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Siting Plug-in Electric Vehicle Charging

There are a number of factors to consider for siting charging equipment – including connecting with the electrical power, ensuring available electrical capacity and integrating into existing site structures, as well as environment, safety and accessibility considerations. Some of these factors are listed below, but site hosts are strongly encouraged to consult with licensed contractors or electricians who are experienced and trained for installation of electric vehicle supply equipment (EVSE). This professional experience and qualification is particularly important in charging locations that will serve the general public; sites are unique and can have a number of different installation plans to lower costs, improve usability and reduce potential hazards.

Key Considerations:

Visibility and Lighting:

Charging stations should be located in areas with high visibility and foot and vehicle traffic to make them easy to find and less prone to vandalism. Well-lit areas also enhance safety and improve user operation. Refer to your jurisdiction's codes and standards for illumination requirements.

Proximity to Power Source:

By minimizing the charging stations' distance to the electrical panel or transformer, you will save money and encounter fewer barriers.

Surroundings:

Minimize disruption of your surroundings. For example, avoid installation under trees or in areas requiring trenching or landscaping.

Parking Space Size:

Provide spaces that are large and long enough to: prevent damage to equipment from vehicle impact; enable easy maneuvering; and prevent cord damage. A 3-foot by 3-foot space around the charging station is optimal. Ensure local zoning requirements are met.

Weather and Climate:

Be sure you select equipment rated for outdoor use – and use outlets with weatherproof coverings – when installing EVSE outside or under partially covered areas (i.e. under car ports). Also, be sure to install EVSE in well-drained locations – avoiding standing water, areas subject to rising sea levels, or areas prone to salt-water erosion. The National Electrical Code requires a ground fault circuit interrupter for outdoor AC Level-1 charging installations.

Selecting the Right Contractor Matters

Licensed
Ensure your contractor is a licensed electrician, in good standing.

Certified
Check to see if the manufacturer of your selected charging equipment (or vehicle) recommends using an electrician that has been certified to install its brand of EVSE. Some manufacturers offer a list of contractors who have met their criteria and understand how to assemble, install and connect the charging station to the network (if applicable).

Experienced
Select an electrician experienced with electric vehicle charging equipment installations. A contractor with prior experience (particularly at public venues), will often be able keep costs down by identifying creative siting solutions. They should also know what to look for and avoid in terms of tripping hazards and optimally locating charging equipment.

Permitting and Inspections
Be sure that your contractor pulls the appropriate permit(s) for the job and arranges for inspection. This process helps to ensure your job has been done safely and is up to code – not something to be taken lightly.

Electrical Safety:

The best way to ensure safety is to choose an experienced and licensed electrician; select equipment approved for use by the Underwriters Laboratory (UL) or similar nationally-recognized, independent lab; follow the manufacturer's operating instructions; and ensure all appropriate permits are pulled and inspections conducted.

Cord Safety:

Minimize the risk of injury to the user and pedestrians by installing charging stations such that cords do not hinder walking paths, providing hooks or brackets for cord storage, and ensuring cords are the appropriate length – no longer than 25 feet.

Ventilation:

Refer to operating manuals and equipment labeling to determine ventilation requirements for indoor charging. While most batteries used in plug-in electric vehicles emit no hydrogen gas in dangerous quantities, some do require ventilation. Section 625.29(D) of the National Electric Code (NEC) has requirements for ventilation for single and multiple vehicles and Section 625.15(B)&(C) provides ventilation-labeling requirements for EVSE.

Orientation of Charging Equipment within the Parking Space:

Locating charging stations in proximity to the parking space is determined by the parking type (pull-in or parallel), parking aisles and pedestrian facilities. Charging inlets are on the front or side of most vehicles and the EVSE must be within easy reach. For pull-in spaces, install equipment at the front – either centered or between two pull-in parking spaces. For parallel-parked vehicles, EVSE should be installed in the front third of the spot, based on the direction of traffic flow.

Mounting:

Mounting options for charging infrastructure include: floor or ground with a post or pedestal; wall-mounted units; existing poles, columns and posts; and overhead units that can help prevent tripping on cords. Using existing walls and poles is less expensive than installing a new post or pedestal.

Protective Barriers:

Ensure charging stations are protected from vehicle collision without presenting a tripping hazard. Protective barriers may include wheel stops, bollards, curb protection or wall-mounted barriers for wall-mounted EVSE.

ADA Accessibility:

Ensure public charging meets accessibility requirements. For example, suitable sites for persons with disabilities should be firm, level and smooth, and in close proximity to the building entrance. Disabled persons may need additional room to maneuver, and care should be taken to avoid barriers that present challenges.

Signage:

Recognizable and readable signs to locate, identify and provide charging station rules (i.e. time limits and costs) are critical for public-charging locations. It is best to check with the Manual on Uniform Traffic Control Devices, the Federal Highway Administration, and the Florida Department of Agriculture and Consumer Services for the latest standards.

Maintenance:

While there are few EVSE maintenance requirements, site operators should store cords to prevent damage, check parts periodically for wear and vandalism, keep the charging station clean, and hire a qualified electrician for periodic inspection, testing, and preventative maintenance.

Questions? For additional information and resources on vehicle siting, please visit:
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Email: Help@DriveElectricFlorida.org | electric-vehicles@FPL.com