






# Advanced Fuels and Transportation

## In-Home Charging Station Guide

With 43 models of electric vehicles (EV) available today,[1] eleven of which can go more than 200 miles on a charge, it makes sense for owners to think about installing high-speed charging equipment at home and at their businesses. At-home Level 2 charging stations come with a premium price tag, but if you charge daily it can save money in the long run.[2] And installing chargers on a commercial property can provide revenue and attract new customers while lowering commute costs for employees with EVs.

### 1 What type of charging station should I install?

There are three types of electric vehicle charging stations on the market, but most EV owners end up installing a Level 2 charging station. Level 2 chargers are much faster than Level 1 chargers, and high voltage Level 3 chargers can get you charged up in a matter of minutes, but are quite pricey.

LEVEL 1	LEVEL 2	LEVEL 3
		
120 V, 12-16 A 2-5 miles range/hr \$500-700	208/240 V, up to 80A 10-20 miles range/hr \$1,000-\$7,000	208-600 V (DC), up to 200A 60-80 miles range/hr \$20k-\$100k
Home	Home/Workplace/Business	Business/Highway Corridor

### 2 What are the permitting requirements?

**First**, determine your property's jurisdiction and contact the relevant permitting department for specific requirements. Jurisdiction-specific guides can be found on RCEA's website.

**Next**, get a quote from a qualified electrical contractor. The contractor will help you determine your electrical panel capacity, placement of electrical service, and options for installation. Multiple bids are a good idea.

**Look for rebates** on charging equipment. Your utility and local or state agencies are good places to start.

**Finally**, have the contractor install the equipment and arrange a final inspection with the jurisdiction's code enforcement officer.

**As an extra step**, contact PG&E to discuss your rate schedule and determine if switching to one of their specialized rates for EV owners could save you money.

### 3 What brand of charging equipment should I get?

There are currently more than 50 companies providing EV charging station equipment and services to American customers. Some sell the hardware that actually charges the EVs, others have created software platforms to help manage chargers and shift load to off-peak times, and others don't build anything themselves but instead walk customers through the entire process, from picking a site to letting drivers pay with a mobile app. Look inside this handout for a list of many current EV vendors and what they offer.

### 4 Who can install charging stations?

**Level 1** stations simply require you to plug your car into a standard 120 V wall outlet.

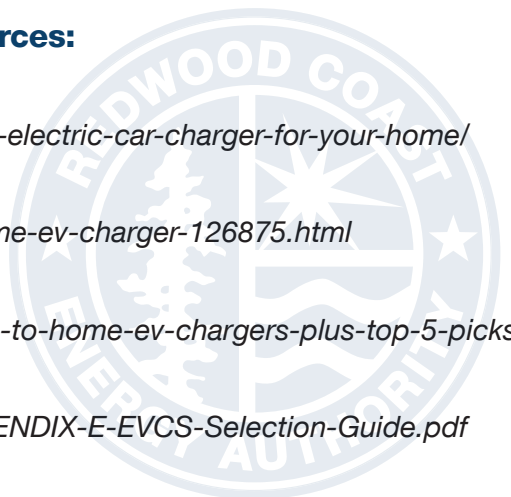
**Level 2** chargers require extra electrical work to be done by an electrician. Like a dryer, Level 2 chargers require 240 V of electricity and a special circuit breaker to prevent damage to your electrical system.

**For Level 3** chargers, the electrical demands are even greater, and more electrical work is required to determine if the grid can support such a large energy load. Due to their high costs of installation and operation, Level 3 chargers are generally installed along highway corridors or at highly-trafficked business locations, not at home.



**This newsletter is just an introduction to EV charging.  
For a more in-depth understanding, visit these resources:**

- **What's the Right Electric-Car Charger for Your Home?**  
<https://www.consumerreports.org/hybrids-evs/whats-the-right-electric-car-charger-for-your-home/>
- **Buying Your First Home EV Charger**  
<https://www.plugincars.com/quick-guide-buying-your-first-home-ev-charger-126875.html>
- **The Ultimate Buyer's Guide to Home EV Chargers**  
<https://insideevs.com/news/341500/the-ultimate-buyers-guide-to-home-ev-chargers-plus-top-5-picks/>
- **RCEA's Electric Vehicle Charger Selection Guide**  
<https://redwoodenergy.org/wp-content/uploads/2018/01/APPENDIX-E-EVCS-Selection-Guide.pdf>





























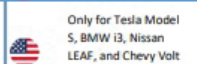






















[1] <https://evadoption.com/ev-models/>

[2] <https://www.edmunds.com/fuel-economy/the-true-cost-of-powering-an-electric-car.html>

# Electric Vehicle Charging Station (EVCS) Vendors

With so many EVCS companies in the space, it can be hard to keep track of who does what. The chart below provides an overview of the EVCS space as it stands today and will help you find the charging station and company that are right for you.

Keep in mind that for home installations, simpler is often better. But if you're considering a commercial installation, it might be helpful to choose a company that allows for more features, such as a web portal and pricing control.

Vendor	Categories	Vendor	Categories	Vendor	Categories	Vendor	Categories
ABB		Electrify America		Kitu Systems		Tellus Power Inc.	
ABM		eMotorWerks		Leviton		Tritium	
AddEnergie Technologies		EV Box		Liberty Plug-Ins		U-Go	
Andromeda Power LLC		EV Connect		MOEV, Inc.		Verdek	
Blink		EverCharge		National Car Charging		Video Voice Data Communications	
Bosch		EVgo		OPConnect		Volta	
BTCPower		EVoCharge		Plugless Power		Wattzilla	
Charge Bliss		EVSE LLC		PowerCharge		Webasto	
ChargePoint		FLO		Schneider		Wirelane	
Clipper Creek		Go Electric Stations SRLS		SemaConnect		Zero-Impact Solutions	
Driivz		Greenlots		Shell New Energies			
EDF Renewables		Juice Bar		Shorepower Technologies			
Efacec		KEBA		Siemens			

**Please contact us with your questions**












**REDWOOD COAST**  
**EnergyAuthority**

**Redwood Coast Energy Authority**  
633 3rd Street, Eureka, CA 95501 • (707) 269-1700  
[RedwoodEnergy.org](http://RedwoodEnergy.org) • [ev@RedwoodEnergy.org](mailto:ev@RedwoodEnergy.org)



# EVCS Vendor Overview Key

DC Fast Charger Vendor		This vendor sells DC Fast Chargers as well as Level 2 chargers. DC Fast Chargers can fully charge most Battery Electric Vehicles in 20-60 minutes but are more expensive to install and operate.
Turnkey Service Provider		This company provides turnkey services, meaning they will assist customers with every step of the process of installing home or commercial chargers. This could include assistance with services like site assessments, charger model selection, site permitting, on-site installation by electricians or certified installers, staff training on charger operation, station monitoring and reporting, billing, maintenance, and marketing.
OCPP Compliant		The EV Charging Stations sold by this vendor are compliant with Open Charge Point Protocol, or OCPP. OCPP is an internationally recognized initiative meant to create an open application protocol allowing hardware and network management software from different EVCS vendors to communicate with each other. This cross-vendor compatibility allows customers to mix and match their providers and thereby optimize cost and continue to operate their EV charging stations even as vendors change.
Network Capable		This vendor sells charging stations that can be connected to a network for monitoring, billing, and other features.
Network Only Provider		This company does not sell EV charging station hardware. Instead, they install their own network management software onto hardware from other vendors and then use that software to manage station use and provide other network services.
App Enabled		This vendor sells charging stations that can be connected to cell phone applications to allow charging station monitoring for station owners, as well as station locating and session starting/payment for station users.
Credit Card Enabled		This vendor sells charging stations that allow users to pay with most major credit cards.
RFID Enabled		This vendor sells charging stations that have RFID-reading capabilities, for use as a payment option or to restrict access to the charger by requiring an RFID card in order to charge.
United States-based		This company is headquartered in the United States and primarily serves the US market.