Growth means more choices
Electric vehicle drivers are increasingly relying on public charging infrastructure to enable their daily travel and extend driving range. Larger battery EVs are also prompting longer distance travel across highway corridors. As such, new technologies are being developed to meet those needs. Choosing the best site fit is critical to commercially successful charging infrastructure.

The role of public charging
It’s well known that most EV charging today happens at home or work, where cars are parked for hours. However, it’s also been shown that drivers are more willing to buy EVs when there is convenient and reliable charging stations in the communities where they work, shop and live.

Right sizing
Charging technology choices are expanding in power range and capability, but they also need to fit driver needs in order to be commercially successful. Next generation EVs will be able to charge at significantly higher powers than today, but they won’t always need the same rates of charge. Right-sizing for sites to find the best technology for the parking use case is key.

Drivers of long-range EVs will appreciate a quick ten minute charge while stopped for a quick break along an interstate highway, or while on route to the next city. But they will also be satisfied by a one hour charge at a restaurant or shopping mall that they frequent in their community, or an eight hour charge while they are at work.

The chart provided in this document illustrates optimal uses cases by technology, charge times and ideal location types.

The highest quality EV charging sites will only be as successful as their planning, implementation and operation. Finding the charging technology that is best suited for each site is a key enabler to that success.
### Public and fleet EV Charging

<table>
<thead>
<tr>
<th>AC Level 2</th>
<th>DC Level 2</th>
<th>DC Fast</th>
<th>DC High Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-19 kW</td>
<td>20-24kW</td>
<td>50kW</td>
<td>150 to 350kW+</td>
</tr>
<tr>
<td>4 to 12 hours</td>
<td>1 to 3 hours</td>
<td>15 to 60 min</td>
<td>5 to 20 min</td>
</tr>
</tbody>
</table>

- Office, workplace
- Multi family housing
- Hotel and hospitality
- Overnight fleet
- Supplement fast charging sites for PHEV use

- Workplace, multifamily
- Parking structures
- Dealerships
- Urban fleets
- Public or private campus
- Sensitive power supply locations

- Retail, grocery, mall, big box, restaurant
- High turnover parking
- Convenience fueling stations
- Highway truck stops and travel plazas
- OEM R&D

- Highway corridor travel
- Metro ‘charge and go’
- Large fleet
- Bus, medium and heavy duty vehicles
- OEM R&D

This chart shows common power ratings and average charge times for public EV infrastructure solutions. Variance among power and charge times relate to vehicle capabilities (charging protocol, BMS, environmental conditions), battery capacity (state of charge, overall kWh capacity) and charging hardware power rating. Level 1 EVSE delivering 1kW or less is not included in this chart as it is limited for most fleet, public and/or fee-based charging applications.

### Other site considerations

In addition to matching the right technology to the site and use case, there are many other factors that should be considered when implementing charging infrastructure.

Of paramount importance is driver safety. Drivers should be assured that when they stop to recharge, they also have access to dusk-to-dawn area lighting, shelter for inclement weather and clean restrooms. Security cameras are a best practice not only to aid driver comfort, but may also act as a vandalism deterrent.

Siting must also consider the availability of safe and convenient ingress and egress, appropriate electric power delivery, and local grid capacity to meet higher power charging needs. Placement of charging sites need not be next to building entrances, but sometimes it is a necessity due to location of power availability.

The most successful locations will offer drivers options for meals and refreshment. A retail experience usually enhances the commercial benefit of implementing charging infrastructure. Existing truck stops, travel plazas, convenience stores and near-highway commercial centers have been shown to be most successful in attracting drivers while also having also some civil and electrical infrastructure already in place.

Underscoring the commercial success of charging stations, host locations should be committed to supporting uptime, maintenance, visibility and long-term system health. This assures drivers that they can depend on these sites, whether in their own communities or during travel to new cities.