and Mendocino
- SR 20 between US 101 and the Lake County line

### **Neighboring Jurisdictions**

#### Sonoma County

Sonoma County is an important anchor for connecting ZEV opportunities. Both US 101 and SR 128 generate a substantial amount of both commute and tourism traffic to Mendocino County.

Sonoma County's *Electric Vehicle Charging Station Program and Installation Guidelines*, released in July 2011, envision a network of electric vehicle charging stations throughout the County. Currently, there are charging stations at the Charles M. Schulz – Sonoma County Airport as well as almost every city in the County. The most northern ZEV station is located in the City of Healdsburg. Plans call for the installation of ChargePoint America stations in Cloverdale, located along the US 101 Corridor, and Sea Ranch, located along SR 1. These two ZEV stations would be logical connection points to the Mendocino County system.

The Sonoma County plan recommends that the business community and Tourism Bureau come together and create a theme or brand involving EV tourism in Sonoma County. Expanding upon the “Historic Trail” or “Wine Road,” local chambers of commerce, grape growers and wineries associations, the Wine Road and Visitors and Tourism Bureaus could create an “Electric Trail” theme. A map showing the location, charger levels and hours of operation and any associated costs or incentives could be included in the existing Wine & Visitors Map produced by the Tourism Bureau or could be a separate brochure in print and electronic form.

### Lake County

There are no current plans for ZEV charging stations in Lake County, nor are there any documented stations currently existing. There is at least one active EV club in Lake County, the Konocti Electric Auto Association. Given the commute traffic on the SR 20 corridor between Lake County and Mendocino County, a station location in proximity to the US 101/SR 20 interchange would be appropriate.

### Humboldt County

The Redwood Coast Energy Authority in Eureka is leading a plug-in electric vehicle planning study for Humboldt County. The purpose of the study, with an expected release in 2014, is to prepare Humboldt County for the broad scale adoption of electric vehicles. The study is examining the feasibility of installing public charging stations around Humboldt County. The County’s existing charging locations include one station in Arcata and one in Eureka. Additional locations likely to be considered include public and private parking areas in high traffic locations where people are likely to park for extended periods. This can include shopping areas, places of employment, and school campuses like Humboldt State. However, the study is focusing on the deployment of charging stations in the Eureka Bay Area, but not currently on the US 101 corridor connecting Mendocino County. Based on discussions with their staff, future expansion of this network may include consideration for connections to the south on the US 101 corridor. The most southern location in Humboldt County which would be an appropriate location for a charging station is Garberville.

### **Tourism**

Given the volume of tourism-related traffic generated through Sonoma County via US 101, with lower volumes on the SR 1 and SR 128 corridors, this trip purpose should be a consideration in locating charging stations in and around Mendocino County. Tourists could be encouraged to use their electric vehicles as a means of touring Mendocino County and in particular, attracting them to the bicycle, wine, and coastal tourism industries. Many Mendocino County wineries are located along major routes SR 128 and US 101. By providing charging stations along these routes, EV and PEV users will be able to access these industries. In addition, these facilities would provide connectivity to the Bay Area via the Electric Trail in Sonoma County. Recreational facilities such as camp sites also provide the opportunity for EV and PEV users to charge their vehicles using RV/Campground hookups, which utilize a standard 240V connector. These locations should be considered for a secondary charging location for users.

### **Implications to ZEV Infrastructure Planning**

ZEV infrastructure should be provided to reach the maximum number of users and trip purposes. A core network of major routes would capture these users, specifically along SR 1, SR 20, SR 128 and US 101. Shorter-length trips may also be accommodated within the County, specifically with charging stations in major urban areas where residents may charge their vehicles while working or shopping. Lastly, tourism-related ZEV travel would also be accommodated and encouraged via the core network.

## Existing Infrastructure

### Existing Charging Facilities in Mendocino County

There are only two existing electric vehicle charging sites in Mendocino County in public locations as of 2013, not including private residences and businesses. These two EV charging stations along with two provided at businesses are described below and either provide Level 1 (120-volt) or Level 2 (240-volt) charging.

#### Available for Public Use

##### **Public Parking Lot**

Oak Street/Standley Street (SW Corner), Ukiah



The fully-equipped charging station is located in a public parking lot in Ukiah, three-quarters of a mile away from US 101, and provides Level 2 charging cords. The charging station's centralized location in downtown Ukiah offers users with access to retail and restaurants. The station was installed as part of the previous *ZEV Demonstration Project* between 1997 and 1999.

##### **City of Willits Parking Lot**

111 East Commercial Street, Willits



This charging station is located in the Willits City Hall parking lot and provides charging at Levels 1 and 2, but users must provide connection cords. It is located within one block of US 101. The station was installed as part of the previous *ZEV Demonstration Project* between 1997 and 1999.

#### Private Business Locations

##### **Real Goods – Solar Living Institute**

13771 South Highway 101, Hopland



The charging station is located in the parking lot of a retail store and provides charging at Levels 1 and 2. It is located in southeast Mendocino County along US 101. Users must provide connection cords.

##### **Super 8 Motel**

693 South Orchard Avenue, Ukiah



The fully-equipped charging station is located in the motel parking lot and provides charging at Level 2.

Another more recent installation was at the Beachcomber Motel in Fort Bragg. Additional information on these existing facilities can be found in Appendix A.

It should be noted that a charging station was previously in operation within a City of Fort Bragg parking lot. The unit, which had been installed at the request of an electric car club more than 15 years ago, became inoperable and was removed.

Based on providing the minimum standard features discussed later in this document, the following upgrades should be considered at the existing public charging sites:

- *Ukiah* – Signage should be upgraded to current *California Manual on Uniform Traffic Control Devices* (CA MUTCD) standards. Obsolete equipment should be removed and replaced. The area for charging should be expanded from one to two parking spaces.
- *Willits* – Signage should be upgraded to current CA MUTCD standards. Also, cords for both Level 1 and 2 should be provided.

### **Additional Charging Opportunities**

Campgrounds offer charging opportunities by providing hookups for recreational vehicles. These should be considered as supplemental facilities for electric vehicle users and though these would not serve as primary charging locations, they can increase electric vehicle user confidence for longer distance trips. A list of campground locations throughout Mendocino County with charging facilities for recreational vehicles is provided in Appendix B.

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## Recommended Charging Station Sites

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A list of criteria was developed to select station sites throughout Mendocino County, including:

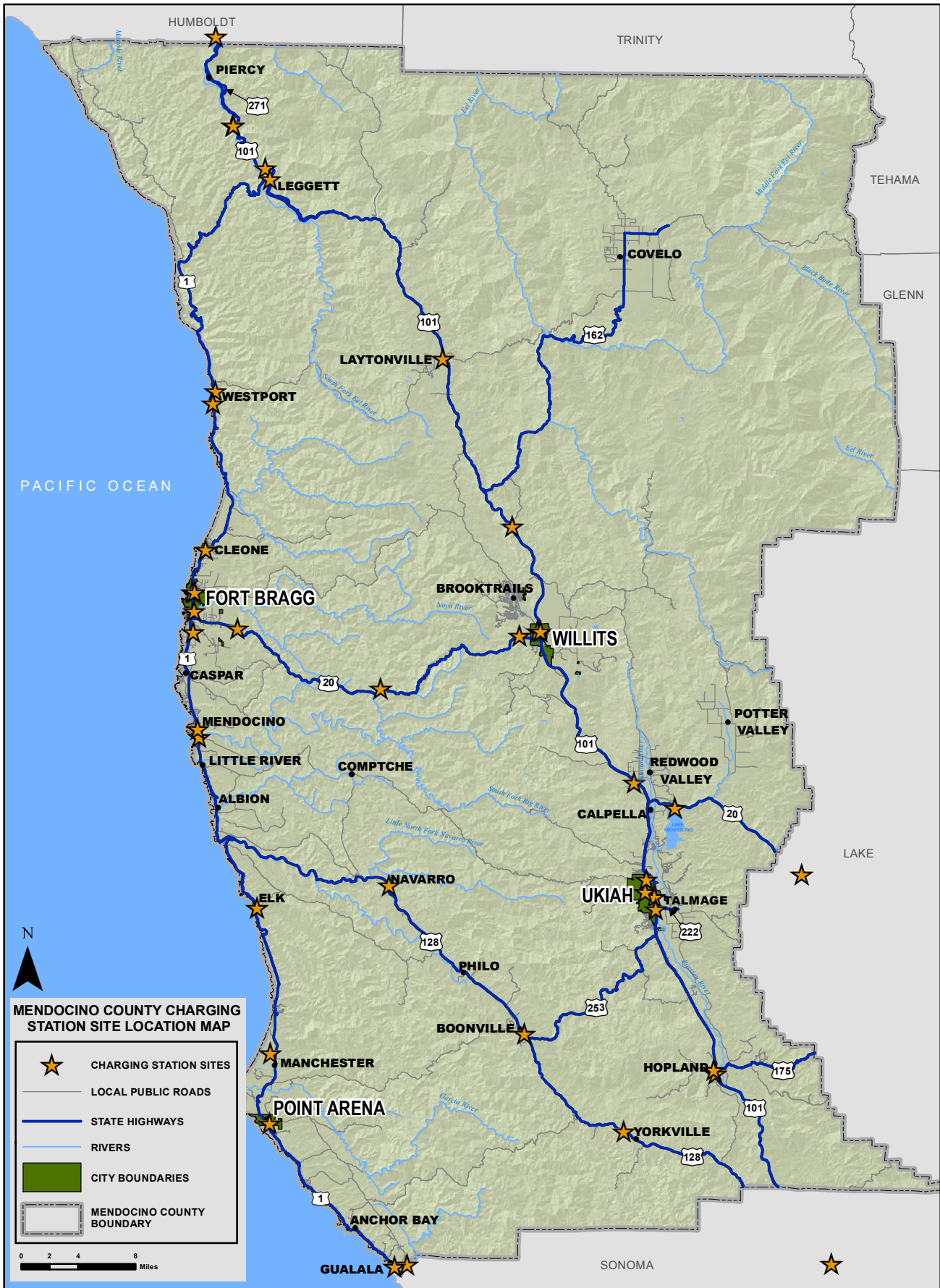
- Located on the US 101, SR 128, SR 1 or SR 20 corridors
- A standard of 25 miles or less between potential charging site locations, if achievable
- Non-residential locations since EV automakers generally deploy chargers for use at owner's homes as part of their program.
- Located on City, School District, County, State or Federal land such as a Post Office or other publically owned property
- Located within walking distance (1/4-mile) of a commercial or recreational activity area
- County road right of way if other options infeasible
- Connectivity to other jurisdiction station sites
- Number of facilities to be provided based on population
- Availability of dedicated parking spaces

Charging Stations sites were selected throughout the County based on this criteria and other local factors and conditions in each of the communities. These sites are shown in Figure 2. The recommended charging station sites were surveyed for the following:

- Type of parking, whether it was on-street, off-street or undeveloped
- Potential type of charging service that can be made available on the site
- Times and dates available for users to charge their vehicles
- Ease for electric vehicles users to access the site because of visibility and/or signage with recommended access improvements
- Benefits of the location based on ease of access and nearby activities
- Whether or not the zoning of the site is compatible or difficult to re-zone
- Communication availability including cell phone reception, land line or other
- Activities in the vicinity that would allow users to spend their time shopping, eating, hiking, etc. while their vehicles charges
- Safety of parking space location
- Risk of flooding at the site

The information collected on the recommended charging station sites can be found in Appendix C along with photos of the recommended sites. Table 3 describes the locations of recommended charging stations and their proximity to other recommended charging stations within the County.

# RECOMMENDED CHARGING STATION SITES





**Table 3  
Recommended Charging Station Sites and Distance to Closest Station Sites**

<b>Route Recommended Station</b>	<b>Distance to</b>	<b>Nearest Charging Station</b>
<b>US 101</b>		
Veterans Memorial Building 110 Feliz Creek Road, Hopland	14 mi	Commerce Drive Cul-de-Sac
Commerce Drive Cul-de-Sac Ukiah	4 mi	Twelfth District Fairgrounds
Twelfth District Fairgrounds Ukiah	22 mi	Willits Skunk Train Depot & Chamber of Commerce
	8 mi	Lake Mendocino Parking Lot
Willits Skunk Train Depot & Chamber of Commerce 299 E Commercial Street, Willits	23 mi	Laytonville Fire House
Laytonville Fire House 44761 US 101, Laytonville	22 mi	Leggett Valley High School/Caltrans Corp Yard
Leggett Valley High School/Caltrans Corp Yard I School Way, Leggett	7 mi	Confusion Hill Gravity House
Confusion Hill Gravity House 75001 US 101, Leggett		North County Line (limit of plan)
<b>SR 128</b>		
Yorkville Post Office & Fire Station 25400 California 128, Yorkville	11 mi	Mendocino County Fairgrounds
Mendocino County Fairgrounds Boonville	15 mi	Navarro General Store/Fire House
Navarro General Store/Fire House 231 Wendling Street, Navarro	21 mi 25 mi	Greenwood Community Center Mendocino Recreation & Community Center
<b>SR 1</b>		
Gualala Community Center 47950 Center Street, Gualala	14 mi	200-214 Main Street, Point Arena
200-214 Main Street, Point Arena	18 mi	Greenwood Community Center
Greenwood Community Center 6075 S Highway 1, Elk	17 mi	Mendocino Recreation & Community Center
Mendocino Recreation & Community Center 10525 School Street, Mendocino	10 miles	Fort Bragg Skunk Train
Skunk Train 100 West Laurel Street, Fort Bragg	<1 mi	Fort Bragg City Hall
Fort Bragg City Hall 416 N Franklin Street, Fort Bragg	16 mi	Westport
Westport Abalone Street, Westport	28 mi	Leggett Valley High School
<b>SR 20</b>		
Lake Mendocino Parking Lot (North Lake Boat Ramp) Redwood Valley	19 mi	Willits Skunk Train Depot & Chamber of Commerce
Chamberlain Creek/Jackson State Forest Fort Bragg	17 mi	Willits Skunk Train Depot & Chamber of Commerce
	19 mi	Fort Bragg Skunk Train

## **Proximity to Adjacent Counties**

Following are the resulting separations between sites in adjacent Counties and the potential sites in Mendocino County:

- Hopland to Cloverdale (Charge Point America station) – 15 miles
- Yorkville to Cloverdale (Charge Point America station) – 16 miles
- Gualala to Sea Ranch (Charge Point America station) – 6 miles
- Redwood Valley to Upper Lake (Station TBD) – 24 miles
- Leggett to Garberville (station TBD) – 23 miles

## **Additional Station Considerations**

This Plan has been the initial effort in identifying specific station sites in developing an initial “skeletal” network for Mendocino County. There are many other sites which could become viable and useful to the citizens of the County. Following is a list of sites and other considerations which were mentioned through comments on the draft document:

- An additional station may be needed near the northern county line as this is an interregional corridor and rising elevation presents challenges for EVs.
- Local airports might be able to access federal grants for charging stations, supporting interregional connections and national linkage. These locations would cover Covelo, Brooktrails, Anderson Valley, north and south coastal areas, and Ukiah.
- Consider a future phase that considers possible sites at Covelo and Dos Rios.
- A second station in Point Arena was recommended at the Wharf.
- Consider a station at the Caltrans Rest Stop at Hwy 101/SR 162 for access to Covelo.
- School sites are generally not recommended due to public safety concerns.
- ADA accessibility should be a consideration in evaluating station locations.

## Phasing for Implementation of New Stations

### Determining Priority for Stations

A priority ranking was developed in order to guide the process of determining the priority for station installation. The priority ranking process took into account the following factors:

- *Highway Traffic Volume* – Average Daily Traffic volume on the State Highway for the peak month as reported by Caltrans.
- *Community Population* – estimated population of the community reported in the 2010 census.
- *Tourism Connection* – number of miles to the Sonoma County line.

Table 4 shows the resulting rankings based on the prioritization calculations provided in Appendix D.

**Table 4**  
**Potential Charging Station Priority Rankings**

Priority Ranking	City	Location	Highway
1	Ukiah	Commerce Drive Cul-de-sac	101
2	Ukiah	Fairgrounds	101
3	Willits	Skunk Train Depot and Chamber of Commerce	101
4	Hopland	Center Drive	101
5	Fort Bragg	Skunk Train Depot	1
5	Fort Bragg	City Hall	1
6	Gualala	Community Center	1
7	Redwood Valley	Lake Mendocino Parking Lot	101
8	Boonville	Mendocino County Fairgrounds	128
9	Point Arena	200-214 Main Street	1
10	Laytonville	Fire House	101
11	Mendocino	Mendocino Recreation & Community Center	1
12	Elk	Greenwood Community Center	1
13	Yorkville	Post Office/Fire Station	128
14	Navarro	General Store/Fire House/Wendling Street	128
15	Leggett	Leggett Valley High School/Caltrans Corp Yard	101
16	Jackson State Forest	Jackson State Forest / Chamberlain Creek	20
17	Westport	Abalone Street	1
18	Confusion Hill	Confusion Hill	101

### Recommended Phasing

It may be desirable to install the charging stations in phases where multiple charging stations along different routes are installed around the same time. Phasing may be needed if funding is constrained or if the County is unable to secure an acceptable site at key locations. Since funding is unknown at this time, it is assumed that it will be unlikely to secure funding to install all 18 stations at once.

In developing this recommended phasing plan, the following concepts were considered:

- Completion of stations along a specific State Highway
- Connections to other stations outside of the County, specifically Sonoma County
- Orientation towards tourism traffic
- Placement within the primary population center and related commute routes
- Connecting along the heaviest travelled routes
- Linking to the higher population in the Bay Area to the south
- Interregional connectivity to neighboring counties

The selected phasing plan considered both the priority ranking presented above as well as these concepts and a goal of maintaining continuity within the system and the desired 25-mile separation between stations. The recommended phasing plan is shown in Table 5.

Phase I: It is recommended that the first phase consist of the US 101 corridor, including the highest traffic volume locations from the Sonoma County line north to Willits. This grouping also includes the Redwood Valley station which connects to Lake County. Additionally, given its high traffic volumes, historical charging station use, and tourism connection, the SR 1 corridor between Fort Bragg and Mendocino would be a standalone subsystem. In total, Phase I consists of seven to eight stations.

Phase II: The recommended second installation should complete the connections to Sonoma County and the tourism/wine road corridors. This phase includes three stations on SR 128 and three stations on SR 1, south of Mendocino.

Phase III: The final phase includes the remaining proposed station sites at the north end of the County. This phase includes Westport on SR 1, Jackson State Park to complete the SR 20 link and the three stations on US 101, north of Willits. It should be noted that the northern stations on US 101 were not given higher priority because Humboldt County is not currently emphasizing a regional connection to Mendocino County along the corridor, but rather focusing on the Eureka Bay Area. Should Humboldt County begin to develop charging stations along this regional corridor, it is suggested that Mendocino County then give higher priority to the northern US 101 locations.

**Table 5  
Charging Station Phasing Plan**

<b>Phase</b>	<b>City</b>	<b>Priority Ranking</b>	<b>Location</b>
I	Ukiah	1	Commerce Drive Cul-de-sac
I	Ukiah	2	Fairgrounds
I	Willits	3	Skunk Train Depot
I	Hopland	4	Center Drive
I	Fort Bragg	5	Skunk Train Depot
I	Fort Bragg	5	City Hall
I	Redwood Valley	7	Lake Mendocino Parking Lot
I	Mendocino	11	Mendocino Recreation & Community Center
II	Gualala	6	Community Center
II	Boonville	8	Mendocino County Fairgrounds
II	Point Arena	9	200-214 Main Street
II	Elk	12	Greenwood Community Center
II	Yorkville	13	Post Office/Fire Station
II	Navarro	14	General Store/Wendling Street
III	Laytonville	10	Fire House
III	Leggett	15	Leggett Valley High School/Caltrans Corp Yard
III	Jackson State Forest	16	Jackson State Forest
III	Westport	17	Abalone Street
III	Confusion Hill	18	Confusion Hill

## Technical Station Issues

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### Charging Equipment

Existing facilities in Mendocino County provide Level 1 and Level 2 charging to users. DC Fast Charging (Level 3) can recharge compatible electric cars to 80 percent of capacity within only 30 minutes. Mendocino County should try to maximize accessibility of electric vehicle users by ensuring charger compatibility and flexibility. A list of types of chargers with features and pricing is included in Appendix E. It is recommended that all charging units include two charging ports so that two vehicles can be charged simultaneously by one unit. Additionally, a list of electric vehicles in production at the time of this report, with features and pricing, is included in Appendix F and should be considered when maximizing charging compatibility. A standardization of chargers is being implemented throughout the state and the region in order to maintain consistency and ease for users. Many chargers now include data logging and automated billing capabilities that will assist in the Payment Method and the Tracking Usage areas. The California Governor's Office of Planning and Research has initiated a "Rural Issues Focus Group" to address the many unique aspects of electric vehicles and charging stations that rural communities face.

### Power Sources

The use of alternative power sources complements electric vehicle charging stations by providing clean energy to emission-saving vehicles. PG&E provides electricity to Mendocino County for all but the City of Ukiah and uses the A-6 Rate Tariff for non-residential service connections such as electric vehicle charging. This rate has high time-of-day cost factor that could make charging expensive during high cost periods (daytime in summer and early fall). Electric vehicle planners could request a special "public electric vehicle charging rate" from the CPUC to provide a lower statewide rate for all public charging stations.

Solar power is collected by using photovoltaic panels to collect energy from the sun's rays and convert it to electricity. Station locations where sufficient room and sunlight exist should utilize the technology. Because of the frequent foggy climate of coastal Mendocino County and the forest canopy in many areas, solar power may not be practical in some proposed station locations. Solar shade structures can be installed where space and sufficient sunlight is available. Examples of solar shade structure are provided in Appendix G. As an alternative, a group of solar arrays could be provided at a focused location to power charging locations throughout the County via "aggregated net metering". Theft and vandalism should be considered in the erection and reliance of solar panels. In general, the price of solar panels increases the overall cost of a charging station by 50 percent. At the present time, PG&E's A-6 rate tariff is particularly advantageous for solar generation where Net Metering would provide a 4-to-1 pricing advantage, meaning every kilowatt-hour of Peak Summer energy receives a credit for 4 kWh of Off Peak energy. However, without solar net metering the cost for charging during peak hour (when tourist vehicle charging would likely take place) is almost \$0.50 / kWh.

### Usage Tracking

Tracking usage is critical in order to determine the effectiveness of each station, frequency of usage and average connect time. This data is necessary in order to determine electricity consumption and overall utilization. Usage data can be tracked using the charging station units and/or with payment methods like smart cards that retain user information. Since the program is in its early development phase, charging stations with usage tracking capability should be selected for monitoring purposes.

Mendocino County has many areas without access to broadband internet connections, especially along the coast and in the north around Laytonville and Leggett that will inhibit utilization of the latest "smart

phone” charger features. Most potential charger locations identified do have a land line in proximity that could be used for connecting the charger to the internet for both data tracking and payment.

The PG&E A-6 electric rate tariff requires a time-of-use meter that records usage in 15-minute intervals; this information can then be used to measure charging usage over the billing period. In addition, the new “smart meters” also have an ability to log usage data and to access that data either remotely or directly from the meter.

## **Payment Methods**

Forms of payment by users include:

- *Direct payment* – users pay a fee up front when charging through the use of a credit card or reloadable debit card
- *Voluntary payment* – users may choose to pay a fee up front when charging
- *Memberships* – users must sign up with an electric vehicle charging station monitoring company
- *Host payment* – the local jurisdiction (City, County or utility provider) chooses to cover the cost
- *Donations* – users, community members or companies sponsor the cost
- *Net-metered* – generation of solar energy that is put into the utility grid is credited to the utility account at the then current rate and usage is charged at the rate for the period of consumption. On an annual basis a net-metered interconnection accounts for the credits generated against usage to “true up” the total. If generation credits exceed usage fees a net credit is issued at “true up.”

If the host agency chooses to require payment for charging, it is recommended that a Direct payment method be used with the use of a credit card specifically for vehicle charging. This is consistent with current trends in charging stations and would provide for centralized money collection. Even if the local jurisdiction decides to provide power free of charge, the same scan card should be used for activation.

## **Cost to Users**

Many cities that have been installing new electric vehicle charging stations are allowing users to charge their vehicles free of cost. These cities plan to monitor usage of the EV charging stations to determine whether a fee for users should be added in the future. The electricity costs for charging stations can be around \$400 annually (assuming \$0.10 per kWh, 200 charges of 20 kWh each). Various options should be considered when deciding whether users should pay, specifically when taking into account the cost to install the charging stations, which also depends on funding from grants and other sources.

## **Installation, Monitoring, and Maintenance**

Companies exist that can provide electric vehicle charging infrastructure, including installation, monitoring, and maintenance of the charging stations. Many of these companies also collect payment and provide users with charging station details, such as availability, and some offer free installation in exchange for the “franchise” location. The State is also promoting highway corridor charging infrastructure and offering access to grants and/or group purchasing opportunities. The most active companies providing charging facilities include:

- Charge Point America
- Blink
- Plug Share
- Recargo
- Car Stations

## Concerns: Impact to the Power Grid

Although none of the cities examined have experienced any issues with the EV charging stations having a negative impact on the power grid, there is much general concern that this will become an issue as the number of electric vehicles and charging stations increases throughout the US. According to AB 631, charging a PEV at Level 2 “is equivalent to adding a new house onto the distribution grid.” There seems to be general concern and desire to manage how and when vehicles charge to reduce the number of vehicles charging during peak periods of demand. While residential EV charging electricity is offered at a blended discounted rate for night-time charging to incentivize off-peak charging, non-residential charging stations in the PG&E service territory will be charged a time-of-use rate that is significantly higher, especially during peak daylight hours when much of the public chargings will occur.

Public charging stations that are discussed in this document will probably have most of the charging done during daylight hours. Private residential charging can certainly take advantage of overnight, off-peak, charging. Public charging stations that are located near restaurants or at RV campgrounds and motels will have more night time and off-peak charging that could also take advantage of the night-time “idle grid capacity.” The electric vehicles used by locals can be charged at night and off-peak times that can take advantage of the off-peak idle grid capacity. As for solar generation, a 1 kW PV array will generate about 1,500 kWh per year and that generation occurs during much of the on-peak times during the year. Through net metering, a solar generator could be used to offset charging during peak periods. Assuming a nominal charge of 30 kWh this means a 1 kW array could support about 50 charges per year.

## Signage

In an effort to standardize electric vehicle charging station signage and in accordance with the *California Manual on Uniform Traffic Control Devices*, by Caltrans, the signs used should be selected from the examples shown in Table 6. Additionally, a custom sign with branding should be located at the charging station site as well as on highways. The branding can incorporate marketing by the local tourism promoters.

In order to ensure that the charging station sites are to be used for electric vehicle charging only, the sites should use the following signage:

- Regulatory Sign: “No Parking Except for Electric Vehicle Charging”
- Permissive Parking Restriction Sign
- Informational Signs concerning ADA disabled access








Below is an example of the application of the parking signs. Typically, a four-hour time limit has been applied which generally allows for adequate charge time with most vehicles using the Type 2 charge. The space on the right uses the supplemental “This Space Designated for Disabled Access. Use Last.” This space is not restricted to those with Disabled placards, but does encourage users to leave the space empty if there are other chargers available. All ZEV charging station spaces would generally be monitored and enforced by local police similar to other time restricted spaces. For some service providers, such as ChargePoint, mobile applications are available that allow the user to reserve a space in advance using a smartphone.





US 101, SR 20, SR 1 and SR 128 along with connecting roadways to the charging stations must display accurate, clear and informative signage so drivers can successfully access the electric vehicle charging facilities.

**Table 6  
On-Site and Roadway Electric Vehicle Signage**

Sign	CA MUTCD Sign Number	Purpose
	G66-21 (CA)	Route sign to be used to inform motorists of charging station sites on highways, roadways, and charging station sites.
	D9-11b	Route sign may be used on highways to inform motorists that a charging station site is nearby. The graphic form of this sign is recommended on sections of highways with higher speeds.
	D9-11b (alternate)	This route sign provides a more accurate graphic of electric vehicle charging. It is an alternative to D9-11b used in Oregon and Washington. The County must receive approval from FHWA prior to installation and use of this sign.
	M5-1, M5-2, M6-1, M6-2, M6-3	Advance turn and directional arrow auxiliary signs shall be used with general service signs, such as D9-11bP, D9-11b, D9-11b (alternate), G66-21, G66-21A
	G66-21A (CA)	Directional arrows to provide motorists with additional information about the location of the charging site. This shall be used in conjunction with G66-21, D9-11b, or D9-11b (alternate).
	Regulatory Sign	Regulatory Sign that prohibits parking in the charging station site except for electric vehicles while charging.
	Permissive Parking Restriction Sign	Parking Restriction Sign that informs electric vehicle charging station users the number of hours permitted to charge.
"Designed for Disabled Access – Use Last"	Informational Sign	The sign is for charging station locations with multiple charging points that are striped parking spaces. To be used where ADA compliance is met in some spaces but not in others.
"Designed for Disabled Access"	Informational Sign	The sign is for charging station locations with a charging point that is a striped parking space. ADA compliance must be met for new charging stations.

## Installation Standards

The Division of State Architect released the *Proposed 2013 Guidelines for Electric Vehicle Charging Stations*, March 2013, containing accessibility standards and design guidelines for the installation of electric vehicle charging stations in California, with best practices and particular design guidelines for parking space design and signage. A copy of this document is included in Appendix H.

At a minimum, charging stations should include:

- public parking space(s)
- signage with 4-hour time limits
- charging unit with cords
- method of payment and activation

## Station Security

Public safety should always be considered in the siting and design of a charging station. Consideration should be given both in terms of preventing abuse and providing for the comfort of users. Proximity to other activity and lighting would be examples of siting measures to ensure public safety.

ADA design criteria should be included in the siting and station design process for each station.

## Cost Estimates

Costs to develop and maintain a charging station generally include:

- Right-of-Way Costs if not a public parking space
- Installation of infrastructure, such as charging equipment and cords
- Potential structures and safety equipment such as lighting
- Striping and signage
- Connection to power and communication source
- Permitting for construction
- Maintenance of site and equipment
- Data collection and analysis
- Payment processing and accounting
- Operation, such as electricity and communication costs
- On-going enforcement of parking activity
- Marketing and public outreach

Based on the experiences of other jurisdictions in the North Bay and San Francisco Bay Area and potential challenges of sites within Mendocino County, the estimated cost of equipment and installation of an EV charging station could range between \$10,000 and \$25,000 per station. They also estimate the ongoing cost of electricity for the station to be around \$400 per year<sup>1</sup>. In addition, some Cities pay an annual subscription to the vendors such as ChargePoint Network, which in some cases install and operate those stations.

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<sup>1</sup> Assuming electricity at \$0.10 / kWh a \$400 annual bill provides 4,000 kWh – enough for about 130 charges of 30 kWh – a little over 10 charges per month per station. If power costs using the A-6 rate tariff are used average power is closer to \$0.20 to \$0.50 / kWh reducing the charges from 65 to as little as 26 per year for the same \$400.

## Implementation Plan

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### Step 1 – Accept Readiness Plan

### Step 2 – Adopt Community Station Locations

- Determination of appropriate entity to lead effort
- Gain acceptance from communities to locate charging station.
- Determine feasibility and costs for each station location
- Determine acceptability by appropriate jurisdictions

### Step 3 – Determine Construction Costs

- Finalize exact location of stations in Phase I
- Determine equipment type
- Determine power sources
- Prepare design plans for equipment installation
- Determine installation costs

### Step 4 – Seek Funding for Phase I Implementation

- Identify appropriate entities to apply for and manage funds, oversee installation projects (e.g. regional agency or local governments)
- Apply for appropriate grants and other funding sources (see below)
- Determine potential to partner with neighboring jurisdictions
- Recommend approaches to tourism marketing (including outreach to wineries)

### Step 5 – Implementation of Phase I

- Finalize pay methods
- Prepare marketing and outreach materials
- Implement Phase I Station Sites
- Plan for Phase II implementation

### Grants and Funding Sources

Many cities have relied on grants to fund the infrastructure for the EV charging stations as well CMAQ (Congestion Mitigation and Air Quality Improvement Program) regional apportionment. The charging station network in the San Francisco Bay Area is funded in part by grants from California and regional agencies, including the Bay Area Air Quality Management District (BAAQMD), and the California Energy Commission (CEC). However, it should be noted that CMAQ and BAAQMD are not available to Mendocino County. Other charging equipment was provided by a grant from the US Department of Energy (funded by the American Recovery and Reinvestment Act through the Transportation Electrification Initiative); however, those funds are no longer available.

There is still a wide range of financing and funding options for local governments including grants and financing strategies to further zero-emission vehicle readiness:

- *Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Grants* – The Motor Vehicle Registration Fee Program provides funding for projects that reduce air pollution from on- and off-road vehicles. Eligible projects include purchasing AFVs and developing alternative fueling infrastructure. Contact local air districts for more information about available grant funding and distribution from the Motor Vehicle Registration Fee Program. (California Health and Safety Code 44220 (b))

- *California Air Resources Board* – The Air Quality Improvement Program funds clean vehicle and equipment projects, research on biofuels production and the air quality impacts of alternative fuels, and workforce training.
- *FundingWizard* – Search this funding aggregator website for ZEV funding opportunities. <http://www.coolcalifornia.org/funding-wizard-home>
- *Public/Private Partnerships* – With both private and government funding, there are many vendors that will facilitate the installation of public and private electric vehicle chargers.
- *Public/Nonprofit Partnerships* – Nonprofits such as Adopt-A-Charger work with organizations and the public to donate funds to install fee-free public EV chargers. Nonprofits can also help with outreach and consumer awareness. Adopt a Charger, a nonprofit organization, accelerates the widespread adoption of plug-in vehicles through the proliferation of public, fee-free electric car chargers which are “adopted” by sponsors. These sponsors, corporations, organizations and individuals, donate funds used to install and maintain EV chargers in parks, museums, beaches and other widely used public places.
- *Electric Vehicle Charging Infrastructure Funding* – The California Energy Commission (CEC) currently administers grant funding for alternative fuels and vehicles through its Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). Under the ARFVTP, the CEC has funded charging infrastructure for electric vehicles since 2009. Four solicitations for electric vehicle infrastructure and related planning activities will provide over 7,000 new chargers in California. There is \$6.6 million (FY 2012-13) and \$7 million (FY 2013-14) identified in the Investment Plan for additional electric vehicle charging infrastructure.



## Appendix A

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Existing Station Locations





## ZEV Charging Station Data

Site Name	Type of Facility	Address	Contact	Voltage	Amps	Rec Type	Days	Hours	Fee	Ease of Access	Owner benefits	Cost-effective	Location Rank	Zoning	Communication	Activities	Safety	Flooding
REAL GOODS	RETAIL STORE	13771 S HWY 101, HOPLAND, CA	SEAN S. SPICER	120/240	50AMPS@240VOLT @120VOLT	NEMA# 14-50R	7 DAYS A WEEK	10am-6pm	NO FEE	GOOD BUT OFF HIGHWAY	RE STORE		NOT IDEAL 3	COMMERCIAL	YES BUT NOT AT CHARGER	RETAIL AND CLASSES	GOOD	AREA HAS FLOODED
					30AMPS @120VOLT	NEMA T1-30R RV RECEIPT.												
					20 AMPS @120VOLT GFCl	NEMA#5-20R												
SUPER 8 MOTEL	MOTEL	683 S ORCHID AVE, UKIAH, CA	MR PATEL ?	240VOLT	40 AMPS	SAE11772	7 DAYS A WEEK	24/DAY	NO FEE	EXCELLENT	PUBLIC RELATION	COST OFFSET BY PR	EXCELLENT	COMMERCIAL	YES BUT NOT AT CHARGER	MOTEL	GOOD	NO
UKIAH PUBLIC PARKING	PARKING LOT	N OAK ST/W STANDLEY ST PARKING LOT	RICK SEANOR, CITY OF UKIAH	240VOLT	40AMP CONDUCTIVE	SAE11772	7 DAYS A WEEK	24/DAY	NO FEE	SEVERAL BLOCKS OFF 101	PROMOTE RE	OFFSET BY PR	NOT IDEAL 4	COMMERCIAL	YES BUT NOT AT CHARGER	SHOPPING RESTAURANTS PARKING	GOOD	NO
					40AMP INDUCTIVE	SAE 1773 PADDLE TYPE												
CITY OF WILLITS	CITY HALL PARKING LOT	111 E COMMERCIAL ST	BUILDING INSPECTOR	120/240	50AMPS@240VOLT @120VOLT	NEMA# 14-50R	7 DAYS A WEEK	24/DAY	NO FEE	OFTEN BEING USED BY CITY	USED BY CITY AND PR	FUEL SAVINGS	NOT IDEAL 3	COMMERCIAL	YES BUT NOT AT CHARGER	CITY GOVERNMENT	GOOD	NO
					30AMPS @120VOLT	NEMA T1-30R RV RECEIPT.												
					20 AMPS @120VOLT GFCl	NEMA#5-20R												

# ZEV Charging Station Data

Site Name	Pictures	Pictures	Pictures	Pictures	Pictures	Pictures
REAL GOODS						
SUPER 8 MOTEL						
UKIAH PUBLIC PARKING						
CITY OF WILLOTS						

## Appendix B

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### Existing Recreational Vehicle Sites



# RV Hookup Locations

## **KOA Campgrounds**

1166 Asti Ridge Road  
Cloverdale, CA 95425  
(707) 894-3337  
[www.koa.com](http://www.koa.com)

## **Redwood Empire Fairgrounds**

1055 North State Street  
Ukiah, CA 95482

## **Oak Park Mobile & RV Park**

8451 Uva Drive  
Redwood Valley, CA 95470  
(707) 485-8688

## **Sleepy Hollow RV Park**

30661 US 101  
Willits, CA 95490  
(707) 459-0613

## **Redwoods River Resort**

75000 US 101  
Leggett, CA  
(707) 925-6249  
[www.redwoodriverresort.com](http://www.redwoodriverresort.com)

## **Richardson Grove RV Park**

750 US Highway 101  
Garberville, CA 95542  
(707) 247-3380

## **Benbow Valley RV Resort & Golf**

7000 Benbow Drive  
Garberville, CA 95542  
(707) 923-2777  
[www.benbowrv.com](http://www.benbowrv.com)

## Highway 20

### **Willits KOA**

1600 California 20  
Willits, CA 95490  
(707) 459-6179  
[www.koa.com](http://www.koa.com)

### **Wildwood Campground & RV Park**

29700 California 20  
Fort Bragg, CA 95437  
(707) 964-8297

### **Lakeview RV Park**

5178 California 20  
Upper Lake, CA 95485  
(707) 275-2105

## Highway 1

### **Manchester Beach KOA**

44300 Kinney Road  
Manchester, CA 95459  
(707) 882-2375  
[www.manchesterbeachkoa.com](http://www.manchesterbeachkoa.com)

### **Mendocino Campground RV Park**

9601 Shoreline Highway  
Little River, CA 95456

### **Caspar Beach RV Park**

(707) 964-3306  
[4mta.org](http://4mta.org)

### **Pomo RV Park & Campground**

17999 Tregoning Lane  
Fort Bragg, CA 95437  
(707) 964-3373  
[www.pomorv.com](http://www.pomorv.com)

### **Sportsman's RV Park**

32094 North Harbor Drive  
Fort Bragg, CA 95437  
(707) 964-2612  
[www.sportsmansrvpark.com](http://www.sportsmansrvpark.com)

### **Cleone Campground**

Cleone, CA  
(707) 964-4589  
[www.cleonecampground.com](http://www.cleonecampground.com)

### **Westport Beach KOA**

37700 California 1  
Westport, CA 95488  
(707) 964-2964  
[www.westportbeachkoa.com](http://www.westportbeachkoa.com)



## Appendix C

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### Proposed Location Investigation





























## Potential EV Charging Sites in Mendocino County along Highway 101 and Highway 20

SITE NAME	TYPE OF FACILITY	ADDRESS	CONTACT	EASE OF ACCESS	BENEFITS	LOCATION RANK	ZONING	COMMUNICATION	ACTIVITIES	SAFETY	FLOODING
HOPLAND	REAR PARKING HOPLAND 76 MINI MART AND GAS STATION	13600 MOUNTAIN HOUSE ROAD	PUBLIC WORKS	GOOD	NEAR STORES AND ACTIVITIES	9	COMMERCIAL	POWER AND PHONE NEARBY	FOOD WINERY REAL GOODS	GOOD	NO
HOPLAND VETERANS HALL	AMERICAN LEGION POST 529	FELIZ CREEK ROAD	BOB WEST 234-6068 FACILITY AND FLEET DIVISION OR HOPLAND FIRE PROTECTION DISTRICT 744-1222	WOULD REQUIRE SEVERAL SIGNS ALSO THERE IS A GATE	FEW PARKING SPACES BEHIND BUILDING AND ARE NOT PAVED	4	COMMERCIAL	POWER AND PHONE ON SITE	LONG WALK TO ACTIVITIES	GOOD	NO
COMMERCE DRIVE CUL DE SAC SOUTH OF WAL MART	CUL DE SAC	END OF COMMERCE ROAD	PUBLIC WORKS 463-6755 RICK SEANOR 463-6269	EASY ACCESS TO 101	IN A LARGE COMMERCIAL SHOPPING AREA	8	COMMERCIAL	POWER AND COMMUNICATION NEARBY	FOOD AND SHOPPING	GOOD IF PARKING SPACE PLACED PROPERLY	NO
REDWOOD EMPIRE FAIRGROUNDS	FAIRGROUND INCLUDES RV PARK AND LARGE PARKING AREA	1055 N STATE ST UKIAH, CA 95482	BOARD MEMBER GLENNA BLAKE 462-3884 EXECUTIVE DIRECTOR JENNIFER SEWARD	EXCELLENT	CLOSE TO NORTH STATE ST EXIT ON HWY 101 ALSO WALKING DISTANT TO STATE ST EXIT STORES	8	COMMERCIAL	POWER AND COMMUNICATION AT SITE	SHOPPING AND FAIRGROUND ACTIVITIES ON OCCASION	GOOD	NO
CHAMBERLAIN CREEK HWY 20	JACKSON DEMONSTRATION STATE FOREST	REST AREA IS HALFWAY BETWEEN WILLITS AND FORT BRAGG NEAR CHAMBERLAIN RIDGE RD	CA CONSERVATION CORPS 964-3518 ALSO 802 N MAIN, FORT BRAGG, 95437 964-5674	EXCELLENT	STRATEGICALLY IMPORTANT PICNIC AND HIKING	10	STATE PARK	POWER AND COMMUNICATION ON SITE	HIKING PICNIC	GOOD	NO
LAKE MENDOCINO HWY 20 EAST	RECREATIONAL AREA	1160 LAKE MENDOCINO DRIVE	ARMY CORPS OF ENGINEERS 462-7581	GOOD	GOOD ACTIVITIES	8	RECREATIONAL AREA	POWER AND PHONE ON SITE	LAKE ACTIVITIES PICNIC AREA	GOOD	NO
LAYTONVILLE DEPARTMENT	FIRE STATION AND LAW ENFORCEMENT	44590 WILLIS RD	FIRE CHIEF JIM LITTLE	GOOD FROM 101 LEFT ON BRANSCOMB RD THEN FIRST LEFT	NOTHING TO DO WITHOUT WALKING 1/4 MILE	6	COMMERCIAL	POWER AND PHONE ON SITE	NONE	GOOD	NO
LEGGETT VALLEY HIGH SCHOOL	HIGH SCHOOL CAMPUS	1 SCHOOL WAY LEGGETT, CA 95585	925 6530	EXIT 101 ON LEFT ON SOUTH LEGGETT EXIT DRIVE PAST DRIVE THRU TREE PARK LOOK FOR SIGN ON LEFT NOT EASY ACCESS	NOT ANY	4	SCHOOL ZONE	BOTH POWER AND PHONE	NONE	GOOD	NO
SKUNK DEPOT PARKING LOT	PARKING LOT	COMMERCIAL STREET ACROSS FROM SKUNK DEPT	JOHN SHERMAN 459-7122	GOOD THREE BLOCKS EAST OF COMMERCIAL ST	WALKING DISTANCE TO DOWNTOWN WILLITS ALSO NEAR CITY PARKS	8	COMMERCIAL	NO PHONE NO POWER	SEVERAL	GOOD	NO

# Potential EV Charging Sites in Mendocino County along Highway 101 and Highway 20

SITE NAME	PICTURES			
HOPLAND				
		Leaving Feliz Creek Road, 101 is one block to the left. The back of the buildings in view is another possible site.		
HOPLAND VETERANS HALL				
		Lodge is ahead up steep driveway		Lodge is barely visible on the right, up the hill at the curve.
COMMERCE DRIVE CUL DE SAC SOUTH OF WAL MART				
		Cul de Sac looking East, 101 is visible. There is an unpaved utility road at the back of the Cul De Sac that is used.		
REDWOOD EMPIRE FAIRGROUNDS				
		RV Park is on the southeast part of the fairgrounds. Photo to the right shows the receptacles.	RV pedestral, different than EV receptacles	Large parking lot with power
				SPACE ABOVE FAIRGROUND ADJACENT TO STATE STREET. THERE IS A SMALL PARKING LOT ON THE NORTH END OF ARE.
CHAMBERLAIN CREEK HWY 20				
		AREA IS PARALLEL TO HWY 20 EXCELLENT ACCESS	Hiking trail across the road from previous picture	Large picnic area
				POWER AND PHONE ON SITE
LAKE MENDOCINO HWY 20 EAST				
		Campsite fees: \$25 -Regular \$30 -Lake Front	Large parking area close to Hwy 20. There is a building below staircase on the right where there is power.	Lakefront camp site
LAYTONVILLE DEPARTMENT				
		North side of firehouse which is the only side that can be used. Site also includes law enforcement access	Firehouse is the right on Willis Rd, the first left off Branscomb Rd, which is pictured. 101 is one block away.	
LEGGET VALLEY HIGH SCHOOL				
		Entry to campus with parking on the right very close to power	Looking down driveway to school which is several miles from 101	View is the driveway looking out from campus
SKUNK DEPOT PARKING LOT				
		Skunk Depot viewed from the parking lot, the possible charging site	Looking out to lot from Skunk Depot. There is power and phone nearby, but nothing on site	

# HWY1 – Westport (Abalone St)

**Contact:** Howard Dashiell, 463-4366

**Agency:** County Public Works

**Result of contact:** By phone Mr. Dashiell suggested that a parking spot on Abalone Street would be the best location. All sites require approval from community board

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V  (New Service Drop)

**Times available:** 24-7 , Days  - , Hours  - , Hours 2  -

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line   New Service , Other

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



Abalone Street



On-street parking on Abalone Street

# HWY1 – Westport (Omega St)

**Contact:** State Parks

**Agency:** State Parks

**Result of contact:** While viewing the Abalone Street site I found an existing space that would be the best location. All sites require approval from community board

**Type of parking:** Off-street striped \_\_\_\_\_, Off-street , On-street \_\_\_\_\_, Undeveloped \_\_\_\_\_

**Type of service:** 110V ; 240V, ; 480V \_\_\_\_\_ (New Service Drop)

**Times available:** 24-7 , Hours 7 \_\_\_\_\_ - \_\_\_\_\_, Hours 5 \_\_\_\_\_ - \_\_\_\_\_, Hours 2 \_\_\_\_\_ - \_\_\_\_\_

**Would fee be required:** No fee \_\_\_\_\_, kWh only \_\_\_\_\_, Additional fee \_\_\_\_\_

**Ease of access:** Very easy \_\_\_\_\_  \_\_\_\_\_ Very hard

**Type of zoning:** Compatible zoning \_\_\_\_\_  \_\_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_\_, Land line \_\_\_\_\_, Other: No easy communications

**Safety:** Very safe \_\_\_\_\_  \_\_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_\_\_\_  \_\_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_\_  \_\_\_\_\_ No activities

**Overall Rank:** Very high \_\_\_\_\_  \_\_\_\_\_ Very Low

**Photos:**



State Park lot on Omega Street

# HWY1 – Fort Bragg (City Lot)

**Contact:** Teresa Spade, 961-2823

**Agency:** City Planning

**Result of contact:** By phone Mrs. Spade suggested that the city was already studying the issue and it would be discussed at a meeting on Feb 21<sup>st</sup>. At the meeting it was decided that the city would request that PG&E restore the EV charger in the city lot north of PG&Es building

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7  - , Hours 5  - , Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



City Lot to the north of the PG&E building



Dismantled EV charger in City parking lot

# HWY1 – Fort Bragg (City Hall)

**Contact:** Teresa Spade, 961-2823

**Agency:** City Planning

**Result of contact:** By phone Mrs. Spade suggested that the city was already studying the issue and it would be discussed at a meeting on Feb 21<sup>st</sup>. The lot behind City Hall was one of the sites discussed.

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7 -, Hours 5 -, Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other \_\_\_\_\_

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



Lot north of FB City Hall

# HWY1 – Fort Bragg (Skunk Train Depot)

**Contact:** Robert Pinoli, 964-6371

**Agency:** Skunk Train Depot

**Result of contact:** By phone Mr. Pinoli suggested a meeting at 2:00 on Feb 21<sup>st</sup>. At the meeting Mr. Pinoli said that he would be very happy to work with the city to develop EV chargers on his property.

**Type of parking:** Off-street striped \_\_\_\_\_, Off-street , On-street \_\_\_\_\_, Undeveloped \_\_\_\_\_

**Type of service:** 110V ; 240V, ; 480V \_\_\_\_\_

**Times available:** 24-7 \_\_\_\_\_, Hours 7 \_\_\_\_\_-\_\_\_\_\_, Hours 5 \_\_\_\_\_-\_\_\_\_\_, Dawn-Dusk

**Would fee be required:** No fee \_\_\_\_\_, kWh only , Additional fee \_\_\_\_\_

**Ease of access:** Very easy  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell , Land line \_\_\_\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Flooding:** Very safe  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Activities close by:** Lots of activities  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No activities

**Overall Rank:** Very high  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very Low

**Photos:**



Utility drop on corner of building close to parking



City parking leased from Skunk Train owner

# HWY1 – Mendocino Community Center

**Contact:** Obe Brown, 937-3081 H, 357-5200 C

**Agency:** Mendocino Community Center (501 C3)

**Result of contact:** By phone Mr. Brown suggested a meeting at 12:30 on Feb 22<sup>nd</sup>. At the meeting Mr. Brown said that he would be happy to work with a public entity to develop EV chargers in the Mendocino Community Center parking lot .

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7 -, Hours 5 -, Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other \_\_\_\_\_

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



Entrance to Mendocino Community Center lot



Parking lot to the north of the Community Center



# HWY1 – Mendocino Community Service District

**Contact:** 937-5790

**Agency:** Mendocino CSD

**Result of contact:** By phone a meeting was set for the afternoon of Feb 21<sup>st</sup>. At the meeting Steve Acker said that the land was leased from the State but they have extra 480V capacity and if the State was willing the thought the CSD would be happy to explore the idea of EV charging.

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7  - , Hours 5  - , Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other \_\_\_\_\_

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



Mendocino CSD Entrance



480V service adjacent to parking

# HWY1 – Elk-Greenwood Community Center

**Contact:** 877-1105

**Agency:** Greenwood Community Center

**Result of contact:** No one was available by phone. I visit site on Feb 23<sup>rd</sup> and found the following.

**Type of parking:** Off-street striped \_\_\_\_\_, Off-street , On-street \_\_\_\_\_, Undeveloped \_\_\_\_\_

**Type of service:** 110V ; 240V, ; 480V \_\_\_\_\_

**Times available:** 24-7 \_\_\_\_\_, Hours 7 \_\_\_\_\_-\_\_\_\_\_, Hours 5 \_\_\_\_\_-\_\_\_\_\_, Dawn-Dusk

**Would fee be required:** No fee \_\_\_\_\_, kWh only \_\_\_\_\_, Additional fee \_\_\_\_\_

**Ease of access:** Very easy \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_\_, Land line \_\_\_\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Flooding:** Very safe  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No activities

**Overall Rank:** Very high \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very Low

## Photos:



Entrance to Elk Community Center



Gravel parking lot west of Community Center

# HWY1 – Elk-Greenwood Visitor Center

**Contact:**

**Agency:** Greenwood Visitor Center

**Result of contact:** The Elk-Greenwood Visitor Center is right in the center of town and looks like an ideal place for EV charging

**Type of parking:** Off-street striped \_\_\_\_\_, Off-street , On-street \_\_\_\_\_, Undeveloped \_\_\_\_\_

**Type of service:** 110V ; 240V, ; 480V \_\_\_\_\_

**Times available:** 24-7 \_\_\_\_\_, Hours 7 \_\_\_\_\_-\_\_\_\_\_, Hours 5 \_\_\_\_\_-\_\_\_\_\_, Dawn-Dusk

**Would fee be required:** No fee \_\_\_\_\_, kWh only \_\_\_\_\_, Additional fee \_\_\_\_\_

**Ease of access:** Very easy \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_\_, Land line \_\_\_\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Flooding:** Very safe  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No activities

**Overall Rank:** Very high \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very Low

**Photos:**



The Elk-Greenwood Visitor Center is right in the center of town

# HWY1 – Point Arena

**Contact:** Alexander Hunter, 882-2122

**Agency:** City of Point Arena, City Administrator

**Result of contact:** By phone Ms. Hunter said that two spaces could be made available in the city lot in the center of town next to the movie theater. I visited the site on Feb 23<sup>rd</sup>. Results from the visit follow.

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7  - , Hours 5  - , Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other \_\_\_\_\_

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



The site is in the center of town with a public Bathroom. Power would come from the theater to the south

# HWY1 – Gualala Community Center

**Contact:** 884-3179 or Jerry Orth 785-2331

**Agency:** Gualala Community Center

**Result of contact:** No one was available by phone. I intend to visit site on Feb 23<sup>rd</sup>. Results from the visit follow.

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7  - , Hours 5  - , Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other \_\_\_\_\_

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



The Center is on the south end of town and a short walk from shopping and other activities.

# HWY1 – Gualala Visitor Center

**Contact:**

**Agency:** Gualala Visitor Center

**Result of contact:** The Gualala Visitor Center is right in the center of town and looks like an ideal place for EV charging

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7 -, Hours 5 -, Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

**Photos:**



The Gualala Visitor Center is right in the center of town

# HWY128 – Yorkville

**Contact:** Collin Wilson 895-2075

**Agency:** Anderson Valley Fire District

**Result of contact:** By phone Mr. Wilson said that no parking spaces were available in the vicinity of any fire stations in Anderson Valley. The Yorkville Post Office and Fire Station are on private property leased to the public agencies.

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7  - , Hours 5  - , Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



Utility pole drop for Yorkville Fire Station



Gravel parking for Yorkville PO and Fire Station

# HWY128 – Boonville (Fairgrounds)

**Contact:** Jim Brown 895-3011

**Agency:** Mendocino County Fairground

**Result of contact:** By phone Mr. Brown said that a space could be made available in the fairground parking lot close to the center of town. I visited the site on Feb 20<sup>th</sup> and got a tour from Mr. Brown of the fair parking lot. There is also an RV park with over 2 dozen 240V, 50A receptacles.

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7  - , Hours 5  - , Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



Fairground Parking



RV spaces at fairground with 480V service



# HWY128 – Boonville (Hotel)

**Contact:**

**Agency:** Hotel Owner

**Result of contact:** No contact was made

**Type of parking:** Off-street striped \_\_\_\_\_, Off-street , On-street \_\_\_\_\_, Undeveloped \_\_\_\_\_

**Type of service:** 110V ; 240V, ; 480V \_\_\_\_\_

**Times available:** 24-7 \_\_\_\_\_, Hours 7 \_\_\_\_\_-\_\_\_\_\_, Hours 5 \_\_\_\_\_-\_\_\_\_\_, Dawn-Dusk \_\_\_\_\_

**Would fee be required:** No fee \_\_\_\_\_, kWh only \_\_\_\_\_, Additional fee \_\_\_\_\_

**Ease of access:** Very easy  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell , Land line \_\_\_\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_\_  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Flooding:** Very safe  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very hazardous

**Activities close by:** Lots of activities  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ No activities

**Overall Rank:** Very high  \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Very Low

**Photos:**



Boonville Hotel street parking



Boonville Hotel off-street parking

# HWY128 – Navarro

**Contact:** Dave Evans, 895-9445

**Agency:** Navarro General Store Owner

**Result of contact:** By phone Mr. Evans said that a space could be made available in the Store parking lot if financial arrangements could be agreed on. I visited the site on Feb 20<sup>th</sup>. Results from the visit follow.

**Type of parking:** Off-street striped , Off-street , On-street , Undeveloped

**Type of service:** 110V ; 240V, ; 480V

**Times available:** 24-7 , Hours 7 -, Hours 5 -, Dawn-Dusk

**Would fee be required:** No fee , kWh only , Additional fee

**Ease of access:** Very easy      Very hard

**Site benefits:** Lots of benefits      No benefits

**Type of zoning:** Compatible zoning      Difficult re-zoning

**Type of communication signal:** Cell , Land line , Other \_\_\_\_\_

**Safety:** Very safe      Very hazardous

**Flooding:** Very safe      Very hazardous

**Activities close by:** Lots of activities      No activities

**Overall Rank:** Very high      Very Low

## Photos:



Navarro Store parking lot



Utility pole adjacent to parking lot

# HWY101 – Hopland Mini-Market

**Contact:** Mendocino County Public Works – Howard Dashiell - 463-4366

**Agency:** Hopland Min-Market / Union 76, 13600 Mountain House Road, Hopland, CA

**Result of contact:** On Street parking near stores and activities.

**Type of parking:** Off-street striped \_\_, Off-street \_\_\_\_, On-street \_\_X\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V\_\_x\_\_; 240V, \_\_x\_\_; 480V \_\_\_\_

**Times available:** 24-7 \_\_X\_\_, Hours 7 \_\_\_\_-\_\_\_\_, Hours 5 \_\_\_\_-\_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_, Land line \_\_x\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_x\_\_ \_\_ \_\_\_\_ \_\_\_\_ No activities

**Overall Rank: 9 out of 10** Very high \_\_\_\_ \_\_ \_\_\_\_ \_\_x\_\_ \_\_\_\_ Very Low

**Photos:**



# HWY101 – Hopland Veteran’s Hall

**Contact:** Bob West – 234-6068 Facility and Fleet Division

**Agency:** Hopland Veteran’s Hall, Feliz Creek Road, Hopland, CA

**Result of contact:** Gate and limited parking, would need signage to locate

**Type of parking:** Off-street striped \_\_, Off-street , On-street \_\_\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V ; 240V, ; 480V \_\_\_\_

**Times available:** 24-7 , Hours 7 \_\_\_\_ - \_\_\_\_, Hours 5 \_\_\_\_ - \_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_  \_\_\_\_ \_\_\_\_ Very hard (gate)

**Site benefits:** Lots of benefits \_\_\_\_ \_\_  \_\_\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_, Land line , Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_ \_\_  \_\_\_\_ No activities (long walk)

**Overall Rank: 4 out of 10** Very high \_\_\_\_ \_\_  \_\_\_\_ \_\_\_\_ Very Low

## Photos:



Lodge is ahead up steep driveway

# HWY101 – Commerce Drive Cul de Sac South of Wal-Mart

**Contact:** City of Ukiah Public Works – Rick Seanor - 463-6296

**Agency:** City of Ukiah

**Result of contact:** No contact - LM

**Type of parking:** Off-street striped \_\_, Off-street \_\_\_\_, On-street \_\_X\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V \_\_x\_\_; 240V, \_\_x\_\_; 480V \_\_\_\_

**Times available:** 24-7 \_\_X\_\_, Hours 7 \_\_\_\_-\_\_\_\_, Hours 5 \_\_\_\_-\_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_x\_\_, Land line \_\_x\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_x\_\_ \_\_ \_\_\_\_ \_\_\_\_ No activities

**Overall Rank: 8 out of 10** Very high \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very Low

## Photos:



Cul de Sac looking East, 101 is visible.

There is an unpaved utility road at the back of the Cul De Sac that is used

# HWY101 – Redwood Empire Fairgrounds

**Contact:** Redwood Empire Fair Board – Glenna Blake - 462-3884 / or Jennifer Seward

**Agency:** Redwood Empire Fair Association, 1055 N State Street, Ukiah, CA

**Result of contact:** No contact - LM

**Type of parking:** Off-street striped \_\_, Off-street \_\_x\_\_, On-street \_\_\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V \_\_x\_\_; 240V, \_\_x\_\_; 480V \_\_\_\_

**Times available:** 24-7 \_\_X\_\_, Hours 7 \_\_\_\_-\_\_\_\_, Hours 5 \_\_\_\_-\_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_x\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_x\_\_, Land line \_\_x\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_x\_\_ \_\_ \_\_\_\_ \_\_\_\_ No activities

**Overall Rank: 8 out of 10** Very high \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very Low

**Photos:**



RV Park is on the southeast part of the fairgrounds. RV Pedestal with NEMA receptacle

# HWY101 – Willits Skunk Train Depot

**Contact:** John Sherman – 459-7122

**Agency:** City of Willits, Skunk Train Depot parking lot on Commercial Street, Willits, CA

**Result of contact:**

**Type of parking:** Off-street striped \_\_, Off-street , On-street \_\_\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V\_\_; 240V, \_\_; 480V \_\_\_\_ - no power on site but close

**Times available:** 24-7 , Hours 7 \_\_\_\_-\_\_\_\_, Hours 5 \_\_\_\_-\_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell , Land line \_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ No activities

**Overall Rank: 8 out of 10** Very high \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Very Low

**Photos:**



# HWY101 – Laytonville

**Contact:** Jim Little, Fire Chief

**Agency:** Laytonville Fire Department, 44590 Willis Road, Laytonville, CA

**Result of contact:**

**Type of parking:** Off-street striped \_\_, Off-street \_\_\_\_, On-street \_\_X\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V \_\_x\_\_; 240V, \_\_x\_\_; 480V \_\_\_\_

**Times available:** 24-7 \_\_X\_\_, Hours 7 \_\_\_\_ - \_\_\_\_, Hours 5 \_\_\_\_ - \_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_ \_\_ \_\_ \_\_x\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_, Land line \_\_x\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_x\_\_ \_\_ \_\_\_\_ \_\_\_\_ No activities

**Overall Rank: 6 out of 10** Very high \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very Low

**Photos:**





# HWY101 – Leggett

**Contact:** Leggett School District – 925-6530

**Agency:** Leggett Valley School, 1 School Way, Leggett, CA 95585

**Result of contact:**

**Type of parking:** Off-street striped \_\_\_\_, Off-street \_\_\_\_, On-street , Undeveloped \_\_\_\_

**Type of service:** 110V ; 240V, ; 480V \_\_\_\_

**Times available:** 24-7 , Hours 7 \_\_\_\_ - \_\_\_\_, Hours 5 \_\_\_\_ - \_\_\_\_, Dawn-Dusk \_\_\_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_\_\_ \_\_\_\_  \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_  No benefits

**Type of zoning:** Compatible zoning \_\_\_\_  \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_, Land line , Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_ \_\_\_\_  \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe   \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_\_\_ \_\_\_\_  \_\_\_\_ No activities

**Overall Rank: 4 out of 10** Very high \_\_\_\_ \_\_\_\_ \_\_\_\_  \_\_\_\_ Very Low

**Photos:**



# HWY20 E – Lake Mendocino

**Contact:** Army Corps of Engineers – 462-7581

**Agency:** Lake Mendocino Recreational Area and Campgrounds, Lake Mendocino

**Result of contact:**

**Type of parking:** Off-street striped \_\_, Off-street \_\_x\_\_, On-street \_\_\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V\_\_x\_\_; 240V, \_\_x\_\_; 480V \_\_\_\_

**Times available:** 24-7 \_\_X\_\_, Hours 7 \_\_\_\_-\_\_\_\_, Hours 5 \_\_\_\_-\_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_x\_\_, Land line \_\_x\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ No activities

**Overall Rank: 6 out of 10** Very high \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very Low

**Photos:**



# HWY20 W – Chamberlain Creek

**Contact:** California Conservation Corps – 964-3518

**Agency:** Chamberlain Creek / Jackson Demonstration State Forest

**Result of contact:**

**Type of parking:** Off-street striped \_\_, Off-street \_\_x\_\_, On-street \_\_\_\_, Undeveloped \_\_\_\_

**Type of service:** 110V\_\_x\_\_; 240V, \_\_x\_\_; 480V \_\_\_\_

**Times available:** 24-7 \_\_X\_\_, Hours 7 \_\_\_\_-\_\_\_\_, Hours 5 \_\_\_\_-\_\_\_\_, Dawn-Dusk \_\_

**Would fee be required:** No fee \_\_\_\_, kWh only \_\_\_\_, Additional fee \_\_\_\_

**Ease of access:** Very easy \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hard

**Site benefits:** Lots of benefits \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ No benefits

**Type of zoning:** Compatible zoning \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Difficult re-zoning

**Type of communication signal:** Cell \_\_\_\_, Land line \_\_x\_\_, Other \_\_\_\_\_

**Safety:** Very safe \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Flooding:** Very safe \_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very hazardous

**Activities close by:** Lots of activities \_\_\_\_ \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ No activities

**Overall Rank: 10 out of 10** Very high \_\_\_\_ \_\_x\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Very Low

**Photos:**





## Appendix D

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### Location Prioritization



# Location Prioritization

Location	Name	Station Number	Traffic Volume		Population		Tourism Connection		Ave Score	Priority Ranking
			Peak Month ADT	Score	Area Population	Score	Proximity to South From	Score		
Hopland	Center Drive	101-11.01	16,300	4	800	1	15 Cloverdale	5	3.3	4
Ukiah	Commerce Drive Cul-de-sac	101-23.17	27,500	5	16,000	5	29 Cloverdale	4	4.7	1
Ukiah	Fairgrounds	101-25.69	36,000	5	16,000	5	29 Cloverdale	4	4.7	2
Willits	Skunk Train Depot and Chamber of Commerce	101-47.01	25,500	5	4,900	3	51 Cloverdale	3	3.7	3
Laytonville	Fire House	101-69.52	7,200	2	1,300	2	74 Cloverdale	2	2.0	10
Leggett	Leggett Valley High School	101-91.06	7,500	2	130	1	96 Cloverdale	1	1.3	15
Confusion Hill	Confusion Hill	101-99.72	7,500	2	1900	2	102 Cloverdale	0	0.7	18
Gualala	Community Center	1-0.68	5,200	2	450	1	0 Gualala	5	3.0	6
Point Arena	200-214 Main Street	1-15.08	4,000	1	250	1	15 Gualala	5	2.3	9
Elk	Greenwood Community Center	1-34.05	1,300	1	900	1	33 Gualala	4	2.0	12
Mendocino	Mendocino High School	1-50.92	8,800	2	7300	3	50 Gualala	3	2.0	11
Fort Bragg	Skunk Train Depot	1-61.58	21,200	4	7300	3	59 Gualala	3	3.3	5
Westport	City Hall	1-61.61	21,200	4	7300	3	59 Gualala	3	3.3	5
Jackson State Forest	Abalone Street	1-77.44	3,200	1	60	0	70 Gualala	2	1.0	17
Redwood Valley	Jackson State Forest / Chamberlain Creek	20-17.17	3,200	1	1	0	36 Cloverdale	4	3.0	7
Navarro	Lake Mendocino Parking Lot	20-35.34	12,400	3	1800	2	42 Cloverdale	3	1.7	14
Boonville	General Store/Fire House/Wndling Street	128-14.24	2,400	1	150	1	28 Cloverdale	4	2.7	8
Yorkville	Mendocino County Fairgrounds	128-29.04	6,000	2	1600	2	15 Cloverdale	5	2.0	13
Yorkville	Post Office/Fire Station	128-40.27	2,200	1	60	0				

Scoring Criteria	
Traffic Volume	Population
40,000-25,000	20,000-15,000
25,000-15,000	15,000-7,500
15,000-10,000	7,500-2,500
10,000-5,000	2,500-1,000
5,000-1,000	1,000-100
<1,000	<100
	0

Priority Ranking	Location	Ave Score
1	Ukiah	4.7
2	Ukiah	4.7
3	Willits	3.7
4	Hopland	3.3
5	Fort Bragg	3.3
5	Fort Bragg	3.3
6	Gualala	3.3
7	Redwood Valley	3.0
8	Boonville	2.7
9	Point Arena	2.3
10	Laytonville	2.0
11	Mendocino	2.0
12	Elk	2.0
13	Yorkville	2.0
14	Navarro	1.7
15	Leggett	1.3
16	Jackson State Fores	1.0
17	Westport	1.0
18	Confusion Hill	0.7














**Appendix E**

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Charger List










## ZEV Charger List

Make / Model	Type	Level	Max Amps	Short Description	Price (USD)	Accessory Images
ABB Terra 51 Fast Charger	Charger, CHAdeMO	DCQ		CHAdeMO compliant charger with aesthetic design suitable for central installation in fleet yards or at gas stations.		
Aerovironment EVSE-RS	Charge Station, SAE J-1772	2	30	UL listed. Residential unit. Aerovironment is Nissan's EVSE service partner for the LEAF rollout.		
Aerovironment Fleet Fast Charging Station Line	Charger, CHAdeMO	DCQ	550	Fleet DC Fast Charge Stations from a leader provider of chargers to airports, logistics providers, warehouses, and manufacturing plants.	\$39,900	
Aerovironment DC Fast Charge Station	Charger, CHAdeMO	DCQ	120	Mid-range networked DC CHAdeMO-compliant fast charge station. This is the station AV is installing as part of the West Coast Green Highway project along the I-5 corridor from California in the south to the Oregon Willamette Valley region in the north.		
Aker Wade Level III Fast Charger	Charger, CHAdeMO	DCQ	125	Commercial DC Quick Chargers. Available in single and dual configurations. 3 phase input (50 or 60 Hz)		
Andromeda Power ORCA-Mobile	Charger, CHAdeMO	DCQ	125	A versatile mobile CHAdeMO charger that can be plugged into a variety of input power sources, including AC or DC.	25000	
ClipperCreek PCS-15	Charge Station, SAE J-1772	1	15	UL listed (see notes). In-cord EVSE. Only currently available for OEM purchase.	\$695	
ClipperCreek CS Series	Charge Station, SAE J-1772	2	75	UL listed. The CS line is ClipperCreek's line of general purpose EVSE. Clipper Creek was the first company to get UL-listing for a charger with an SAE J1772 connector.		
ClipperCreek LCS Series	Charge Station, SAE J-1772	2	25	UL, ETL listed. Designed for residential use. This station features some of the same features found in other ClipperCreek units, like the Service Ground Monitor, Automatic re-closure, and contactor monitoring.	\$795	
Control Module Industries EVSE LLC EVSE	Charge Station, SAE J-1772	2	74	EVSE, LLC. is a subsidiary of Control Module Industries. They are planning designs for parking lot, curbside, and industrial uses.		
Coulomb Technologies CT2000	Charge Station, SAE J-1772	2	30	UL listed. Coulomb is one of the pioneers in the networked EVSE space. This is their Level 2-only charging station.		
Coulomb Technologies CT500	Charge Station, SAE J-1772	2	30	UL listed. Residential. Level 2 charging station designed and manufactured by Coulomb.		
Coulomb Technologies ChargePoint Application	Software			Locate ChargePoint networked charging stations on your smart phone. Search, find, and get turn-by-turn directions to stations. See if station is Available, or In Use. Start and stop a charging session directly from your smart phone and receive real-time charging status notifications.	\$0	
Coulomb Technologies CT2100	Charge Station, SAE J-1772	1 2	30	UL Listed. This is a Level 1 and 2 combination charging station.		
Darwin 3D EV Charger Finder Application	Software			Taps the great community EVChargerMaps.com database to help you locate public charging stations for your electric vehicle.	\$0	
DBT Wallbox	Charge Station, SAE J-1772	2	16	Custom built stations. Customers can choose 1 or 2 plugs, and Level 1 or Level 2 power.		

## ZEV Charger List

Make / Model	Type	Level	Max Amps	Short Description	Price (USD)	Accessory Images
DBT GNS Series Level 2 Charging Station	Charge Station, SAE J-1772	2	30	Networked, dual-plug station with a variety of access control systems (RFID, NFC) and payment system options. Supports Open Charge Point Protocol (OCPP).		
DBT BBR Series Charging Station	Charge Station, SAE J-1772	2	16	This station can be configured with one or two plugs, and has a variety of available access control systems and payment options. It can be set up standalone or configured with a central management system.		
Delta AC Charging Station	Charge Station, SAE J-1772	2	32	Basic Level 2 station designed for residential or commercial use. Two models available, "Economic" or the networked "Smart".		
Eaton Pow-R-Station Level 2 EVSE	Charge Station, SAE J-1772	2	70	ETL listed. Eaton's Pow-R-Station line seems compelling for fleet use, as it can talk to a facility's Energy Management System. It is also unique in that it can locally store usage information on an flash card.		
Eaton Pow-R-Station DC Quick Charger	Charger, CHAdeMO	DCQ	125	ETL Listed. Commercial unit running off 208VAC power. Maximum output is 125 amps at 400VDC (50kW).		
Ecotality Blink EVSE	Charge Station, SAE J-1772	2	30	UL listed. Selective height design for convenient compliance with ADA requirements. 360 degree beacon light.	1195	
Ecotality Blink DC Fast Charger	Charger, CHAdeMO	DCQ	200	Ecotality's DC Fast Charger is a two port solution with a large LCD display and advertising capability.		
Ecotality Blink Mobile Application	Software			Blink charge station finder application for smartphones and mobile devices. Works whether you are a Blink Member or not.		
Efacec QC50	Charger, CHAdeMO	DCQ	120	This fast charger is designed for EV fleet bases, service stations, EV service workshops, and public EV infrastructure.		
Enginer Auxiliary Battery Pack	Other			An add-on battery back for OEM vehicles like the Nissan LEAF designed to extend vehicle range.	3495	
Epyon Power Terra 50.X System	Charger, CHAdeMO	DCQ	125	A system consisting of a number of charge posts together with a base station. Designed for fleets and commercial uses. Compact, space saving design (versus having to park next to a large self-contained charger).		
Epyon Power Terra 50.1 Charge Station	Charger, CHAdeMO	DCQ	125	A DC Quick Charging Station with a single CHAdeMO compliant connector.		
EV-Charge America EV2100	Charge Station, SAE J-1772	2	32	Easy to install unit.	\$649	
EV-Charge America EV2000	Charge Station, SAE J-1772	1	20	Unit can charge up to 2 vehicles. Please note that customers have reported problems buying charging stations from EV-Charge America.		
EV-Charge America EV2200 Series	Charge Station, SAE J-1772	2		Combination Level 1 and Level 2 stations. Please note that customers have reported problems buying charging stations from EV-Charge America.		
Evatran Level 2 EVSE	Charge Station, SAE J-1772	2	32	Designed by Evatran to be upgradeable to Plugless Power hands-free proximity charging capability as soon as it's available.		




## ZEV Charger List

Make / Model	Type	Level	Max Amps	Short Description	Price (USD)	Accessory Images
EVTEC MobileFastCharger	Charger, CHAdeMO	DCQ	60	20kW (18.3kW output) portable CHAdeMO-compliant charger. Swiss made. Also available in a 10kW (9.2kW output) version.	\$20,278	
Ford Focus Electric Charging Station	Charge Station, SAE J-1772	2	32	Ford is working with Best Buy to offer a charging station for owners of the Ford Focus Electric EV. Best Buy will sell the station and offer consultation and installation services through its Geek Squad tech support services unit.		
Fuji FRCH50B-2-01	Charger, CHAdeMO	DCQ	125	This is Fuji Electric's 50 kW model, and was one of the first models chosen by EVOasis in California.		
General Electric DuraStation	Charge Station, SAE J-1772	2	30	UL listed. Company has over 100 years experience in the design and manufacture of electrical distribution systems.	4500	
General Electric WattStation	Charge Station, SAE J-1772	2	30	Designed by industrial designer Yves Behar. Now available.	\$1,000	
GM Voltec EVSE	Charge Station, SAE J-1772	2	15	ETL listed. GM has announced a partnership with Michigan-based SPX Service Solutions to sell and install this 240V home charging station made for the Chevrolet Volt. This station can recharge the Volt battery from depleted to full in about four hours.	490	
Go Smart ChargeSpot PS	Charge Station, SAE J-1772	2	50	This charging station allows the owner to set fee collection. The station provides the consumer with options depending on the length of time they will be charging.	\$2,200	
GoSmart ChargeSpot RF	Charge Station, SAE J-1772	2	50	GoSmart Technologies offers two Level 2 units, one offering 30A charging, the other 50A.	900	
Green Garage Associates Juice Bar	Charge Station, SAE J-1772	2		Designed by BMW Group DesignworksUSA. This is a free-charging only station.	\$5,000	
GRIDbot UP-100J	Charge Station, SAE J-1772	2	30	ETL listed. Commercial unit can handle simultaneous Level 1 charging via a NEMA 5-20 receptacle or Level 2 charging using the J-plug.		
Gridtest Systems EV Emulator Tool	Other			Designed for EVSE installers and lab testers, this tool allow you to verify and track the installation of SAE J1772 Level 1 and 2 EV charging stations. Provides a simple pass/fail result or detailed explanation of the failure mode through its touch screen interface.	\$3,000	
Kanematsu Ultra Fast	Charger, CHAdeMO		100	Fast charger with built-in battery buffer. Designed to limit input power to 20kW while providing 160kW burst charging.	80000	
Legrand Level 1	Charge Station, SAE J-1772	1	12	Legrand's cordset allows selection of charge rate, which increases flexibility and reduced the chance of blowing a circuit breaker on a limited-ampereage circuit.	\$499	
Legrand Level 2	Charge Station, SAE J-1772	2	16	Level 2 station from a major manufacturer of consumer electrical goods. Features auto reset.	749	
Leviton Evr-Green 160	Charge Station, SAE J-1772	2	16	UL listed. Residential.	\$1,050	
Leviton Evr-Green 120	Charge Station, SAE J-1772	1	12	Plugs into a standard household outlet. Comes with carrying case for use on the road.	950	

## ZEV Charger List

Make / Model	Type	Level	Max Amps	Short Description	Price (USD)	Accessory Images
Leviton Evr-Green 320	Charge Station, SAE J-1772	2	32	The core of many of Leviton's and other reseller's Level 2 models, this charging station features a "do-it-yourself" wall mounting and plug system.	\$1,395	
Leviton Evr-Green Level 2 Fleet	Charge Station, SAE J-1772	2	30	UL listed. Networked charging stations. Designed for fleet and light commercial applications.		
Leviton Evr-Green CT Level 2	Charge Station, SAE J-1772	2	30	UL listed. Designed for public-use applications.		
Leviton Guide Light GFCI Receptacle	Charge Station, SAE J-1772	1	15	Single outlet designed for dedicated Level 1 circuit. Includes GFCI and sensor-controlled guide light	26	
Leviton Evr-Green Installation Kit	Charge Station, SAE J-1772		20	Pre-wire kit that allows easy install of Leviton Evr-Green or selected other charging stations. Allows easy future upgrades of charging station. May reduce the need for special local permitting.	\$79	
Leviton EV Charging Station for Toyota	Charge Station, SAE J-1772	2	40	Charging station designed by Leviton exclusively for the 2012 Toyota RAV4EV. (although it should work fine with other vehicles with J1772 inlets)		
Liberty Plugins Inc Secure Access System	Other			LPI manufactures a system which can be added to common charge stations to control access. The system is designed for operators of pay station and gated pay lots to allow them to just control access, and use their existing payment collection system.	\$800	
Mitsubishi Level 1 Cordset	Charge Station, SAE J-1772	1	8	OEM cordset that comes with the Mitsubishi i.		
Mitsubishi Motors MiEV power BOX	Other			This adapter plugs into a CHAdeMO connector and is capable of supplying up to 1500 watts of AC electricity from the power stored in the vehicle's drive battery.		
Nichicon Quick Charger	Charger, CHAdeMO	DCQ	30	Touted as the world's smallest and lightest quick charger.		
Nissan NSQC-44 Series	Charger, CHAdeMO	DCQ	125	Nissan's own quick charger. Standard model. Nissan plans to install 2,200 units at dealers nationwide.	\$19,088	
Nissan Level 1 Cordset	Charge Station, SAE J-1772	1	12	UL listed. Made by Panasonic. This is the Level 1 EVSE cordset that comes standard with the Nissan LEAF.	760	
Nissan LEAF Application	Software			Designed by Nissan for the LEAF. Allows owners to control and track battery charging and climate control.	\$0	
Nissan Quick Charger	Charger, CHAdeMO		125	Smaller size, and lower-cost quick charger.	9900	
OnStar MyLink Application	Software			Made for a range of Chevy vehicles, including the Volt. Lets owners control and track charging and various other car features.		
OpConnect EVCS (with J1772)	Charge Station, SAE J-1772	2	30	ETL listed. Allows four vehicles to charge at same time. Combination Level 1 and 2 unit.		

## ZEV Charger List

Make / Model	Type	Level	Max Amps	Short Description	Price (USD)	Accessory Images
ParkPod	Charge Station, SAE J-1772	2	30	This futuristic-looking unit is LED-lit all around, for ease of finding the receptacles at night, or to highlight ads or company logos. The unit features a Windows XP/7 client/server database solution.		
Plug Smart Go!	Charge Station, SAE J-1772	1		This is a Level 1 networked charging cordset. It communicates with a smart meter or home energy management system to control vehicle charging. It's web interface can be accessed via a PDA, laptop or smart phone.		
Plug-In Electric Power (PEP) Level 2	Charge Station, SAE J-1772	2	30	ETL listed. Dual Level 2 units that can charge two EVs simultaneously.		
Pvilion Solar Sail				Good looking, lightweight, solar carports featuring tensioned, flexible solar panels.		
Recargo Application	Software			This application allows you to tap into the Recargo charge station location database to find nearby chargers while you're on the move.	\$0	
renewz isola Solar Charging Carport	Other			This carport is designed to be foundation free for single-day construction. Can be put up in a couple of hours, so it may be useful for fairs and other events. System comes with an Eaton Level 2 EVSE.		
Schneider Electric Square D Indoor	Charge Station, SAE J-1772	2	30	UL listed. Schneider's indoor model designed for residential use.	\$799	
Schneider Electric EVlink Outdoor	Charge Station, SAE J-1772	2	30	UL listed. Schneider outdoor model can be used in both residential or commercial applications. Optional advanced metering functionality to collect and monitor energy and demand profile data is also available. Advanced versions feature additional networking and communication features.	2772	
Schneider Electric Fast Charger	Charger, CHAdeMO	DCQ	200	Schneider's DC fast charger.		
SemaConnect ChargePro 620	Charge Station, SAE J-1772	2	30	Station designed for commercial-grade applications, such as multifamily, office, retail, fleet and municipal parking environments. Compact and sleek design for easy integration into existing parking facilities.		
SemaConnect ChargePro Charging Station Application	Software			Search for ChargePro charging station locations, view real-time charging status, receive alerts on your charging session.		
Shorepower WU-120	Charge Station, SAE J-1772	1	16	Shorepower's units are unique in that they take 240 volt input, but provide four Level 1 outputs, handling four EVs at once.	2500	
Shorepower SC2-120	Charge Station, SAE J-1772	1	16	Shorepower's units are unique in that they take 240 volt input, but provide four Level 1 outputs, handling four EVs at once.	\$2,900	
Shorepower ePump	Charge Station, SAE J-1772	2	30	Highly configurable commercial/public multi-head unit. Payment system does not require use of proprietary network.	3900	
Siemens Smart Grid EVSE	Charge Station, SAE J-1772	2	30	UL listed. Siemens units are available as single Level 2 and multi-level designs. The multi-level units allow both Level 1 and 2 outputs to deliver energy simultaneously.		
Siemens VersiCharge	Charge Station, SAE J-1772	2	70	Available in 30A and 70A models. Units are adjustable via an amperage dial or via communication with utility.	1000	

## ZEV Charger List

Make / Model	Type	Level	Max Amps	Short Description	Price (USD)	Accessory Images
SPX Power Xpress	Charge Station, SAE J-1772		32	This unit is available in either a plug in model (240VAC input) or a permanent hardwired model.	\$949	
Tesla Motors Supercharger	Charger, Supercharger			Charger designed by Tesla Motors for its Model S. Tesla plans to deploy supercharger stations between key cities to allow fast charging on road trips.		
Toyota Level 1 Cordset	Charge Station, SAE J-1772		12	UL listed. Stock Level 1 cordset for the Toyota Plug-in Prius.		
Volta Charging EVSE	Charge Station, SAE J-1772		30	Designed for media-driven installations that allow free charging to the public. Company is planning to launch network in 2012.		
Voltec Charge Cord	Charge Station, SAE J-1772		10	ETL listed. Able to fully charge the Volt in 10 hours. This cordset comes standard with every Volt.	\$360	
Xatori PlugShare	Software			Search for charging stations in the PlugShare network. Latest version includes ability to rate and leave comments on charging stations, and new account and station editing pages.		











## Appendix F

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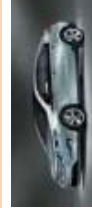








### Electric Vehicle List














## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Arcimoto SRK	EV	The Arcimoto SRK is a 3-wheel tandem 2-seater with AGM lead-acid batteries that recharge from a standard 120V outlet in 6 hours. It is powered by a 96-volt DC motor with...	80 mi	65 mph	\$17,500	TBA	
Audi e-tron Spyder	PHEV	The latest vehicle in Audi's e-tron family, the Spyder, is a two-door, two-seat sports coupe powered by a 221kW (300-hp) twin-turbo V6 TDI and two electric motors with a combined output of 64kW...	31 mi	155 mph	TBA	TBA	
Audi A3 e-tron	EV	Audi has launched a pilot program for an all electric version of its A3 hatchback, dubbed the A3 e-tron...	90 mi	145 mph	TBA	2014	
Balqon Nautilus E20/E30	EV	The Nautilus is an all-electric shipping cargo port drayage tractor with a 60,000-pound max payload and a 30-60 mi range, depending on payload and battery configuration...	60 mi	40 mph	\$208,000	Now Available	
BMW i8	PHEV	The i8 is a newly-designed 2-door 4 seater PHEV, with the same electric drive system as the BMW i3 powering the front wheels, and a 1.5 L, 3-cylinder engine driving the rear wheels...	20 mi	155 mph	TBA	2014	
BMW ActiveE	EV	The ActiveE is BMW's next vehicle in their EfficientDynamics lineup. It is an all electric BMW 1-series coupe powered by a 125kW electric motor (170hp) with 250Nm of torque...	94 mi	90 mph	TBA	Now Available	
BMW i3	EV	The i3 will be BMW's first production electric vehicle. It is a 3-door hatchback that is expected to be under 2,500 lbs, thanks to it's carbon fiber body and aluminum chassis...	100 mi	93 mph	TBA	2013	
BMW Motorrad E	EV	The Motorrad E is an all-electric concept motorcycle from BMW. The 2-passenger scooter will have a range of 60 miles and will recharge on a household outlet in just 3 hours.	60 mi	TBA	TBA	TBA	
Boulder EVs Truck and WUV	EV	Boulder Electric Vehicle is producing four CARB certified models: an Electric Delivery Van, a 15 Passenger Shuttle, a Service Body and a Flat Bed. All models are purpose-built and 100 % electric...	120 mi	65 mph	TBA	Now Available	
Brammo Evertia	EV	The Evertia is an all-electric street bike, powered by a 13kW electric motor and 3.1kWh of Valence Li-ion phosphate batteries. The batteries, which give the Evertia...	45 mi	62 mph	\$7,995	Now Available	
Brammo Empulse	EV	Brammo's newest motorcycle, the Empulse, is an all electric, aluminum-framed motorcycle powered by a 40 kW sealed permanent AC synchronous motor...	77 mi	100 mph	\$16,995	2012	
Bremach T-REX	EV	The Bremach T-REX is a customizable off-road heavy-duty truck, with a 3.87-ton payload rated chassis. The T-REX comes in 4 fuel types: Gasoline, CNG, Hybrid, and electric.	100 mi	TBA	\$120,000	TBA	








## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
BYD Auto e6	EV	The e6 is an all electric 5 passenger, 4 door crossover with a 330 km (205 mi) range and top speed of 100 mph. The e6 can accelerate from 0-60mph in 8 sec and can...	186 mi	87 mph	\$35,000	2012	
BYD Auto Electric Bus	EV	The BYD Electric Bus is a full size, all-electric bus that seats 32 (including driver). The roof of the bus is lined with solar panels, which provide power to the "Fe" battery...	155 mi	62 mph	TBA	Now Available	
Chery Automobile Co. M1EV	EV	Previously referred to as S18, the M1EV by Chery is, 4-door, 5-seater compact with a 120 km (75 mi) range and top speed of 120 kmh (75 mph). The M1EV is powered by a 336 V, 16 kWh...	75 mi	75 mph	\$19,000	Now Available	
Chevrolet Volt	PHEV	GM's EREV, extended range electric vehicle, with a 16.5kWh Li-ion battery from LG Chem, giving the Volt a 38 mi all electric range and 379 mi total range.	38 mi	100 mph	\$39,145	Now Available	
Chevrolet Spark EV	EV	The 2013 Chevy Spark EV will be Chevrolet's first purely electric production vehicle. The Spark will be powered by a 114 HP electric motor, built by GM in the US, and a 20kWhr Li-ion battery pack, built by	TBA	TBA	TBA	2013	
Citroën C-ZERO	EV	Rebadged Mitsubishi i-MiEV. 4-door hatchback, range 130 km "standard combined cycle", top speed 130 kph, 0-100 km/h 15 sec, 60-90 km/h 6 sec, 330V 16 kWh Li-ion battery...	80 mi	80 mph	\$48,000	Now Available	
Coda Automotive CODA Sedan	EV	The CODA Sedan is a 4-door, 5-passenger sedan with a range up to 125 miles (EPA rated at 88 miles per charge). The Sedan features a 31kWhr Li-ion battery...	88 mi	85 mph	\$37,250	Now Available	
Commuter Cars Tango T600	EV	A unique 2 passenger car with inline seating and a range of 40-200 mi, depending on battery choice. The T600 will accelerate from 0-60 in just 4 sec...	200 mi	135 mph	\$108,000	Now Available	
Current Motor Co. C-Series Scooter	EV	Current Motor Co's C-Series Motor Scooter is an all-electric highway-capable scooter. It is offered in three levels: Economy, Standard, and Deluxe...	50 mi	65 mph	\$9,995	Now Available	
DesignLine Tindo Solar Bus	EV	27 passenger municipal bus, 10.42m, 11,480kg, top speed 76 kmph, 220kWh Sodium Nickel Hydride battery, Fast Booster Charger 170 kW, 400V 3-phase 100A...	120 mi	47 mph	TBA	Now Available	
Detroit Electric e63	EV	Based on the Proton Persona, the e63 has a 4-speed transmission, will accelerate from 0-62 mph in under 8 sec, and contains a 25kWh Li-ion battery...	112 mi	112 mph	\$24,000	TBA	
DOK-ING XD	EV	Smart-sized 3 seater with 30kWh of LiFePo4 batteries, 2 or 4 40kW (53HP) brushless AC motors, depending on configuration, available in front, rear, or all-wheel drive, 0-62mph in...	TBA	TBA	\$40,000	TBA	













## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Duracar Quicc DiVa	EV	Lightweight, small van made from recycled plastic, LiFePo batteries, shareholder recently brought the company out of bankruptcy and are looking for more investors...	90 mi	75 mph	TBA	TBA	
Electrorides ZeroTruck	EV	Class 4 truck, range up to 100 mi, top speed 60mph, Li-ion polymer battery, UQM 100 kW (124 hp) motor, peak torque 650 Nm (400 lb-ft), peak power 150 kW...	100 mi	60 mph	\$130,000	Now Available	
Enova Systems ZE Stepvan	EV	The Enova ZE Stepvan is an all electric walk-in stepvan, based on the Freightliner MT-45 chassis.	150 mi	65 mph	TBA	Now Available	
EV Drive Puma	EV	The Puma is an all-electric sports car, manufactured in South Africa	60 mi	75 mph	\$41,000	Now Available	
EVI MD	EV	Medium Duty Truck, Class 4, 5, 6 (GVWR 15,000-25,950 lbs) trucks built on Freightliner chassis, top speed 60 mph, range options up to 90 mi, 99kWh Valence Li-ion...	90 mi	60 mph	\$120,000	Now Available	
EVI WI	EV	Commercial "walk-in" van (class 4 - class 6) with top speed 60 mph, range options up to 90 mi, 99kWh Valence Li-ion battery pack, 200kW electric motor...	90 mi	60 mph	TBA	Now Available	
Fisker Karma	PHEV	A 4-door, 4-passenger luxury plug-in hybrid sports car with a 50 mi all electric range and 0-60 speed of less than six seconds. The Karma has an electric drivetrain by...	50 mi	125 mph	\$102,000	Now Available	
Fisker Surf	PHEV	The Fisker Surf will be the Karma's big brother. Fisker describes the Surf as "a crossover between a sport car and a station wagon".	TBA	TBA	TBA	2012	
Ford Focus Electric	EV	The Focus Electric is based on Ford's next generation Focus body. The vehicle is powered by 23 kWh of Li-ion batteries with active liquid cooling.	76 mi	100 mph	\$39,200	Now Available	
Ford Transit Connect EV	EV	Based on the popular Ford Transit Connect van platform from Europe, the Transit Connect EV has a liquid-cooled 28 kWh Li-Ion battery pack in the floorboard...	80 mi	75 mph	\$60,000	Now Available	
Ford Tourneo Connect EV	EV	A passenger version of the Transit Connect EV with rear passenger seats, which Ford believes will make it ideal as a taxi and shuttle service in urban environments...	100 mi	70 mph	TBA	TBA	
Ford C-Max Energi	PHEV	The 2013 Ford C-Max Energi is a plug-in hybrid version of the Ford C-Max. The C-Max Energi can drive in all electric mode over 47 mph and is expected to have a range of over 500 miles...	TBA	TBA	TBA	2012	












## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Ford Fusion Energi	PHEV	The Ford Fusion Energi is the plug-in hybrid version of the 2013 Ford Fusion. The Fusion Energi will be powered by the Fusion Hybrid's 2.0 L engine along with a Lilon battery pack.	TBA	TBA	TBA	2013	
Ginetta G50 EV	EV	Two seater sports car based off of gasoline G50, rear-wheel drive, brushless 300V DC motor...	250 mi	120 mph	TBA	TBA	
Herpa Trabant nT	EV	Two door modernization of the Trabant with EV range of 250km. Per Herpa website, Ronald Gerschewski, CEO of project partner company Indikar said...	155 mi	TBA	TBA	2012	
Heuliez WILL	EV	French coach builder in collaboration with Michelin & Orange, Opel Agila body, 4 Michelin in-hub wheel motors, has 2 trunks, three battery options for range of...	249 mi	TBA	TBA	TBA	
Honda Fit EV	EV	Honda's latest EV, the Fit EV is an all-electric OEM conversion of Honda's 5-passenger Fit. The Fit EV has an estimated range of 100 miles and is expected to be available for lease in late 2012...	76 mi	90 mph	\$36,625	2012	
Hyundai Blue-Will	PHEV	4-door hatchback, new body design, same wheelbase as Kia Ray, LG Chem Li-ion battery, 100kW electric motor, continuously variable transmission...	38 mi	TBA	TBA	2012	
Hyundai i10 EV	EV	EV version of Hyundai's i10 5-door hatchback 5-seater city car, 0-60 mph 15 sec, 16 kWh LG Chem Li-ion polymer battery, recharge 240V less than 5 hr...	100 mi	80 mph	TBA	2011	
IC Bus CE Hybrid	EV	IC offers PHEV "Charge Depleting" & hybrid "Charge Sustaining" versions of CE series bus, charge depleting range 40 mi, Li-ion, liquid cooled battery pack...	40 mi	TBA	\$210,000	Now Available	
Kia Ray	PHEV	Uses same wheelbase as Hyundai Blue-Will, but designed to be more aerodynamic (Cd of 0.25), 1.4-liter 4-cyl engine and 78kW electric motor...	50 mi	TBA	TBA	TBA	
Kia Venga EV	EV	EV version of Kia's new Venga "tall wagon", 24kW of lithium polymer batteries stored under floorpan of vehicle, 80% recharge in 20 minutes with 50kW fast charger...	112 mi	87 mph	TBA	TBA	
Kia Pop	EV	The Kia Pop is a uniquely-designed all electric vehicle that seats 3. The Pop's lithium polymer gel batteries and 50-kW electric motor will take it 100 miles per charge with a top speed of 87 miles per hour.	100 mi	87 mph	TBA	TBA	
KTM Freeride	EV	Single passenger, 2.5kWh KTM "hot swappable" battery pack, 1.5 hour recharge time, around 10,000 Euros, two versions: streetbike and dirtbike...	TBA	45 mph	TBA	TBA	

## Electric Vehicle List













Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Lightning Car Co. GT	EV	Hand built exotic car, 0-60 mph < 4 sec, 30 Altair NanoSafe™ batteries, can recharge in 10 minutes, four in-hub 120kW wheel motors, body made from...	188 mi	130 mph	TBA	2012	
Lumeneo SMERA	EV	Ultra narrow tilting 4-wheel vehicle with two inline seats, 0-60 mph 8 sec, 10kWh Li-ion battery pack, two 15kW DC electric motors power rear wheels...	90 mi	80 mph	TBA	Now Available	
Luxgen EV+	EV	7-passenger minivan powered by 180kW (240hp) electric motor and AC Propulsion drivetrain, 0-62mph in 8.6sec, top speed of 145km/h, range: 350km...	200 mi	90 mph	TBA	2012	
Mavizen TTX02	EV	Single passenger with 7.5kWh battery pack (4kWh and 10kWh also available), integrated computer with internet connectivity, street legal version available...	110 mi	130 mph	\$40,000	Now Available	
Mercedes BlueZero E-Cell	EV	Electric-only version of the PHEV BlueZero E-Cell Plus, based on next generation B-class body style, 35 kWh battery pack. One of three in the BlueZero Family...	120 mi	TBA	TBA	TBA	
Mercedes B-Class E-Cell PLUS	PHEV	Plug in hybrid version of the B-Class E-Cell with an all electric range of 62 miles using an 18 kWh battery pack. A 67-hp 1.0L 3-cylinder engine gives the E-Cell Plus a total range of 373 miles.	62 mi	93 mph	TBA	TBA	
Mercedes S500 Vision	PHEV	Luxury sedan based on the popular S-class, 10kWh Li-ion battery, 44kW (60HP) electric motor with a 3.5L V6 petrol engine, and 73 mpg...	19 mi	TBA	TBA	TBA	
Mercedes SLS E-Cell	EV	Sports car with 4 hub motors with a combined output of 392kW and 880Nm of torque. Daimler claims the vehicle will accelerate from 0-62mph in four seconds...	130 mi	155 mph	TBA	2012	
Mercedes A-Class E-Cell	EV	Daimler and Tesla have partnered to produce an all-electric A-Class. The vehicle will be manufactured at Daimler's Rastatt plant in Germany...	124 mi	93 mph	TBA	TBA	
Mindset AG Mindset	PHEV	Ultra-lightweight hybrid vehicle with roof-mounted solar panels, gullwing doors, designed by former VW head of design Murat Günak, AER 100-200km based on driving style...	112 mi	87 mph	TBA	TBA	
Mission Motors Mission One	EV	High performance street bike, onboard charger, full charge 8 hrs 120V, 2 hrs 240V. wireless, data acquisition. Now taking reservations for the series of first 50 motorcycles...	150 mi	150 mph	68995	TBA	
Mitsubishi 'i'	EV	The Mitsubishi 'i' is the most efficient passenger vehicle in North America, rated at 112 MPGe. The 'i' is powered by a 47kW AC synchronous motor and a 16-kWh Li-ion battery pack...	62 mi	81 mph	\$29,125	Now Available	

## Electric Vehicle List










Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Mitsubishi PX-MiEV	PHEV	4-door, 4-seater, AER over 50km in "10-15 EV cruising" mode, Li-ion battery pack less than 16kWh, permanent magnet electric motors front & rear, 60 kW, 200 Nm...	31 mi	TBA	TBA	2013	
Mitsubishi iMiEV Cargo	EV	The iMiEV cargo is based on the all-electric iMiEV's body and drivetrain. The back of the vehicle has been completely redesigned from the iMiEV to achieve of 60 cubic feet of storage space.	TBA	TBA	TBA	TBA	
Myers Motors NmG	EV	NmG: "No More Gas", a three wheeled enclosed vehicle, powered Li-ion batteries with a 6-8 hr recharge at 120V/20A and 30-45 min fast charge...	60 mi	75 mph	29995	Now Available	
Myers Motors Duo	EV	Duo: "Doesn't Use Gas", a three wheel enclosed vehicle, two-seater, powered by Li-ion batteries for a range 60-100 mi depending on battery package...	100 mi	76 mph	\$22,495	TBA	
Navistar eStar	EV	AKA Modec Box Van, a joint venture between Navistar and Modec. A ground-up design with chassis cab, drop-side truck & box van models, 60-100 mi range...	100 mi	50 mph	TBA	Now Available	
New Flyer Xcelisior	PHEV	New Flyer's plug-in hybrid bus comes in gasoline-electric and diesel-electric hybrid models. The bus comes in 35', 40', and 60' models, seating up to 59 passengers	TBA	TBA	TBA	Now Available	
NICE and Fiat e500	EV	AKA Fiat e500; joint effort between Fiat and NICE, 4 seater, Li-ion polymer batteries, Chrysler will launch the vehicle in the US in 2012 ...	75 mi	60 mph	TBA	2012	
Nissan LEAF	EV	The Nissan LEAF was built from the ground up to be an EV. It is a 5-seater, 4-door hatchback based on Versa/Tida platform. The LEAF has an 80kW electric motor...	73 mi	90 mph	\$35,200	Now Available	
Nissan Townpod	EV	The Townpod is the newest member of Nissan's ZeroEmission family. It is an all electric vehicle, designed to be customized to meet the needs of almost any driver.	TBA	TBA	TBA	TBA	
Nissan Esflow	EV	The Esflow is a concept sportcar of Nissan's new EV family. The Esflow uses technologies developed for the LEAF, with several enhancements, including two twin AC motors, one for each rear wheel of the vehicle.	150 mi	TBA	TBA	TBA	
Nissan e-NV200	EV	The e-NV200 is Nissan's NV200 "multi-usage vehicle" powered by a LEAF drivetrain. Consequently, the e-NV200 will have specs similar to those of the LEAF.	TBA	TBA	TBA	2013	
Opel Ampera	PHEV	The Opel/Vauxhall Ampera shares it's platform and E-Flex propulsion system with the Chevy Volt. Like the Volt, it has an all electric range of 56 km, a total range of 610 km, and can travel from 0-100 km/h about 9 sec.	35 mi	100 mph	\$57,000	2012	









## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Optare Solo EV	EV	54 passenger bus, top speed is limited to 56 mph, range about 60 mi, Enova Systems P120 AC induction motor, 120kW, two banks of Valence Li-ion Phosphate batteries...	60 mi	56 mph	TBA	TBA	
Peraves MonoTracer e	EV	High performance pure battery electric version of the MonoTracer®, a two-wheeled fully enclosed cabin motorcycle with retractable lateral stabilizer wheels...	200 mi	150 mph	\$104,320	2012	
Peugeot iOn	EV	A rebadged Mitsubishi i-MiEV, the iOn is a 4-door hatchback, with a 130 km range (standard combined cycle) and a top speed of 130 kph...	80 mi	80 mph	TBA	Now Available	
Peugeot HX1	PHEV	The Peugeot HX1 is a plug-in hybrid MPV with a very low roof, resulting in a drag coefficient of only 0.28. The HX1 has four reverse-opening doors and will seat six.	19 mi	TBA	TBA	TBA	
Piaggio Mp3 Hybrid	PHEV	Tilting 3-wheel scooter, 20km AER, total range 500km (300mi), EV-mode top speed 30kmph, Li-ion battery, full charge about 3 hr, 85% SOC in 2 hr, 2.6kW electric motor...	12 mi	64 mph	TBA	Now Available	
Pininfarina Nido EV	EV	The Nido EV is a 2-door, 2-seater microcar, slightly larger than the Smart fortwo. The Nido EV will accelerate from 0-60mph in 6.7 seconds...	87 mi	75 mph	TBA	2010	
Pininfarina-Bolloré BlueCar	EV	AKA B0, Pininfarina & Bolloré joint venture, 4-door hatchback, 5-seater, uses Li-ion batteries & ultracapacitors, recharge 8 hr, quick charge option available...	155 mi	81 mph	TBA	TBA	
Proterra EcoRide BE35	EV	Golden, Colorado based, full size city bus, UQM 150kW electric drivetrain, AltairNano batteries, claimed to capture 90% of kinetic energy on braking...	30 mi	12 mph	TBA	Now Available	
Quantya Strada	EV	Street-legal version of the Swiss Quantya Track off-road dirt bike. Quantya's LiPo Energy 40Ah 48V battery provides about 3 hours of riding time and a 2 hour recharge time...	30 mi	55 mph	10700	Now Available	
Renault Fluence Z.E.	EV	Family sedan, standard recharge 4-8 hr, quick charge 20 min, "Quickdrop" battery exchange option, using a new body to be introduced in gasoline version in 2009, now taking reservations in EU...	100 mi	84 mph	\$36,015	2012	
Renault Kangoo ZE	EV	The Kangoo ZE is an all-electric compact commercial van that seats two passengers. The Kangoo Z.E. has a curb weight of 1520kg and is powered by a 44kW (70hp) electric motor.	100 mi	81 mph	27000	Now Available	
Renault Zoe	EV	Compact coupe, standard recharge 4-8 hr, quick charge 20 min, "Quickdrop" battery exchange option, 70kW electric motor...	62 mi	90 mph	TBA	2012	













## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Renault DeZir	EV	he Renault DeZir is an all-electric two-seat coupe that can accelerate from 0-60 in less than five seconds. 24kWh of Li-ion batteries are vertically mounted behind the bench seat and provide the DeZir with a	100 mi	112 mph	TBA	TBA	
REVA	EV	Named for "NeXt Generation", two-seater with a targa roof, designed by Dilip Chhabria, top speed of 130 km/hr, range of 200 km, reserves a % of battery capacity...	124 mi	81 mph	TBA	2013	
NXR	EV	Named for "NeXt Reva", four-seat, three-door hatchback family car suitable for urban driving. NXR Intercity top speed 104 kmph, range 160 km, Li-ion battery...	100 mi	65 mph	TBA	2012	
Rolls Royce 102EX	EV	Based off of the gasoline-powered Phantom, the 102 EX is an all-electric experimental vehicle, designed to evaluate the ultra-luxury electric vehicle market.	120 mi	100 mph	TBA	TBA	
Saab 9-3 ePower	EV	The ePower is an OEM conversion of the Saab 9-3 SportsCombi wagon. It is powered by 35.5kWh of Li-ion batteries and a 135kW (184hp) electric motor, that will bring the car from 0-60mph in 8.5 seconds.	125 mi	93 mph	TBA	TBA	
SABA Carbon Zero	EV	2 door, 2 seater, convertible roadster, 0-60 in 5 sec, 120-140 mi per charge, price not officially announced, will be "affordable" ...	TBA	TBA	TBA	TBA	
SAIC Roewe 750	EV	4-door sedan, top speed 150 kmph, range 200 km, Li-ion battery, recharge 6-8 hr from Shanghai Automotive Industry Corporation...	124 mi	93 mph	TBA	2012	
SEAT IBE	EV	SEAT has redesigned the IBE from the original version that debuted at the 2010 Geneva Auto Show. The new IBE is a two-door four-seater sports coupe with 102 horsepower.	81 mi	100 mph	TBA	TBA	
Sinautec Ultracap Hybrid Bus	EV	41 passenger, 37.5 ft, 12.5 ton municipal bus, top speed 33mph, range 45 mi, 60kWh lead acid battery pack, 2.25kWh Ultracapacitor pack, recharge 5-10 min...	33 mi	45 mph	TBA	Now Available	
Smart ED	EV	An OEM conversion of the Smart Fortwo. Smart began life as Swatch car in 1998, and was first converted into EV form in 2006. The Smart ED will have 16.5kWh of Li-ion batteries...	63 mi	70 mph	TBA	Now Available	
Smith EVs Newton EV	EV	Large delivery truck already marketed in UK, range up to 100 mi, top speed 50 mph, Li-ion Iron Phosphate battery, onboard charger allows 6-8 hr recharge...	100 mi	50 mph	TBA	Now Available	
Smith EVs Edison	PHEV	Available in as chassis cab, panel van or 15 seater minibus. Uses 40kWh Li-ion Iron Phosphate (LiFePO4) battery, 90kW induction motor, payload up to 3960lbs	100 mi	50 mph	TBA	Now Available	









## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Subaru R1e	EV	2-seater with Li-ion batteries capable of 15 min quick charging to 80% SOC, displayed at the 2008 New York Auto Show, it has been in various test programs in Japan...	50 mi	65 mph	TBA	N/A	
Subaru Stella EV	EV	OEM conversion of mini-car Stella, 4-door, 9.2 kWh lithium-ion battery, recharge 5 hr 240V or 120V, quick-charge to 80% SOC 15 min, 47 kW motor, 125 lb-ft torque...	50 mi	62 mph	\$47,600	TBA	
Suzuki Swift PHEV	PHEV	Popular Swift 4-door hatchback 4-seater model, AER 20kmh, 2.66kWh 260V Li-ion battery pack, 50kW electric motor, 40kW 660cc engine, front wheel drive...	12 mi	TBA	TBA	TBA	
Suzuki e-Let's	EV	The e-Let's is an all electric scooter being built in conjunction with Sanyo, based on Suzuki's gasoline "Let's4 basket". The scooter is powered by an in-wheel hub motor with regenerative braking	19 mi	TBA	TBA	TBA	
Tata Motors Indica Vista EV	EV	4-seater, range 200 km, 0-60 kmph < 10 sec, polymer Li-ion batteries, joint venture between TMEETC (Tata) and Miljobil Ireland...	99 mi	71 mph	41000	TBA	
Tesla Motors Model S	EV	The Model S is a new ground-up 4-door, 7-seat sedan built by California EV startup Tesla Motors. It's range will be based on battery options of 160 mi, 230 mi, and 300...	300 mi	120 mph	\$57,400	Now Available	
Tesla Motors Model X	EV	The Tesla Model X is an all-electric crossover that seats 7 adults and features "falcon-wing" rear doors, which require little clearance on each side of the vehicle...	TBA	TBA	TBA	2013	
THINK City	EV	Two seater City car with 180km range (based on MES DEA Zebra battery, US model will use EnerDel LiFEPO4 batteries). Body is ABS recycled plastic, steel...	111 mi	60 mph	\$35,495	Now Available	
THINK Ox	EV	An all electric 5-seat, 4-door hatchback, 0-60 mph about 8.5 seconds, Li-ion batteries, recharge to 80% SOC < 1 hr, solar panels in roof power the onboard electronics...	155 mi	TBA	TBA	TBA	
Toyota 2nd Gen. RAV4 EV	EV	The second generation Toyota RAV4 EV is the result of the Toyota and Tesla Motors collaboration. Based on the popular RAV4 compact SUV and powered by a Tesla electric powertrain...	100 mi	TBA	TBA	2012	
Toyota FT-EV	EV	Name from "Future Toyota Electric Vehicle", 2-seater, based on iQ body, will have it's own body style, will get its own body style to create a stand-alone model...	93 mi	70 mph	TBA	TBA	
Toyota FT-EV II	EV	Named "Future Toyota Electric Vehicle II", second generation of the unreleased FT-EV 2-door micro car, range 90km (56mi), top speed 100kmph...	56 mi	62 mph	TBA	TBA	

## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Toyota Plug-in Prius	PHEV	OEM PHEV conversion based on 3rd generation Prius using Li-ion batteries. All electric range of around 13 miles, while below 100 km/h (62 mph)...	15 mi	112 mph	32000	Now Available	
TTW One	PHEV	A 2-seater in-line, fully enclosed, active tilting 3-wheeler with an all electric range of 40 miles, supplemented by compressed natural gas...	40 mi	111 mph	TBA	TBA	
Vectrix VX-1	EV	All electric scooter capable of transporting two passengers. A brushless 21kW DC, radial air-gap motor brings the VX-1 from 0-50 mph in 6.8 sec...	85 mi	62 mph	TBA	Now Available	
Vectrix VX-3	EV	The VX-3 is a 3-wheeled all electric scooter with a top speed of 68 mph and a range of up to 50-80 miles.	80 mi	68 mph	TBA	TBA	
Velozzi SOLO	PHEV	Crossover PHEV, genset powered by a microturbine that can run on a variety of fuels, powered by Lilon batteries and supercapacitors, 100mpg, 0-60mph in 6sec...	TBA	130 mph	TBA	2012	
VIA Motors VTrux	PHEV	The VIA Motors VTrux is an extended range electric truck that can travel up to 40 miles on electricity and 400 miles using gasoline...	40 mi	TBA	TBA	2013	
Volkswagen TwinDRIVE	PHEV	Golf type 6 using VW twinDRIVE® no transmission, 1-liter turbocharged gasoline engine, runs on electric only to 30 mph, then switches to gas engine...	TBA	TBA	TBA	TBA	
Volkswagen Up Blue e-motion	EV	OEM conversion of the Volkswagen Up!, a 2-door mini car that seats 3 adults + 1 child. 130km range, 0-60 mph in 11 sec with 60 kW electric motor...	81 mi	TBA	TBA	2013	
Volkswagen Golf Blue e-motion	EV	The Golf Blue e-motion will be an OEM conversion of the seventh-generation Volkswagen Golf. It will be powered by a 85 kW ( 114 hp) electric motor...	93 mi	85 mph	TBA	2013	
Volvo V70 PHEV	PHEV	Unspecified future model, shown as a Volvo V70 PHEV concept car, AER 50 km (31 mi), Li-ion battery, recharge about 5 hr from 240V wall socket, diesel engine...	31 mi	TBA	TBA	2012	
Volvo C30 EV	EV	OEM conversion of two-door, four-seater C30 with 82kW motor and 24 kWh battery pack (22.7 kWh useable), yielding a range of 150 km (approx 94 mi)...	94 mi	81 mph	TBA	TBA	
Volvo V60 Plug-in Hybrid	PHEV	The V60 Plug-in Hybrid is one of the first ever plug-in diesel hybrids. It will have 3 drive modes: Pure, Hybrid, and Power, offering varying efficiencies and speeds.	32 mi	TBA	TBA	2012	

## Electric Vehicle List

Make / Model	Drivetrain	Description	Range	Top Speed	Price (USD)	Target	Image
Von Mynheer Auto CHICO	EV	The CHICO is a summer fun electric vehicle. It is powered by two twin AC motors, which give the CHICO 44kW of power and bring the vehicle from 0 to 60 mph in 12 seconds. The CHICO has a 2+2 seating configuration	100 mi	67 mph	38000	TBA	
Wheego Whip Life	EV	Two-passenger Smart-sized vehicle with 45kW brushless AC motor, top speed 65mph, 28kW LiFe battery pack, 10 hour charge time at 240VAC...	100 mi	65 mph	\$32,995	Now Available	
Zero Motorcycles Zero S-ZF6	EV	The 2012 Zero S leverages a completely new battery cell chemistry and configuration. The Zero S electric motorcycle features an aircraft grade alloy frame and a low friction belt drive...	76 mi	88 mph	11495	Now Available	
Zero Motorcycles Zero S-ZF9	EV	The Zero S electric motorcycle features an aircraft grade alloy frame and a low friction belt drive. Weighing in at only 341 pounds, the 9 kWhZ-Force™ patented Li-Ion...	114 mi	88 mph	\$13,995	Now Available	
Zero Motorcycles Zero DS-ZF6	EV	The Zero DS electric motorcycle is built on the foundation of the Zero S street motorcycle and incorporates technology from Zero Motorcycles' off-road motorcycles...	75 mi	80 mph	11495	Now Available	
Zero Motorcycles Zero DS-ZF9	EV	The Zero DS electric motorcycle is built on the foundation of the Zero S street motorcycle and incorporates technology from Zero Motorcycles' off-road motorcycles...	112 mi	80 mph	\$13,995	Now Available	
Zero Motorcycles Zero XU	EV	Featuring a light, aircraft grade alloy frame and a removable power pack the Zero XU electric motorcycle is designed to meet the needs of city commuters...	42 mi	65 mph	7695	Now Available	
Zero Motorcycles Zero X	EV	A street legal version of the Zero MX off-road electric motorcycle. It features an ultra-light frame design, and weighs in at only 215 pounds. The 3 kWh Z-Force™ patented Li-Ion...	38 mi	56 mph	\$9,945	Now Available	



## Appendix G

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Solar Shades





# Solar Charging Station

## PG&E A-6 Rate Tariff - SMALL GENERAL TIME-OF-USE SERVICE

- for any non-residential meter location
- Total Energy Rates (\$ per kWh)
- Peak Summer \$0.48657
- Part-Peak Summer \$0.23713
- Off-Peak Summer \$0.13768
- Part-Peak Winter \$0.15534
- Off-Peak Winter \$0.12768

Range to provide 30 kWh from \$3.60 to \$15.00 depending on season and time of day. No demand charges but there are additional meter charges and taxes. If the future cost of utility power rises between 2-3% over the next 25 years this would be an average of from \$5.00 to \$20.00 per charge.

A 1 kW PV array produces approximately 1,500 kWh per year and if used as a “net metered” system most solar generation will occur during peak summer times so the total annual value of power generated may be between \$250 – 500. Assuming 30 kWh per charge an average PG&E power cost might range from \$5 to \$10. Assuming a range of solar installation costs from \$4,000 to \$8,000 per kW, the average kWh cost over a 25 year life would range from \$0.11 to \$0.22.



With electric vehicles on the verge of filling our streets, Florian Solar, in collaboration with Sanyo North America, Portland General Electric, the Oregon Museum of Science and Industry and In Spec Group's Energy Solutions division has completed an uniquely innovative application for electric transportation. This is the first of many such systems already in production by Florian. Project By Florian Solar & Sanyo Energy

## Solar-Powered Electric Vehicle Charging Station Product Debut In Portland, OR, July 30, 2010.



With electric vehicles on the verge of filling our streets, Florian Solar, in collaboration with Sanyo North America, Portland General Electric, the Oregon Museum of Science and Industry and In Spec Group's Energy Solutions division has completed an uniquely innovative application for electric transportation. This is the first of many such systems already in production by Florian.

This 8.2KW solar canopy is capable of producing up to 10,000 kWh per year, which is expected to meet the electrical demand for public charging on site.

The charging equipment includes the following:

- (1) 120/208V EV Charger
- (4) Bicycle parking bollards with 120V outlets
- (6) Coin-operated lockers with 120V outlets. All of the charging outlets are available for free public use.



System specifications:

Solar panels: (42) SANYO HIT-Double 195-watt, bifacial module total capacity: 8.19 kW

Inverters:(2) PV Powered 4600-watt PV inverter total capacity: 8.19 kW

Electric Vehicle Charger:(1) Shorepower Dual Level 1/2 Pedestal

Charging StationCapacity: (2) Level 1 (120V) outlets and (1) Level 2 (208/ 240V) plug

System Statistics: Anticipated Annual Production: 9,000 –10,000 kWh Total installation timeline:  
3 weeks





Unbreakable Thin film BIPV on metal roof



## Appendix H

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### DSA Guidelines







EDMUND G. BROWN JR.  
GOVERNOR

STATE OF CALIFORNIA  
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH



KEN ALEX  
DIRECTOR

## **Plug-In Electric Vehicles: Universal Charging Access Guidelines and Best Practices**

These draft guidelines have been developed in conjunction with the Division of the State Architect (DSA) to assist the Governor's Office of Planning and Research with physical accessibility standards and design guidelines for the installation of plug-in electric vehicle charging stations throughout California. This initiative supports the Governor's Zero Emission Vehicle Executive Order, B-16-2012, which establishes a target of 1.5 million ZEVs in California by 2025.

These guidelines are intended to supersede and expand upon the current DSA "Interim Disabled Access Guidelines for Electric Vehicle Charging Stations 97-03", dated 5 June 1997. While 97-03 is a policy statement and only applicable to facilities under DSA's regulatory jurisdiction, it is possible that these voluntary 2013 guidelines will eventually become regulations within *California Building Code Chapter 11B Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing*.

For clarity and usability, the guidelines and any subsequent regulations should reflect the format and organization of the California Building Code. The 2013 Chapter 11B accessibility provisions use the Americans with Disabilities Act Guidelines as their model code with amendments to implement more stringent California specific requirements. These draft guidelines use the same format and are organized with separate scoping and technical provisions. The designation EVG (for Electric Vehicle Guidelines) is used as a prefix for the guideline provisions and the prefix 11B is used before sections from the 2013 California Building Code's accessibility provisions. These Guidelines are focused on physical accessibility standards and information about Section 508 of the Rehabilitation Act for Self-Contained Closed System Products will be provided in future guidance.

The guidelines address accessible plug-in electric vehicle charging stations on both public and private sites and within public rights of way. Making charging stations within public rights-of-way fully accessible can be challenging, as illustrated by the examples in the Plug-in Electric Vehicle Collaborative's "Accessibility and Signage for Plug-in Electric Vehicle Charging Infrastructure Report and Recommendations" of May 2012. Similar provisions from the proposed federal Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way related to parking have been adapted as the basis for on-street installations. Signage and identification of the accessible electric vehicle charging stations is raised but not yet fully resolved in this public draft.

Dennis J. Corelis, Deputy State Architect  
Division of the State Architect

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## Guidelines for the Provision of Electric Vehicle Charging Stations

The following scoping sections of these guidelines are designed to present best practices for electric vehicle charging station accessibility and eventually may become part of the California Building Code's Chapter 11B Division 2: Scoping Requirements.

**ADVISORY:** EVG-250 Electric Vehicle Charging Stations. A reasonable portion of Electric Vehicle Charging Stations are required to be accessible. If provided by a state or local government on public property or on-street within the public right of way, vehicle charging is considered a program or service that must be accessible to and useable by individuals with disabilities. Accessibility covers not just the physical dimensions of the charging station, and operable parts of the device, but also the functionality of the 'self-contained, closed product' charging system. If provided at privately owned or operated public accommodations they must also be accessible as a service provided to the general public.

### **EVG-250 Electric Vehicle Charging Stations**

**ADVISORY:** EVG-250.1 General. While there is no positive requirement to provide electric vehicle charging stations, when they are provided a portion of them should be accessible. When co-located with parking spaces, electric vehicle charging is considered the primary function of these stations, not parking. Accessible electric vehicle charging stations are not to be reserved exclusively for the use of persons with disabilities. They should not be identified with signage that would mistakenly indicate their use is only for vehicles with placards or license plates for individuals with disabilities.

#### **EVG-250.1 General**

Where provided, electric vehicle charging stations shall comply with EVG-250.

**EXCEPTION:** Restricted Electric Vehicle Charging Stations not available to the general public and intended for use by a designated vehicle or driver, such as public or private fleet vehicles, vehicles assigned to an employee or by an electric vehicle owner at home may but shall not be required to comply with EVG-250 and EVG-812.

**ADVISORY:** EVG-250.1 General. Existing conditions, terrain, electric infrastructure and other factors dictate that not every electric vehicle charging station can be fully accessible. With electric vehicle charging stations being functionally similar to and usually integrated with parking, the ratios of accessible to standard electric vehicle charging stations in these guidelines are the same as those for accessible to standard parking in the 2010 ADA standards and the 2013 California Building Code. The numbers of required accessible electric vehicle charging stations for both on-site and public rights-of-way locations are shown in Tables EVG-250.2 On-site Electric Vehicle Charging Stations and EVG-250.3 On-street Electric Vehicle Charging Stations.

**EVG-250.2 Minimum Number for On-site Locations**

On publically owned or privately owned sites electric vehicle charging stations complying with EVG-812 shall be provided in accordance with Table EVG-250.2.

**Table EVG-250.2 On-Site Electric Vehicle Charging Stations**

<b>Total Number of Electric Vehicle Charging Stations Provided at a Site</b>	<b>Minimum Number of Required Physically Accessible Electric Vehicle Charging Stations</b>
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 and over	4, plus 2 for each 100, or fraction thereof, over 100

**EVG-250.2.1 Minimum Number for Residential Facilities**

Electric vehicle charging stations to serve residential facilities and sites shall comply with EVG-250.2.1.

**EVG-250.2.1.1 Electric Vehicle Charging Stations for Residents**

Where at least one parking space is provided for each residential dwelling unit and electric vehicle charging services are provided in conjunction with that parking, five percent, but no less than one, of the electric vehicle charging stations provided shall comply with EVG-812.

**EVG-250.2.1.2 Additional Electric Vehicle Charging Stations for Residents**

Where additional parking spaces beyond one for each residential dwelling unit is provided and electric vehicle charging services are provided in conjunction with that parking, two percent of the additional parking spaces, but no fewer than one, of the additional electric vehicle charging stations provided shall comply with EVG-812.

**EVG-250.2.1.3 Electric Vehicle Charging Stations for Guests, Employees and Other Non-Residents**

Where parking spaces are provided for persons other than residents and electric vehicle charging services are provided in conjunction with that parking, electric vehicle charging stations for guests, employees and other non-residents shall be provided in accordance with Table EVG-250.2 and shall comply with EVG-812.

**EVG-250.3 Minimum Number for On-Street Locations**

Within the public right-of-way of a state or local government jurisdiction on-street electric vehicle charging stations complying with EVG-812 shall be provided in accordance with Table EVG-250.3.

**Table EVG-250.3 On-Street Electric Vehicle Charging Stations**

<b>Total Number of Electric Vehicle Charging Stations Provided within a Jurisdiction’s Public Right of Way</b>	<b>Minimum Number of Required Physically Accessible Electric Vehicle Charging Stations</b>
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 and over	4, plus 2 for each 100, or fraction thereof, over 100

**EVG-250.4 Electric Vehicle Charging Stations for Vans. Reserved.**

**ADVISORY:** EVG-250.4 Electric Vehicle Charging Stations for Vans. The guidelines do not include provisions for van accessible electric vehicle charging stations. As of the date of these guidelines there are no plug-in electric vans being manufactured and providers of electric plug-in vehicle conversions indicate that van style vehicles are not currently available due to technical and cost factors. When future developments make electric plug-in vans feasible, provisions for van accessible electric vehicle charging stations can be included in the guidelines.

**EVG-250.5 Locations**

Electric Vehicle Charging Stations shall be located in compliance with EVG-250.5.

**ADVISORY:** EVG-250.5 Location. For new construction, accessible electric vehicle charging stations should be close to a major facility, public way or accessible route on the site, with 200 feet recommended as a maximum distance. However, electric vehicle charging stations need not be provided immediately adjacent to the facility since charging services, not parking, is their primary purpose. For installations at existing sites and locations, the accessible electric vehicle charging stations may not be located in close proximity to other services due to technical factors such as the availability of electric power or terrain, but they should be on an accessible route to the maximum extent feasible.

**EVG-250.5.1 On-Site Locations**

Electric vehicle charging stations on public and private sites shall be dispersed within each separate type of parking facility providing electric vehicle charging to the maximum extent feasible.

**EVG-250.5.1.1 Proximity to Buildings, Facilities or Sites Served**

Electric vehicle charging stations complying with EVG-812 that serve a particular building, facility or site shall be located in close proximity to the facility, public way or major circulation path on the site.

### **EVG-250.5.1.2 Proximity to Accessible Routes**

Electric vehicle charging stations complying with EVG-812 that serve a particular building, facility or site shall be on an accessible route to an entrance complying with 11B-206.4 of the current edition of the California Building Code. Electric vehicle charging stations that do not serve a particular building or facility shall be on an accessible route to an accessible pedestrian entrance to the functional area within which they are located.

**ADVISORY:** EVG-250.5.2 On-Street Locations. Provision of fully accessible on-street electric vehicle charging stations within the public right of way can be very difficult due to constraints posed by terrain, available right of way and other factors. The technical requirements for accessible parking, when applied electric vehicle charging stations, can be in direct conflict with roadway and sidewalk grades, right-of-way widths, and functional requirements for curbs, gutters and other right of way improvements. While many of these issues can be addressed during new construction or re-construction of the public improvements, solutions providing full accessibility may not be possible. EVG-250.5.2 allows a public entity to provide accessible electric vehicle charging on a programmatic basis. This involves using additional on-site accessible electric vehicle charging stations to meet the combined requirements for the number of both on-street and on-site locations within the public entity's jurisdiction.

### **EVG-250.5.2 On-Street Locations Within a Public Right-of-Way**

The required total number of electric vehicle charging stations complying with EVG-250.2 and EVG-250.3 may be provided on a combined basis using both on-site locations and on-street locations within a public right-of-way owned or controlled by a state or local governmental jurisdiction. On-street electric vehicle charging stations within the public right of way shall be integrated with on street parking to the maximum extent feasible.

### **EVG-250.5.3 Accessible Route Between Vehicle Space and Charging Equipment**

An accessible route complying with the California Building Code Chapter 11B Division 4 Accessible Routes shall connect the electric vehicle charging station vehicle space to the electric vehicle charging equipment.

## **EVG-250.6 Electric Vehicle Charging Stations at Existing Facilities**

Alterations solely for the purpose of installing electric vehicle charging stations shall be limited to the actual scope of work of the project and shall not be required to comply with section 11B-202.4 of the current edition of the California Building Code.

**EXCEPTION:** Alterations solely for the purpose of installing electric vehicle charging stations at sites where vehicle parking or storage is the sole and primary use of the facility shall comply with the 2013 California Building Code section 11B-202.4 Path of Travel Requirements in Alterations, Additions and Structural Repairs to the maximum extent feasible. The cost of compliance with 11B-202.4 shall be limited to twenty percent of the cost of the work directly associated with the installation of the electric vehicle charging equipment.

**ADVISORY:** EVG-250.6 Electric Vehicle Charging Stations at Existing Facilities. The majority of electric vehicle charging stations being installed in the foreseeable future will occur at existing on-site or on-street parking facilities where the source of electric power, location of accessible parking, natural terrain, landscaping and other features are existing. Under the California Building Code these projects would be considered alterations. Alteration projects generally require accessibility improvements, if needed to comply with current requirements, to certain “path of travel” elements serving the area of alteration. The California Building Code provides exceptions to the “path of travel” upgrade requirements for projects that do not affect the usability or accessibility of the facility. It also recognizes the inherent difficulty in altering certain existing facilities for full compliance with the accessibility requirements through provisions for situations where strict compliance is technically infeasible.

EVCS installations at existing facilities fall into three categories:

1. Within an existing public right-of-way – With no specific “path of travel” elements serving the area being altered there would be no accessibility upgrades outside the area of work.
2. On building and facility sites where parking / vehicle storage is incidental to the primary function – Under the federal 2010 ADA Standards these projects would be alterations not affecting a primary function area and “path of travel” upgrades would not be required. This is the approach used in the prior DSA Access Policy Statement 97-03 and is most probably based upon classification of electric vehicle charging stations as electrical projects not involving the placement of receptacles or switches. These proposed guidelines continue the same approach as the prior DSA policy.
3. Installations of electric vehicle charging stations at sites where vehicle parking or storage is the sole or primary use of the facility are alterations affecting the usability of or access to a primary function area. The 2010 ADA Standards require that, to the maximum extent feasible, the path of travel to the altered area, including restrooms, telephones, and drinking

fountains, is readily accessible to and usable by individuals with disabilities. Additional alterations to upgrade non-compliant path of travel elements outside of the project's area of work are required, unless those alterations are disproportionate to the overall alterations in terms of cost and scope, which is defined as exceeding twenty percent (20%) of the cost of the primary alterations. When the cost of full compliance for path of travel elements would exceed twenty percent (20%), compliance is required to the greatest extent possible within the twenty percent (20%) limitation. California law prohibits the State Architect's regulations and building standards from prescribing a lesser standard of accessibility or usability than that provided by the 2010 ADA Standards. 2013 California Building Code section 11B-202.4 reflects similar requirements with the addition of signage to the designated path of travel elements. For projects with basic costs above the CBC valuation threshold of \$139,964, the cost above which path of travel alterations would become disproportionate has been aligned with the federal requirements of twenty percent (20%).

**The following technical sections for the electric vehicle charging station guidelines are designed to eventually be located within the California Building Code's Chapter 11B Division 8: Special Rooms, Spaces and Elements.**

## **EVG-812 On-Site Electric Vehicle Charging Stations**

### **EVG-812.1 General**

On-site electric vehicle charging stations shall comply with EVG-812.

### **EVG-812.2 Electric Vehicle Charging Station Spaces**

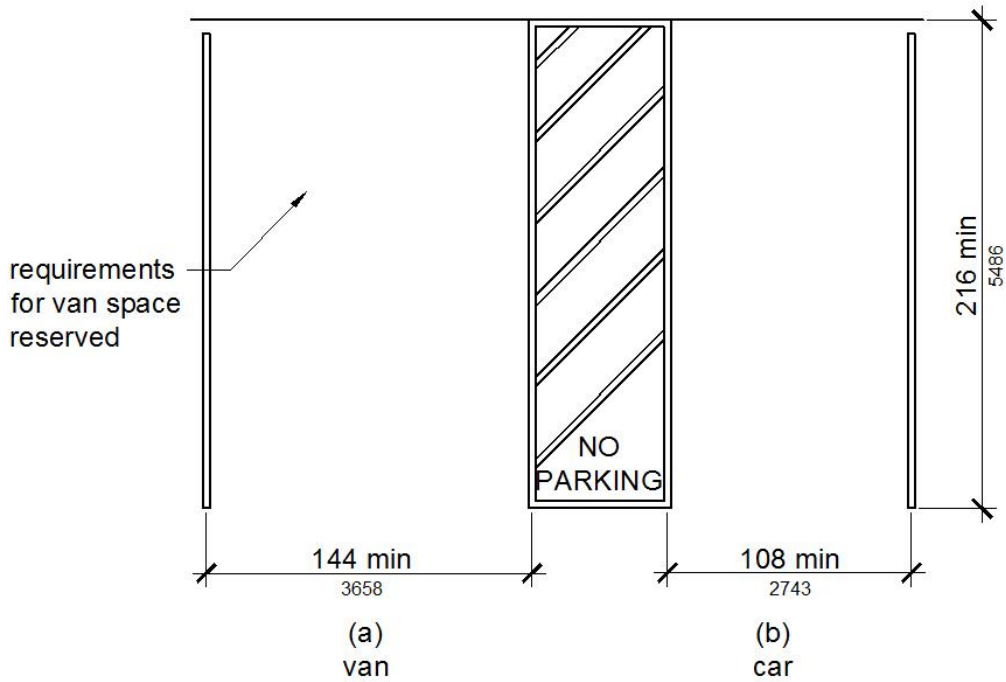
The vehicle space designated for on-site electric vehicle charging stations shall be 216 inches (5486 mm) long minimum and 108 inches (2743 mm) wide minimum and shall have an adjacent access aisle complying with EVG-812.3.

#### **EVG-812.2.1 Vehicle Space Marking**

Car and van electric vehicle charging stations shall be marked to define their width. Where Electric Vehicle Charging Stations are marked with lines, width measurements of electric vehicle charging stations and access aisles shall be made from the centerline of the markings.

**EXCEPTION:** Where electric vehicle charging stations or access aisles are not adjacent to another parking space or access aisle, measurements shall be permitted to include the full width of the line defining the parking space or access aisle.





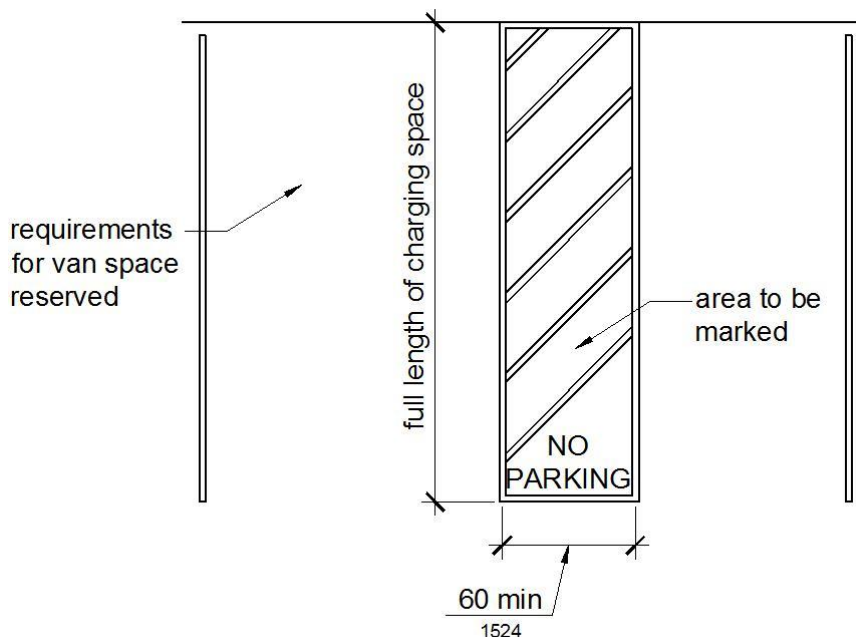
**Figure EVG-812.2  
On-site Electric Vehicle Charging Station Spaces Dimensions**

**EVG-812.2.2 Electric Vehicle Charging Only Lettering**

The words "ELECTRIC VEHICLE CHARGING ONLY" or "EV CHARGING ONLY" may be painted on the surface within each charging space letters a minimum of 12 inches (305 mm) in height and located to be visible from the adjacent vehicular way.

### **EVG-812.3 Access Aisle**

Access aisles serving vehicle spaces at on-site electric vehicle charging stations shall comply with EVG-812.3. Access aisles shall adjoin an accessible route. Two electric vehicles charging stations or one electric vehicle charging station and one accessible parking space shall be permitted to share a common access aisle.



**Figure EVG-812.3  
Electric Vehicle Charging Station Space Access Aisle**

#### **EVG-812.3.1 Width**

Access aisles serving on-site electric vehicle charging station car spaces at shall be 60 inches (1524 mm) wide minimum.

#### **EVG-812.3.2 Length**

Access aisles at on-site electric vehicle charging stations shall extend the full required length of the vehicle spaces they serve.

#### **EVG-812.3.3 Marking**

Access aisles at electric vehicle charging stations shall be marked-with a painted borderline around their perimeter. The area within the borderlines shall be marked with hatched lines a maximum of 36 inches (914 mm) on center. The color of the borderlines, hatched lines, and letters shall contrast with that of the surface of the access aisle, with white being the preferred color. The blue color required for the identification of access aisles for accessible parking shall not be used.

#### **EVG-812.3.4 No Parking Lettering**

The words "NO PARKING" shall be painted on the surface within each access aisle in letters a minimum of 12 inches (305 mm) in height and located to be visible from the adjacent vehicular way.

### **EVG-812.3.5 Location**

Access aisles at on-site electric vehicle charging station spaces shall not overlap the vehicular way and may be placed on either side of the vehicle space they serve.

### **EVG-812.4 Floor or Ground Surface**

On-site electric vehicle charging station spaces and access aisles serving them shall comply with 11B-302 Floor and Ground Surfaces. Access aisles shall be at the same level as the electric vehicle charging station space they serve. Changes in level or slopes exceeding 1:48 are not permitted.

### **EVG-812.5 Vertical Clearance**

On-site Electric vehicle charging station spaces, access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches (2489 mm) minimum.

### **EVG-812.6 Identification**

On-site electric vehicle charging stations shall be identified with a sign complying with EVG-812.6 and shall not be identified as or provided with signage required for accessible parking spaces.

#### **EVG-812.6.1 Language**

Provide a sign containing language stating “Designed for Disabled Access - Use Last” in addition to the signage identifying standard electrical vehicle charging stations. Where only one electric vehicle charging station is provided the sign shall contain language stating “Designed for Disabled Access”.

#### **EVG-812.6.2 Mounting Height**

Signs shall be 60 inches (1524 mm) minimum above the finish floor or ground surface measured to the bottom of the sign and shall be the uppermost sign when co-located with “No Parking except for Electric Vehicle Charging” and “Parking Time Limit” word message signs or electric vehicle charging symbol signs.

**EXCEPTION:** Signs located within an accessible route shall be a minimum of 80 inches (2032 mm) above the finish floor or ground surface measured to the bottom of the lowest sign.

#### **EVG-812.6.3 Size and Finish**

Signs shall be reflectorized with a minimum area of 70 square inches (45161 mm<sup>2</sup>).

#### **EVG-812.6.4 Color**

Signs shall be white symbols and letters on a blue background.

#### **EVG-812.6.5 Location**

Signs shall be permanently posted immediately adjacent to and visible from each space, and shall be located within the projected width of the vehicle space.

## **EVG-812.7 Relationship to Accessible Routes**

Electric vehicle charging station vehicle spaces and access aisles shall be designed so that when occupied the required clear width of adjacent accessible routes is not obstructed.

### **EVG-812.7.1 Arrangement**

Electric vehicle charging stations and access aisles shall be designed so that persons using them are not required to travel behind electric vehicle charging stations other than to pass behind the vehicle space in which their vehicle has been left to charge.

**EXCEPTION:** Electric vehicle charging stations installed in existing facilities shall comply with EVG-812.7.1 to the maximum extent feasible.

### **EVG-812.7.2 Accessible Route Encroachment**

A curb, wheel stop, bollards or other device shall be provided if required to prevent encroachment of vehicles over the required clear width of adjacent accessible routes.

**ADVISORY:** EVG-813 General. EVG-250.3 specifies how many accessible electric vehicle charging stations must be provided within the public right of way of a state or local governmental entity's area of jurisdiction. Accessible electric vehicle charging stations are not parking for purposes of accessibility and should be identified by signs that do not create the impression they are reserved for vehicles displaying disabled persons license plates or placards. While accessible electric vehicle charging stations are ideally located where the street has the least crown and grade and close to key destinations, other factors, such as proximity to electric service and connections, may control their location.

## **EVG-813 On-Street Electric Vehicle Charging Stations**

### **EVG-813.1 General**

On-street electric vehicle charging stations shall comply with EVG-813.

### **EVG-813.2 Parallel Electric Vehicle Charging Stations**

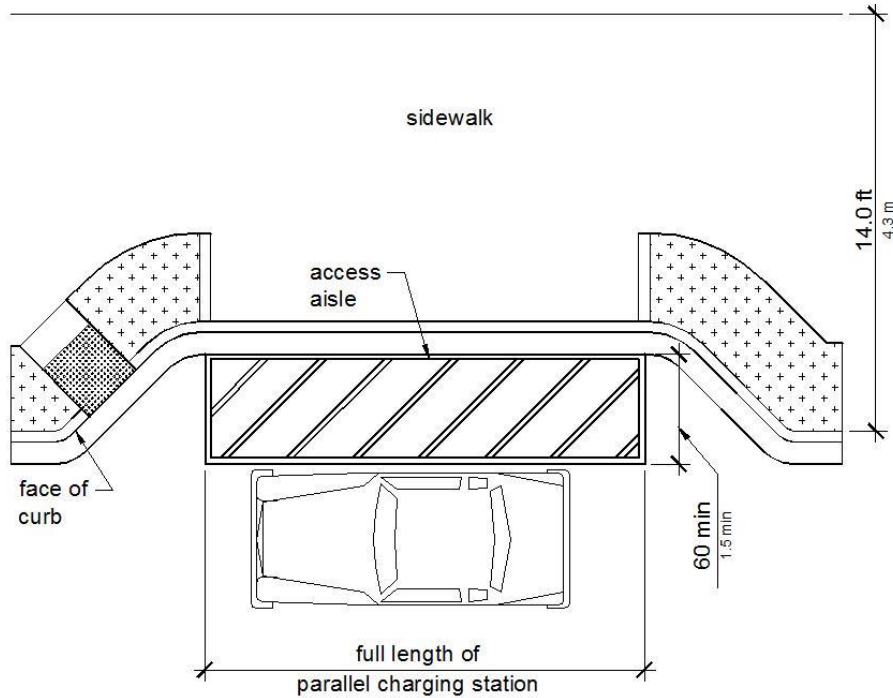
Parallel Electric vehicle charging station spaces shall comply with EVG-813.2.

**ADVISORY:** EVG-813.2 Parallel Electric Vehicle Charging Stations. The sidewalk adjacent to accessible parallel electric vehicle charging station spaces should be free of signs, street furniture, and other obstructions to permit deployment of a van side-lift or ramp or the vehicle occupant to transfer to a wheelchair or scooter. Accessible parallel electrical vehicle charging stations located at the end of the block face are usable by vans that have rear lifts and cars that have scooter platforms.

### **EVG-813.2.1 Parallel Electric Vehicle Charging Stations at Wide Sidewalks**

Where the width of the adjacent sidewalk or available right-of-way exceeds 4.3 m (14.0 ft), an access aisle 1.5 m (5.0 ft) wide minimum shall be provided at street level the full length of the electric vehicle charging station, shall connect to a pedestrian access route and shall not encroach on the vehicular travel lane. The access aisle shall comply with EVG-812.3.1, EVG-812.3.2 and EVG-812.3.

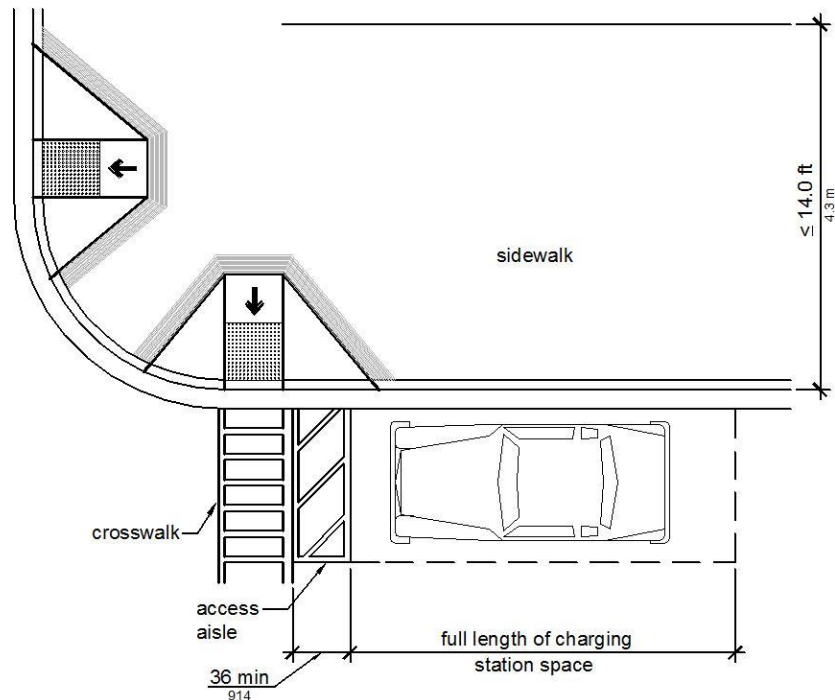
**EXCEPTION: Alterations.** In alterations where the street or sidewalk adjacent to the electric vehicle charging station space is not altered, an access aisle shall not be required, provided the Electric Vehicle Charging Stations space is located at the end of the block face.



**Figure 1 EVG-813.2.1 Parallel Electric Vehicle Charging Stations at Wide Sidewalks**

**ADVISORY:** EVG-813.2.1 Wide Sidewalks. Vehicles may be positioned at the curb or at the parking lane boundary and use the space required by EVG-813.2.1 on either the driver or passenger side of the vehicle to serve as the access aisle.

## **EVG-813.2.2 Parallel Electric Vehicle Charging Stations at Narrow Sidewalks**



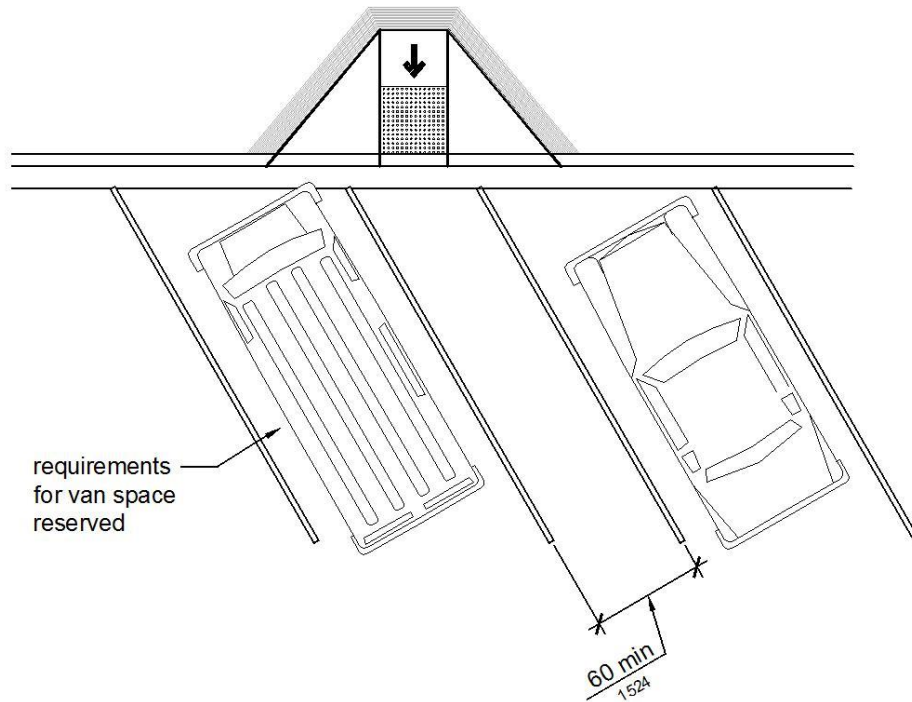
**Figure EVG-813.2.2 Parallel Electric Vehicle Charging Stations at Narrow Sidewalks**

An access aisle with a direct connection to the adjacent sidewalk is not required where the width of the adjacent sidewalk or the available right-of-way is less than or equal to 14.0 feet (4.3 m). When an access aisle is not provided, the Electric Vehicle Charging Stations spaces shall be located at the end of the block face to the maximum extent feasible.

**ADVISORY:** EVG-813.2.2 Narrow Sidewalks. At parallel electric vehicle charging stations vehicle lifts or ramps can be deployed on an 8.0 feet (2.4 m) wide sidewalk if there are no obstructions.

### **EVG-813.3 Perpendicular or Angled Electric Vehicle Charging Stations**

Where perpendicular or angled electric vehicle charging stations are provided, an access aisle 8.0 feet (2.4 m) wide minimum shall be provided at street level the full length of the electric vehicle charging station space and shall connect to a pedestrian access route. The access aisle shall comply with EVG-812.3 and shall be marked so as to discourage parking in the access aisle. Two electric vehicles charging stations or one electric vehicle charging stations and one accessible parking space shall be permitted to share a common access aisle.



**Figure EVG-813.3 Perpendicular or Angled Electric Vehicle Charging Stations**

**ADVISORY:** EVG-813.3 Perpendicular or Angled Electric Vehicle Charging Stations Spaces. Perpendicular and angled parking spaces permit the deployment of a van side-lift or ramp.

**EVG-813.4 Curb Ramps or Blended Transitions**

Curb ramps or blended transitions shall connect the access aisle to the pedestrian access route. Curb ramps shall not be located within the access aisle.

**ADVISORY:** EVG-813.4 Curb Ramps or Blended Transitions. At parallel electric vehicle charging stations spaces, curb ramps and blended transitions should be located so that a van side-lift or ramp can be deployed to the sidewalk and the vehicle occupant can transfer to a wheelchair or scooter. Electric vehicle charging station spaces at the end of the block face can be served by curb ramps or blended transitions at the pedestrian street crossing.

**EVG-813.5 Marking**

On-street electric vehicle charging station spaces may be marked with Electric Vehicle Charging Only Lettering in compliance with EVG-812.2.2 Electric Vehicle Charging Only Lettering.

**EVG-814 Electric Vehicle Charging Station Equipment**

**EVG-814.1 Electric Vehicle Charging Station Equipment**

Equipment pedestals and pay stations that serve electric vehicle charging stations shall comply with EVG-814.1.

### **EVG-814.1.1 Location**

Equipment pedestals and pay stations shall comply with EVG-814.1.1.

#### **EVG-814.1.1.1 Parallel Locations**

At parallel electric vehicle charging station spaces, equipment pedestals and pay stations shall be on the immediately adjacent sidewalk or ground surface and located 36 inches maximum from the head end or foot end of the projected length of the space.

#### **EVG-814.1.1.2 Perpendicular or Angled Locations**

At perpendicular or angled Electric Vehicle Charging Station spaces, equipment pedestals and pay stations shall be located on the immediately adjacent sidewalk or ground surface at the head end within the projected width of the electric vehicle charging station space.

**EXCEPTION:** For alterations at existing facilities when an accessible route or general circulation path is not provided adjacent to the head end of the space or access aisle, the equipment pedestal and pay station may be located within the projected width of the access aisle 36 inches maximum from the head end of the space.

**ADVISORY:** EVG-814.1.1 Location. Locating equipment pedestals and pay stations at the head or foot of the electric vehicle charging station permits deployment of a van side-lift or ramp or the vehicle occupant to transfer to a wheelchair or scooter.

### **EVG-814.1.2 Charging Station Equipment Operable Parts**

Operable parts and charging cord stowage locations shall comply with 11B-309 Operable Parts.

### **EVG-814.2 Displays and Information**

Displays and information shall be visible from a point located 3.3 feet (1.0 m) maximum above the center of the clear floor or ground space in front of the equipment pedestal and pay station.

### **EVG-814.3. Charging Station Equipment Clear Floor Space**

Clear floor space at electric vehicle charging stations shall comply with 11B-305 Clear Floor Space and shall be centered on the display and information side of the electric vehicle charging station equipment.



# **Related 2013 California Building Code Chapter 11B Accessibility Regulations**

## **2013 CBC Path of Travel Provisions for Alterations**

### **11B-202.4 Path of Travel Requirements in Alterations, Additions and Structural Repairs**

When alterations or additions are made to existing buildings or facilities, an accessible path of travel to the specific area of alteration or addition shall be provided. The primary accessible path of travel shall include:

1. A primary entrance to the building or facility,
2. Toilet and bathing facilities serving the area,
3. Drinking fountains serving the area,
4. Public telephones serving the area, and
5. Signs.

#### **EXCEPTIONS:**

1. Residential dwelling units shall comply with 11B-233.3.4.2.
2. If the following elements of a path of travel have been constructed or altered in compliance with the accessibility requirements of the 2010 California Building Code, it shall not be required to retrofit such elements to reflect the incremental changes in this code solely because of an alteration to an area served by those elements of the path of travel:
  1. A primary entrance to the building or facility,
  2. Toilet and bathing facilities serving the area,
  3. Drinking fountains serving the area,
  4. Public telephones serving the area, and
  5. Signs.
3. Additions or alterations to meet accessibility requirements consisting of one or more of the following items shall be limited to the actual scope of work of the project and shall not be required to comply with 11B-202.4:
  1. Altering one building entrance.
  2. Altering one existing toilet facility.

3. Altering existing elevators.
  4. Altering existing steps.
  5. Altering existing handrails.
4. Alterations solely for the purpose of barrier removal undertaken pursuant to the requirements of the Americans with Disabilities Act (Public Law 101-336, 28 C.F.R., Section 36.304) or the accessibility requirements of this code as those requirements or regulations now exist or are hereafter amended consisting of one or more of the following items shall be limited to the actual scope of work of the project and shall not be required to comply with 11B-202.4:
1. Installing ramps.
  2. Making curb cuts in sidewalks and entrance.
  3. Repositioning shelves.
  4. Rearranging tables, chairs, vending machines, display racks, and other furniture.
  5. Repositioning telephones.
  6. Adding raised markings on elevator control buttons.
  7. Installing flashing alarm lights.
  8. Widening doors.
  9. Installing offset hinges to widen doorways.
  10. Eliminating a turnstile or providing an alternative accessible route.
  11. Installing accessible door hardware.
  12. Installing grab bars in toilet stalls.
  13. Rearranging toilet partitions to increase maneuvering space.
  14. Insulating lavatory pipes under sinks to prevent burns.
  15. Installing a raised toilet seat.
  16. Installing a full-length bathroom mirror.

17. Repositioning the paper towel dispenser in a bathroom.
  18. Creating designated accessible parking spaces.
  19. Removing high-pile, low-density carpeting.
5. Alterations of existing parking lots by resurfacing and/or restriping shall be limited to the actual scope of work of the project and shall not be required to comply with 11B-202.4.
  6. The addition or replacement of signs and/or identification devices shall be limited to the actual scope of work of the project and shall not be required to comply with 11B-202.4.
  7. Projects consisting only of heating, ventilation, air conditioning, reroofing, electrical work not involving placement of switches and receptacles, cosmetic work that does not affect items regulated by this code, such as painting, equipment not considered to be a part of the architecture of the building or area, such as computer terminals and office equipment shall not be required to comply with 11B-202.4. unless they affect the usability of the building or facility.
  8. When the adjusted construction cost is less than or equal to the current valuation threshold, as defined in Chapter 2, Section 202, the cost of compliance with 11B-202.4 shall be limited to 20 percent of the adjusted construction cost of alterations, structural repairs or additions. When the cost of full compliance with 11B-202.4 would exceed 20 percent, compliance shall be provided to the greatest extent possible without exceeding 20 percent.

When the adjusted construction cost exceeds the current valuation threshold, as defined in Chapter 2, Section 202, and the enforcing agency determines the cost of compliance with 11B-202.4 is an unreasonable hardship, as defined in Chapter 2, Section 202, full compliance with 11B-202.4 shall not be required. Compliance shall be provided by equivalent facilitation or to the greatest extent possible without creating an unreasonable hardship; but in no case shall the cost of compliance be less than 20 percent of the adjusted construction cost of alterations, structural repairs or additions. The details of the finding of unreasonable hardship shall be recorded and entered into the files of the enforcing agency and shall be subject to Chapter 1, Section 1.9.1.5, Special Conditions for Persons with Disabilities Requiring Appeals Action Ratification.

For the purposes of this exception, the adjusted construction cost of alterations, structural repairs or additions shall not include the cost of alterations to path of travel elements required to comply with 11B-202.4.

In choosing which accessible elements to provide, priority should be given to those elements that will provide the greatest access in the following order:

1. An accessible entrance;
2. An accessible route to the altered area;
3. At least one accessible restroom for each sex;
4. Accessible telephones;
5. Accessible drinking fountains; and
6. When possible, additional accessible elements such as parking, storage and alarms.

If an area has been altered without providing an accessible path of travel to that area, and subsequent alterations of that area or a different area on the same path of travel are undertaken within three years of the original alteration, the total cost of alterations to the areas on that path of travel during the preceding three-year period shall be considered in determining whether the cost of making that path of travel accessible is disproportionate.

9. Certain types of privately funded, multistory buildings and facilities were formerly exempt from accessibility requirements above and below the first floor under this code, but as of, April 1, 1994, are no longer exempt due to more restrictive provisions in the federal Americans with Disabilities Act. In alteration projects involving buildings and facilities previously approved and built without elevators, areas above and below the ground floor are subject to the 20-percent disproportionality provisions described in Exception 8, above, even if the value of the project exceeds the valuation threshold in Exception 8. The types of buildings and facilities are:
  1. Office buildings and passenger vehicle service stations of three stories or more and 3,000 or more square feet (279 m<sup>2</sup>) per floor.
  2. Offices of physicians and surgeons.
  3. Shopping centers.
  4. Other buildings and facilities three stories or more and 3,000 or more square feet (279 m<sup>2</sup>) per floor if a reasonable portion of services sought and used by the public is available on the accessible level.

For the general privately funded multistory building exception applicable to new construction and alterations, see Division 11B-206.2.3, Exception 1.

The elevator exception set forth in this section does not obviate or limit in any way the obligation to comply with the other accessibility requirements in this code. For example, floors above or below the accessible ground floor must meet the requirements of this section except for elevator service. If toilet or bathing facilities are provided on a level not served by an elevator, then toilet or bathing facilities must be provided on the accessible ground floor.

## **2013 CBC reference from EVG-814.1.2 Electric Vehicle Charging Stations Pedestals and Pay Stations**

### **11B-309 Operable Parts**

#### **11B-309.1 General**

Operable parts shall comply with 11B-309.

#### **11B-309.2 Clear Floor Space**

A clear floor or ground space complying with 11B-305 shall be provided.

#### **11B-309.3 Height**

Operable parts shall be placed within one or more of the reach ranges specified in 11B-308.

#### **11B-309.4 Operation**

Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.

**EXCEPTION:** Gas pump nozzles shall not be required to provide operable parts that have an activating force of 5 pounds (22.2 N) maximum.

## **Reference from 11B-309 Operable Parts to 11B-305 Clear Floor or Ground Space**

### **11B-305 Clear Floor or Ground Space**

#### **11B-305.1 General**

Clear floor or ground space shall comply with 11B-305.

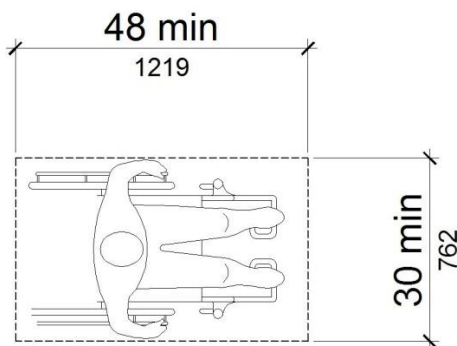
#### **11B-305.2 Floor or Ground Surfaces**

Floor or ground surfaces of a clear floor or ground space shall comply with 11B-302. Changes in level are not permitted.

**EXCEPTION:** Slopes not steeper than 1:48 shall be permitted.

### **11B-305.3 Size**

The clear floor or ground space shall be 30 inches (762 mm) minimum by 48 inches (1219 mm) minimum.



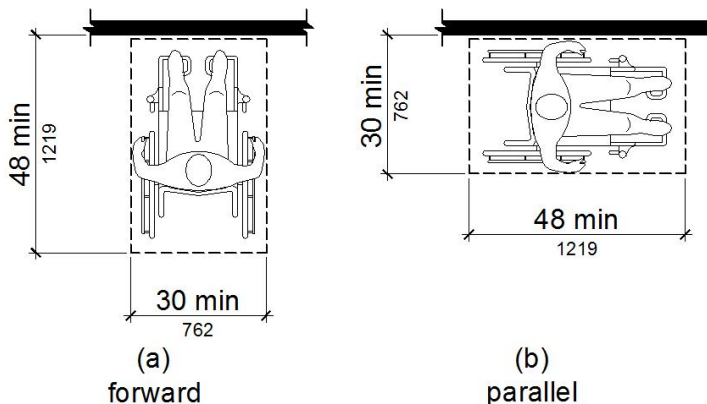
**Figure 11B-305.3**  
**Clear Floor or Ground Space**

### **11B-305.4 Knee and Toe Clearance**

Unless otherwise specified, clear floor or ground space shall be permitted to include knee and toe clearance complying with 11B-306.

### **11B-305.5 Position**

Unless otherwise specified, clear floor or ground space shall be positioned for either forward or parallel approach to an element.



**Figure 11B-305.5**  
**Position of Clear Floor or Ground Space**

### **11B-305.6 Approach**

One full unobstructed side of the clear floor or ground space shall adjoin an accessible route or adjoin another clear floor or ground space.

**Reference from 11B-305 Clear Floor or Ground Space to 11B-302 Floor or Ground Surfaces**

**11B-302 Floor or Ground Surfaces**

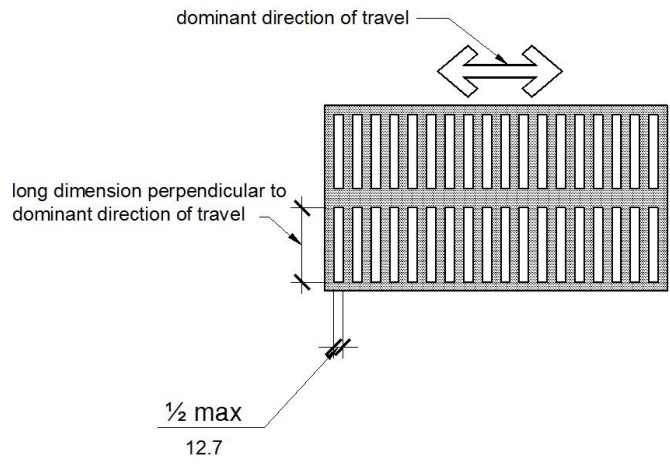
**11B-302.1 General**

Floor and ground surfaces shall be stable, firm, and slip resistant and shall comply with 11B-302.

**EXCEPTIONS:** 1. Within . . .

**11B-302.3 Openings**

Openings in floor or ground surfaces shall not allow passage of a sphere more than 1/2 inch (12.7 mm) diameter except as allowed in 11B-407.4.3, 11B-409.4.3, 11B-410.4, 11B-810.5.3 and 11B-810.10. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.



**Figure 11B-302.3  
Elongated Openings in Floor or Ground Surfaces**

**Reference from 11B-707 Automatic Teller Machine, and Fare Machines and Point-of-Sale Devices**

**11B-707.1 General.**

Automatic teller machines and fare machines shall comply with 11B-707.