



Public Charging: Priorities, Characteristics and Considerations

While the majority of plug-in electric vehicle (PEV) charging happens overnight at home, strategically placed public charging infrastructure will support the long-term success of PEVs.

Prioritizing Public Charging – By Venue Type

High Priority

- » **Workplace charging:** The workplace can serve as a primary charging location for those who can't charge at home, in addition to serving those with lengthy commutes.
- » **Destination venues and major attractions:** Destinations like sporting arenas, airports, beaches and regional shopping malls bring visitors and employees from near and far, making charging infrastructure necessary for battery electric vehicles (BEVs) that rely solely on electric power – and need the charge to return home.
- » **Along major arteries and corridors:** Charging infrastructure at and along highways, including rest areas, service plazas, restaurants and truck stops serve drivers traveling outside their PEV's range. This makes city-to-city travel possible for BEVs and extends plug-in hybrid electric vehicle (PHEV) electric range.

Varied Priority

- » **Government locations:** Locations like local libraries, courthouses and mass transit facilities are similar to other public locations. The importance of public charging at these locations depends upon whether they are regional destinations or serve a more locally-based population.

Lower Priority

- » **Local establishments:** Retail and dining areas often serve locals who do not necessarily need to charge their vehicle, but who may "top off" – also known as opportunity charging. Charging at local destinations can attract customers and encourage them to stay longer and spend more.

Guidance on Charging Levels, Ownership and Fees

- » **Charging level:** Charging speed should be matched with user needs. Low mileage and long parking durations can be met by AC Level-1 charging; Level-2 and DC-Fast Charging (DCFC) are suitable for longer mileage and shorter parking durations.
- » **Ownership/funding models:** There are a number of models today for who owns, operates and assumes the expenses of public charging stations – (1) owned and operated by the site host; (2) a third-party electric vehicle service provider (EVSP), which assumes all installation and maintenance costs and charges a fee to users; and (3) government grants and funding.
- » **Fee structures:** Some locations may offer free PEV charging to attract and retain customers, or as an employee benefit. Other site hosts charge a fee for PEV charging – a time-based and/or kilowatt-hour (kWh) fee. Time-based fees help ensure users will move their vehicle when the battery is charged, rather than leaving it parked for long durations, beyond what's needed to charge the vehicle. Fees should remain lower than the equivalent cost of gas; otherwise PHEV drivers will opt to use gasoline until a more reasonably-priced electric vehicle charging station is located. The following table provides suggested range of fees for AC Level-1 and AC Level-2 charging based on today's gasoline price.

Benefits of Public Charging to the Site Host:

Customer Attraction, Retention

PEV customers say they are more likely to shop/dine – and linger longer and spend more – when free/low-cost charging is offered.

Employee Attraction, Retention

Workplace charging differentiates an employer from others.

Added Revenue from Fees

Certain sites are ideal for subscription-based, pay-per-charge, or pay-for-parking PEV charging.

Corporate Branding

Charging stations are a visual way to show commitment to customers, the environment and energy independence.

Advertising Opportunities

Some charging stations offer digital screens that can display advertising, coupons and more.

Contribution to LEED

Charging stations may contribute to LEED points and certification.



Fee Guidelines:

| | AC Level-1 | AC Level-2 @ 3.3 kW | AC Level-2 @ 6.6 kW |
|--|---|---|---|
| Miles gained per hour of charging a PEV | 3 to 5 miles | 10 to 14 miles | 20 to 25 miles |
| Gasoline Equivalent* per Hour of Charge | \$0.43 | \$1.29 | \$2.36 |
| Cost of Electricity** per Hour of Charge | \$0.17 | \$0.30 | \$0.59 |
| Fee Target: | Less than \$0.43 per hour or \$0.11 per 15 minutes | Less than \$1.29 per hour or \$0.32 per 15 minutes | Less than \$2.36 per hour or \$0.59 per 15 minutes |

*Assumes gasoline price of \$3.75 per gallon and 35 miles per gallon fuel efficiency for a PHEV or EREV running on gasoline

**Assumes electricity rate of \$0.09 per kilowatt-hour, with no impact to demand charges

Summary of Recommendations:

| Priority | Location | Charging Level | Equipment Type | Payment Models | Installation Funding Sources |
|---|---------------------------------------|--|--|---|--|
| High | Workplace Charging | Level-1: For employees and visitors parked for a full-shift or day | 120V electric outlet only or hard-wired Level-1 charging station | · Free – employee benefit · Small fee – flat monthly access | · Employer / owner · Landlord / owner |
| | | Level-2: For employees and visitors parked short durations or with high mileage | Smart charging station or basic one with parking meter | Fee – usage and/or time | · Employer / owner · Landlord / owner · Third-party EVSP |
| | Destination Venues, Major Attractions | Level-1: For venue employees or visitors parked all day, overnight, or longer | 120V electric outlet only or hard-wired Level-1 charging station | Free or small fee | · Employer / owner · Landlord / owner |
| | | Level-2: For short parking durations or high mileage | Smart charging station or basic one with parking meter | Fee – usage and/or time | · Employer / owner · Landlord / owner · Third-party EVSP |
| | | DC-Fast Charging: Where there are high volumes of users – managed by a valet service | Smart charging station or basic one with valet service | Fee – usage and time | · Employer · Landlord / owner |
| | Major Arteries, Corridors, Routes | Level-1: Less practical, except for employees | 120V electric outlet only or hardwired Level-1 charging station | · Free – Employee benefit · Small fee – flat monthly access | · Landlord / owner · Business owner · Third-party EVSP · Public funding sources, grants, transportation funding |
| | | Level-2: Practical for PHEV users wanting to extend battery range | Smart charging station or basic one with parking meter | · Free – at restaurants near highway looking to attract diners · Fee – usage and/or time | |
| | | DCFC: Most practical; users can charge in time it takes to grab a snack | Smart charging station or standard with valet service | Fee – usage and time | |
| | Varied | State, County, or City-Owned Government Locations | Level-1: For employees or visitors who will be parked for full day | 120V electric outlet only or hardwired Level-1 charging station | Low Fee: Parking meter or included in existing parking rate |
| Level-2: For short parking durations or high mileage | | | Smart charging station or basic one with parking meter | Fee – usage and/or time | |
| DCFC: Not practical, except in locations with high multi-unit dwelling density, or high-volume of users | | | Smart charging station or standard with valet service | Fee – usage and time | |
| Lower | Local Retail Opportunity Charging | Level-2: For patrons who tend to stay for up to three hours | Smart charging station or basic one with parking meter | · Free – to attract customers · Small fee – if local residents use the lot | · Business owner · Landlord · Third-party EVSP |
| | | DCFC: Only practical in locations with high density of multi-unit residential dwellings and areas with high expected usage | Smart charging station or standard with valet service | Fee – usage and time | · Business owner · Third-party EVSP |

Questions? For additional information and resources on vehicle siting, please visit:

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