Good Questions to Ask EV Charging Equipment Vendors

- Developers and Property Managers can use these sample questions for electric vehicle (EV) charging equipment vendors to better understand if the vendor has an appropriate solution for their projects.
- This fact sheet also provides real-world examples of successful EV charging installations in the San Francisco Bay Area.

Getting Up to Speed

This fact sheet assumes you're familiar with EV Supply Equipment (EVSE) and have at least a preliminary scope of work for your EV infrastructure (EVI). If you need technical support to develop an EVI scope for your project, the EV Charge SF program's Technical Assistance team is here to support enrolled projects. Review these other fact sheets on the EV Charge SF website to get up to speed with EVSE and EVI:

- EV Charging Level Options and Considerations
- EV Charging Equipment Ownership, Management, and Billing

EVSE Vendor Questions

The type of EV charging equipment and the needed service in the EVI scope will largely determine which EVSE vendor(s) can meet your project's needs. Your scope may include a mix of equipment (EV outlets and/or EV chargers) with different charging levels (Level 1, Low Power Level 2, Level 2, and DCFC) to meet your tenants' needs. Network software (if required for billing and tracking users, reporting usage, etc.) may be procured from the same - or different - vendor as the hardware. Vendor offerings continue to evolve as the EV industry grows. Asking the right questions will help you select the best-aligned vendor or vendors to meet your requirements.

Vendor Product Lines
a) **Does the vendor supply all the equipment in the site's scope of work?** You may need more than one vendor depending on the specifics of your project.
b) **If your project requires an "Automatic Load Management System" (ALMS), does the vendor offer an appropriate solution?** An ALMS lets you maximize the number of electrified parking stalls by fully utilizing the available electric capacity. Costs for an ALMS are typically included in monthly subscription fees, as well as being a part of the upfront cost of the hardware. Some EVSE vendors offer different pricing tiers, with ALMS only being included in their highest rate tier.

Cords and Connectors

a) **Does the vendor offer dual and single port (i.e., dual and single connector) EV charger options?**
While charging stations with two or more connectors are more expensive than single connector charging stations, installing a "dual port" EV charger between two parking spaces can take up less space and reduce installation costs due to reduced trenching, conduit, and wiring.

b) **What types of ports does the EV charger have and does the vendor offer adapters for different types of ports? Do the EV chargers come with the option of NACS connectors or adapters?**
The SAE J1772 ("J-plug") and Combined Charging System (CCS) are the current EV charger connectors which most EVs manufactured in North America are designed for. However, a growing list of EV manufacturers have announced they will begin designing for the SAE J3400 port, which is based on Tesla's "North American Charging Standard" (NACS) design, on their EVs in coming years. It is important to ensure that your vendor can support the needs of the future users, assuming most future EVs will utilize the J3400/NACS connector type.

c) **Does the EV charger come with cord management options like retractable cords? If not, what is the additional price per unit for this?**

d) **How does cord length impact pricing?**
While typical cord lengths are ~18', some parking configurations could need a longer cord. Though more expensive, the cord could improve accessibility and users' satisfaction.

Payment

a) **If the scope includes "Smart" (network connected) EVSE with user payment to access the EVSE, how does the EVSE accept payment?**
- **Can the EV driver pay for the charging session via a smartphone app, on the EVSE itself (via credit card insert, tap, and/or swipe), and/or with an RFID fob?**
- **How easy is it for the Property Manager to set the fee schedule for all payment options and methods?**
- **How does the EVSE display pricing/fees?**

Shared EVSE in California charging a fee require a physical payment method like a credit card reader. Be aware that payment options and other factors may require the EVSE to meet National Institute of Standards and Technology (NIST) and/or California Type Evaluation Program (CTEP) requirements.

User Experience

a) **What is the EV driver's experience with the EVSE like?**
- **What is the user experience like at the EVSE and within the digital format (e.g., the EVSE's related smart phone app and/or mobile website)?**
- **How does the EVSE handle EV drivers' expectation of the state of their EV battery's charge when they depart?**
- **Is a queue feature available, with charging scheduled to optimally meet both the driver's and operational cost needs?**

Maintenance and Networking

a) **How will you be able to tell if the EVSE goes "off-line", i.e., that it is in a "fault" state?**

b) **For "Smart" EVSE: What remote monitoring capabilities are available to track usage, status, revenue, faults, and maintenance issues?**

"Smart" EVSE gives you remote monitoring and other software features, but requires a monthly fee to a vendor, while "non-smart" (non-networked) EVSE lacks remote monitoring but doesn't require monthly vendor subscription fees.

c) **How is EVSE maintenance handled and what warranties does the vendor offer?**
- **If they offer a warranty, what is covered and for how long?**
- **Do warranty options vary by EVSE model?**
- **Who will be responsible for managing warranty or non-warranty work?**
- **Can components of the EVSE be repaired/replaced or does the whole unit need to be swapped out when there are hardware issues?**
- **Can the building's on-site maintenance staff be trained to repair or replace the EVSE? Will that impact the warranties?**

d) **If you are not happy with the EVSE software provider, does the EVSE allow you to switch to a different EVSE software provider in the future?**

EVSE that is "Open Charge Point Protocol" (OCPP) compliant should give you the option of switching to another OCPP compliant EVSE software provider, similar to how you can keep your smartphone when switching carriers.

Important Specs and Branding

a) **What compliance certifications does the vendor's EVSE have? Are the vendor's products certified to meet relevant safety standards by a nationally recognized testing laboratory?**

The American National Standards Institute (ANSI) and Underwriters Laboratories (UL) have defined three main product safety standards for EVSE: ANSI/UL 2202 (for DCFC), ANSI/UL 2594 (for Level 2), and UL 9741 (for bidirectional charging). Any nationally recognized testing laboratory (NRTL) can confirm compliance with these standards. Other certifications are required for certain projects, such as the California Department of Food and Agriculture, Division of Measurement Standards certification for meter accuracy on equipment that will be used for energy-derived user fees.

b) **Can the product line be exposed to harsh weather (rain, extreme temperatures, and/or sunlight) or does it require protection?**

Electrical equipment that can withstand harsh environments have a National Electrical Manufacturers Association (NEMA) "outdoor rating" of 3R or better.

c) **What are the vendor's privacy and data standards and security policies?**
- **If the EVSE is connected to cloud-based computing systems, does it comply with SOC-2 (Systems and Organizations Controls 2), a set of standards for protecting customer data in the cloud?**
- **If the EVSE is collecting credit card payments, does it comply with Payment Card Industry (PCI) standards, which are mandated by credit card companies to help ensure the security of credit card transactions?**

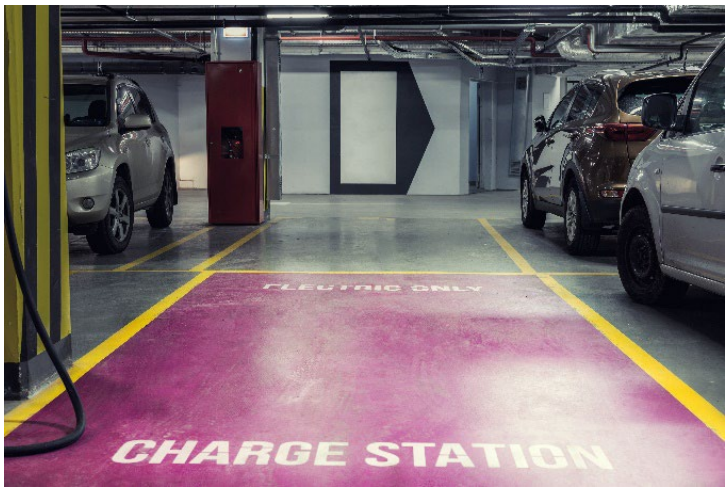
d) **Does the vendor enable adding your brand and/or customizing the chargers?**
- **Can you put your organization's (or company's) branding on the EVSE?**
- **Does the EVSE have a large digital display where you could display user information and/or advertising?**

e) **What safeguards from vandalism or theft prevention features does the EVSE have?**

Case Studies

Check out the EV Charge SF website for case studies on real estate developers' experience installing EVSE in a new construction condominium project and an affordable housing project with support from the EV Charge SF program. Here are some summaries of other real-world EVSE installations in the San Francisco Bay Area.

DISCLAIMER: The EV Charge SF program is vendor-agnostic. Any mention of a specific product used in a case study should not be seen as an endorsement by the program.



Case study #1: EV Charging in Hospital Parking Garage

Type of Building	Existing hospital parking garage (staff and visitor)
# of Existing Parking Spaces	1,080 (485 visitor, 595 staff)
Goal	Meet current EV charging needs of visitors (typical dwell times of 1-4 hours) and staff (typical dwell times 8-12 hours) and prepare for future EV charging needs
Existing EVSE	None
EVSE Installed	15 Level 2 chargers
Make & Model	ChargePoint CT4000 Level 2 Commercial Charging Station
Features	• "Smart" (network connected) • OCPP compliant • Bollard mount (self-supporting pedestal mount) • Electrical output: 30A, 7.2KW at 240V • SAE J1772 ("J-plug") connectors • 18' cables • RFID fob, tap-to-pay, and smartphone app payment options • Outdoor rating NEMA 3R
New Electric Vehicle Infrastructure (EVI) Installed	• New 225KVA, 480-120/208V, 3-phase transformer • New 600A, 208/120V, 3-phase, 4W, panelboard with 2 sections
EV Capable (future-proofed spaces with panel capacity, conduit, and wiring)	7 Level 2 spaces
ADA Compliant	2 EV Ready (1 Van Accessible, 1 Standard Accessible)
EVSE Load Management	Automatic Load Management System (ALMS)

Case study #2: EV Charging in a Commercial Office Building Garage

Type of Building	Existing commercial/office building
# of Existing Parking Spaces	126 multi-level parking spots • Basement parking with two distinct floors • 66 parking stalls that are private Monday-Friday and available to the public Saturday-Sunday • The rest of the parking spaces are available to building staff, visitors, and the public daily
Goal	Meet current EV charging needs plus some futureproofing
Existing EVSE	5 Level 2 chargers (2 chargers in ADA compliant spaces)
EVSE Installed	10 Level 2 chargers
Make & Model	SemaConnect by Blink Charging Series 6 Smart EV Charging Station
Features	• "Smart" (network connected) • Pedestal-mounted • Electrical output: 30A, 7.2KW at 240V • OCPP compliant • SAE J1772 ("J-plug") connector • 18' cables • RFID fob, tap-to-pay, and smartphone app payment options • Outdoor rating NEMA 3R
New Electric Vehicle Infrastructure (EVI) Installed	None (used existing panel)
EV Capable (future-proofed spaces with panel capacity, conduit, and wiring)	2 Level 2 spaces
ADA Compliant	No additional ADA compliant spaces required because of existing ADA compliant spaces
EVSE Load Management	Automatic Load Management System (ALMS)

Questions?

Contact: **San Francisco Public Utilities Commission at** (415) 554-0773 or email PowerPrograms@sfwater.org

For more information about SFPUC's **EV Charge SF program**, please visit our program website.

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