

6. PUBLIC ACCESS AND COMMERCIAL CHARGING INSTALLATIONS

The public access charging network is growing steadily. Currently there are 38 inductive and 17 conductive public charging sites in PG&E's service territory (see Appendix A). This chapter includes information specific to the installation of public access charging facilities.

A. Local Codes and Regulations

Some municipalities require a certain number of EV charging spaces at some public parking areas. These requirements may also specify the types of spaces to provide, such as disabled, most convenient, or covered parking.

B. Payment of Charging Services

Organizations interested in providing public EV charging must decide whether or not they will charge users to charge their EVs. Some commercial developers are not charging usage fees in an effort to attract customers. Other retail businesses are providing EV charging as a free service to patrons. However, since most public charging will occur during peak demand periods when the cost of electricity is highest, some form of billing system will eventually be required. Currently, credit cards, debit cards, and prepaid value cards are being evaluated to serve as point-of-sale and payment systems. When a viable payment system is available, EVSE suppliers will probably integrate the payment system with the EVSE.

C. Types of Chargers and Level of Charging

As mentioned in earlier chapters, the facility owner will need to decide which type of charging system to install: inductive, conductive, or both. Of course, this will be determined by the vehicles purchased. As in fleet facilities, public charging facilities currently offer Level 2 charging, which takes 3 to 6 hours to completely charge an EV battery pack, depending on the type and capacity of battery used. Level 2 charging is provided with both inductive and conductive connectors to serve all vehicles in the area.

It is anticipated that in the future, many public facilities will offer Level 3 charging so that their patrons can take full advantage of quick opportunity charging.

D. EVSE Siting Decisions

EVSE siting is especially important in public sites and can significantly affect the cost of the installation. There are many siting considerations relating to costs, safety, and aesthetics. These include:

- *Public Safety:* Chargers should be sited away from traffic and other hazards. Adequate lighting should be provided for security.
- *Convenience:* Chargers should be located conveniently near the main building or facility.

- *Proximity to Utility Equipment:* Siting charge stations near the electric utility's feeder lines or transformers may reduce installation costs.
- *Cable Management:* To avoid injury from tripping over cables, cords and cables should not cross sidewalks or pedestrian traffic patterns, and should be installed with the EV user's convenience in mind. Cable retractors should be considered for permanently wired cables.
- *Potential Hazards:* Ensure that EV charging spaces are not located near potential hazards. EVSE should not be installed near explosive material; flammable vapors, liquids and gases; combustible dust or fibers; and materials which ignite spontaneously on contact with air. NEC Articles 500 to 516 describe equipment and procedures for installation of electrical systems in hazardous locations. If charge stands are installed in an enclosed area, check ventilation requirements.
- *Curbs, Wheel Stops, and Setbacks:* Curbs, wheel stops, and setbacks should be provided so that EVs or other vehicles cannot inadvertently drive into the EVSE. When installing curbs, wheel stops, and setbacks, consider ease of access to the charger, mobility of users and foot traffic in the area.
- *Signs and Visibility:* The electrical codes require special signs for EVSE (see Figure 7.2). Signs may also be needed to designate parking spaces for EV-use only. These signs should be positioned high enough to be seen over parked vehicles.
- *Disabled Access:* See Chapter 3 for more details on disabled access and ADA compliance.

E. Electrical Service Adequacy

As with fleet facilities, the public site owner must determine whether the electrical service is sufficient to provide for EV charging. PG&E can help assess the current capacity and needed equipment upgrades. In public charging, the facility owner should also plan for the introduction of Level 3 charging and its related electrical demands.

F. Electric Rates

Property owners should discuss the impact of EV charging on rates with a PG&E representative.

G. Prevention of Vandalism

If the EVSE is situated in an outdoor parking lot, it should be sited to minimize the risk of vandalism. This includes consideration of lighting, alarms, traffic through the area, visibility from the security gate or desk, and fencing or enclosures.

H. Lighting

Public charge stations should have enough lighting to create an attractive environment and to provide safety for late-night charging. Lighting will vary according to the needs of the site and local ordinances. In all cases, lighting should promote security of EV drivers, EVs, and EVSE; safe operation of the charging equipment; and the attractiveness of the environment.

I. Creating the Site Plan

Similar to other types of installations, a site plan for engineering review and approval should be developed. A siting plan is necessary for a building permit, which is required for charger installation.

J. Installation Costs

The costs of installing EVSE will vary from site to site. The cost table in the previous chapter provides sample costs for reference only and is applicable to public access installations. Not all costs will apply to all sites.

K. Checklist for Public Access and Commercial Charging Installations

1. Investigate local requirements for EV charging, including number of spaces required, types of spaces (disabled, “most convenient,” covered parking, etc.). Also, determine whether the local jurisdiction, electric utility, or EV/EVSE manufacturer has any special requirements.
2. Determine number of spaces to add public-access EVSE.
3. Decide what levels of charging to install.
4. Estimate electrical load.
5. Contact PG&E to discuss adequacy of utility feeder line, equipment, impact of charging load on electric rates, and proper siting of new utility equipment.
6. Select an electrical contractor and ensure that the contractor's license for electrical work is current.
7. Develop a site plan, including location of hazardous materials; wiring diagrams; traffic flow, parking and landscaping drawings; lists of materials; and ventilation diagram (if ventilation is required).
8. Apply for a building permit. Do not begin installation until the permit is issued.
9. Install EVSE (and ventilation, if required).
10. Notify building department that the installation is ready for inspection.
11. Discuss insurance coverage with an insurance agent.

The following flowchart illustrates the process of installing EVSE infrastructure at public access locations.

