

EV Charging System Needs Analysis

What features do I need on my charging station?

	<u>What is it?</u>	<u>Why do I want it or need it?</u>	<u>For Commercial Installations</u>
Level 1	120V @ 16Amps. Level 1 charging is the slowest method of charging, and it can be powered by standard home current. It will take at least 8 to 12 hours to completely charge the average electric vehicle. Figure one hour for each kilowatt hour of energy storage.	If you use your EV less than 35 miles a day, and you charge up each night at home, this may be all you need. A partial charge of 5 KW will only take about 5 hours. Be sure that your EV can charge with 120 volts (level 1) since some of the new EV's are made to charge only on 240 volts (level 2).	Not recommended as a standalone, but should be considered if you already have a level 2 station installed.
Level 2	240V @ 32Amps. Level 2 charging uses 240 volts, which will be available in most homes. If your home has electric heat or an electric oven or range you will have 240 volts available. If you do not have 240 volts already in your home be sure to find out about the expense of having it installed by your local electrician.	Your new EV may require level 2 (240 Volt) charging. Level 2 charging will take only half as long to charge your vehicle as level 1. Most users will have level 2 charging.	Level 2 is recommended with level 3 for some applications as it becomes available.
Level 3	480V @ 100Amps. This is the "Fast Charge" option, and complete charging can be done in about 20 minutes (possibly less depending on what the manufacturer claims).	This is not recommended for typical home installation due to safety and cost issues.	Recommended for applications where very fast charging is required (filling stations, highway rest stops, some resort locations, etc.) It is the most expensive to install but offers the fastest charge available, getting down to 10 to 20 minutes in some cases.
Dual Mode Charging (120V & 240V)	120V & 240V Simultaneous and consistent charging	This can be useful if you may change vehicles and/or charge different vehicles in the future.	240v (Level 2) or Level 3 will be most popular at most commercial stations, not a lot of 120v needs due to the longer charging times.
Indoor use or outdoor use	Indoor chargers are less expensive. Outdoor chargers are weatherproof but the charger and the installation will be more expensive.	Ensure that indoor chargers are installed where they will not be in the way of foot traffic and cord will also be safe.	Review access and expected use before selecting the charging station. A plain 'black box' may not be suitable for a space in front of your main entrance but fine in the underground parking lot.
Commercially Available	There are many new charging stations now announced. Ensure that the manufacturer does actually have units installed and ask for references that you can call and verify claims.	Do not trust a slick web site on this. There are a lot of claims out there that must be verified.	Consumer Reports has not yet tested charging stations. Be cautious of manufacturer claims or other claims that may be biased.
Safety and Compliance Standards	User Authentication to obtain access to EVSE. Meets all NEC, SAE, and UL standards currently listed. Utility Grade Meters in ALL stations. Built in GFCI Automatic Re-closure after 2 minutes	For the private consumer home installation, it is probably best to ensure that the product is UL listed.	For commercial customers, a unit with a utility grade meter is important, especially if customers may be charged for access or electricity.

Liability Issues	Primarily a commercial consideration, but should be considered at home if others will be using the chargers.	Not a major concern in most cases.	Does the unit have adequate protection by GFI and the ability to remotely notify the owner of a circuit breach, vandalism or malfunction.
Data Management Reporting	Tracks GHG and Fuel savings, Allows Fleet Managers to track vehicle usage and real time charging status, generate station usage reports,	Not as important for private consumers.	Evaluate your fleet needs for data collection. Consider possible Federal incentives for Green House Gas reduction.
Networking	Is the product wireless and accessible via internet or cellphone? Can the unit software be upgraded remotely?	Can you access the unit by internet or phone to notify you of any problems or when your vehicle is completely charged?	Can you monitor multiple units in your installations for problems, usage, etc.?
Ground Fault Protection	The unit should be ground Fault protected, and should shut off power in the event of high current draw or short circuit.	Do you want a home unit with automatic restart or not? Nice to have but not critical for home use.	Can the unit be restarted by remote (wireless) control? This can be very important if you do not have personnel located close to the unit at all times.
Sales Forces	Many suppliers have local sales representatives. Others may have different marketing channels including Internet sales.	You will need a local electrician to install the unit in your home. You may not require a local sales agent.	Commercial customer may require more support including site review and consultation with a local sales agent.
Payment Collection	Can billing be handled through an automatic billing process? (Allows station owners to pay for access to stations.) Revenue generating stations that allow for solid business ventures with viable business models. Multiple forms of payment may include Credit Card via phone or contactless swipe.	Not really applicable for private owners.	This could be an important consideration for commercial buyers. Consider future business considerations.
Driver Benefits	Drivers access their account from anywhere in the world. iPhone App is available. Blackberry and other smart phone applications are in development. Can you search for stations along planned route, destined locations, and request stations at frequented locations. Alerts when vehicle is fully charged, stopped charging, or when time has expired (if time restrictions on parking space). These are added features of having a networked charging station.	Many charging units now have some or all of these features. Range anxiety is much reduced if you can access information on where you can pick up a charge on your vehicle, which hotels, restaurants, etc. have charging stations and are they in use?	These features may be as important to fleet owners as they are to other commercial locations. For hotels and restaurants and other destination charging this may be a significant feature.