Electric Era

The EV Charging Buying Guide: For Enterprise Retailers

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Buyers Guide Overview

As adoption of electric vehicles (EVs) accelerates, retailers increasingly recognize the value of investing in DC Fast Charging (DCFC—Direct Current Fast Charging) infrastructure. DC fast chargers (also referred to as Level 3) deliver critical service to EV drivers while creating unique opportunities to drive customer loyalty, increase foot traffic, and align business with sustainability goals. Still, barriers to entering the world of EV charging can feel high to new adopters, given the range of technologies, funding models, and operational considerations involved.

This guide simplifies the decision-making process and offers insights for retailers evaluating investments in DCFC. Whether you're a retailer looking to attract more customers, a fleet manager optimizing operations, or a property owner preparing for future regulations, this guide will help you navigate the rapidly evolving EV charging landscape. Similarly, it's designed to help you wherever you are in the investment decision cycle, regardless of whether you're just starting to build a better understanding of different charger types or are ready to select a service provider to install the best solution for your business. We'll walk you through the process.

Let's explore how you can capitalize on this opportunity and make the best investment in DC fast-charging technology. You'll find a comprehensive checklist at the end that will help you evaluate potential charging providers.

Understanding Level 3 or DC Fast Charging (DCFC)

Types of Chargers

If you're evaluating whether, when, and how to add DCFC (Direct Current Fast Charging) to your business, you will first need to decide which type of charger is best suited for your site. There are three types of EV chargers: Level 1, Level 2, and Level 3.

Level 1 chargers utilize a standard plug, the same as any outlet in your home, charging cars slowly over 30-60 hours. Level 1 typically provides at-home or emergency charging. Level 1 charging is best suited for plug-in hybrid vehicles (PHEVs), residential charging for low-mileage drivers, or as a backup option when Level 2 or DC fast chargers are unavailable.

Level 2 chargers use a 240V connection. These are typically installed at homes, at offices, or in public/private parking garages. They can charge cars in 6-12 hours and are well suited for long-duration settings where customers or owners dwell for extended periods of time, such as during work, at home, or in a multi-family apartment garage overnight.

DCFC, also known as L3 charging or fast charging are all terms to describe chargers with power between 50kW and 350kW. As charging technology has evolved over the past 10+ years, terms such as supercharger, hypercharger, and ultra-fast charging have popped up as well to differentiate this higher class of chargers.

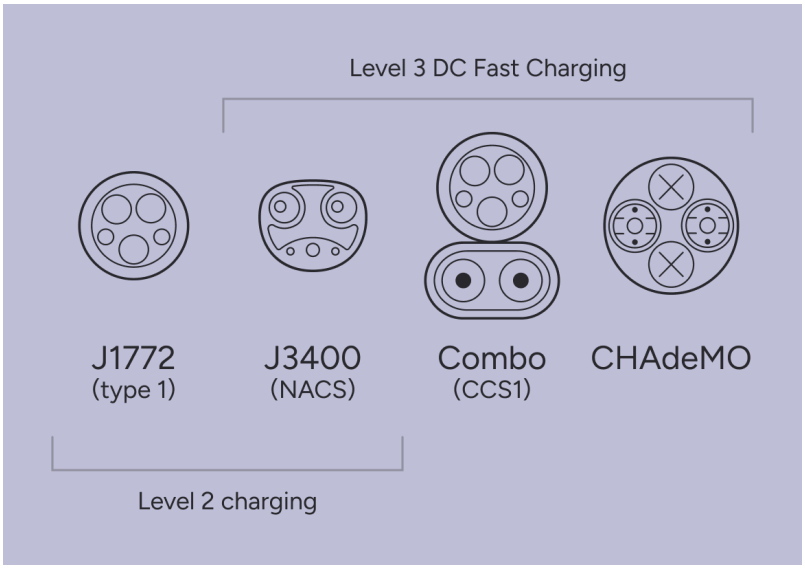
Level 3, DC fast charging stations can recharge vehicles in just 15–45 minutes, offering a much more appealing solution than the 6–12 hours required for Level 2 charging. Long charging times are inconvenient for

drivers, who typically can't commit to staying in one location for extended periods. When selecting a charging station, drivers overwhelmingly prefer Level 3 chargers to maximize the range they can add in a short time.

For retailers, fast-charging customers are more attractive for two key reasons. First, faster turnover means they can sell electricity to more drivers. Second, each new customer presents an opportunity for additional in-store spending. This makes Level 3 chargers the optimal choice in most cases, whether the location is on a major transit corridor or in an urban area.

Types of Port

DC fast charging (DCFC) ports are specialized connectors designed for rapid energy transfer to electric vehicles. There are three types of ports available: CHAdeMO, NACS and CCS. The most popular ports are CCS, which is used by the vast majority of non-Tesla drivers and NACS which is used by all Tesla vehicles. When deploying a station, a combination of CCS and NACS ports is often the optimal solution. Most manufacturers are moving away from CHAdeMO, which will likely be completely phased out over the course of the next few years.



Benefits To Retailers

Adding EV charging—particularly Level 3 DCFC—can benefit retailers' businesses in a variety of ways. Perhaps the most evident is that offering charging can unlock a new revenue stream from selling electricity to drivers. But opportunity abounds beyond that: EV charging can become a pillar of retailers' brand ecosystems. DCFC charging can transform parking lots from being one of the least profitable, interesting parts of the customer experience into an asset that can drive customer lifetime value, which encompasses all revenue earned from charging but also drives more revenue across in-store purchases, subscription/membership fees, other add-ons, and more.

Let's explore each of these key areas in detail:

Revenue Generation

EV Charging Fees - This is the revenue generated by selling electricity to drivers. Whether the stations charge users by session, time, or electricity consumed, these fees contribute to a new revenue stream that requires minimal additional investment after initial installation and set-up costs.

Adjacent Retail - EV drivers need time to charge their vehicles, often resulting in 30-60 minutes of dwell time. This period offers a prime opportunity for drivers to visit adjacent retail stores, increasing customer traffic and boosting in-store purchases. This uptick in revenue will often outperform the revenue generated at the charger. Forward-thinking charging providers are also incorporating additional functionality (i.e., on-screen advertising capabilities) to improve in-store conversion metrics and help retailers maximize their investments in charging infrastructure.

Art of the Possible

A customer arrives and plugs in their vehicle, then they scan a coupon for $5 off charging and begin their session. This allows the retailer to know that the customer has arrived at the store so they can begin to connect their online and in-store experience. The customer has been browsing leaf blowers at home. The home-improvement store app pings the customer, welcomes them, and lets them know where to locate leaf blowers. It also asks if they would like an associate to meet them and talk them through the various options and, by the way, they also have a 10% off coupon for garden waste bags—they will need somewhere to put those leaves after all.

Customer Loyalty - EV drivers increasingly seek out locations with charging options, and retailers who meet this need are better positioned to attract and retain a loyal customer base. Adding features such as loyalty points accumulation linked to charger spending adds an additional convenience factor that can improve the overall shopping experience, building a stronger brand association for sustainability and forward-thinking service.

Advertising - Modern EV chargers are equipped with large, digital touchscreen displays. This digital real estate can serve as advertising space. Retailers can use these screens to promote in-store offers, advertise products, or sell ad space to brands looking to reach an eco-conscious audience.

Sustainability Goals and State Mandates

State-Level Mandates - Many states are implementing mandates that require the installation of EV charging stations at new retail locations. Requirements vary based on the total number of parking spaces—they typically stipulate a proportionate number of EV-ready spaces compared to parking spaces without them. By understanding requirements and proactively installing chargers, retailers can stay ahead of regulatory requirements, avoiding potential penalties and showcasing their commitment to state initiatives.

Corporate Sustainability Goals - As investors, businesses, and consumers increasingly prioritize sustainability, retailers are turning to EV charging stations as a way to improve their ESG (environmental, social, and governance) scores. The commitment not only enhances their corporate image, but positions them as leaders in environmental stewardship.

Overall, retailers are making EV charging investment decisions based on a variety of the “push” and “pull” factors outlined above. Every investment requires an analysis of how a profit is returned, whether across financial metrics, customer loyalty, or others, such as brand and environmental factors. When building a business case out, make sure to also prioritize providers who can help you navigate the nuances of your business and help you maximize your return on investment.

Key Considerations for Choosing the Right EV Charging Station

When the value of the investment is clear, the next question is which provider to choose. The market is flooded with different manufacturers, ownership models, and technologies. The next section provides guidance on which areas you will need to consider in order to make your investment a success and de-risk your buying decision.

Reliability and Availability

Reliability is the cornerstone of a successful EV charging investment. Unreliable chargers create poor customer experiences, reduce revenue, and impact adjacent retail spending. While most charging providers claim to have unbeatable reliability, user reviews on platforms like PlugShare often tell a different story, revealing that many providers and operators have extensive downtime issues. As the market matures, many early adopters have had to rip out and replace unreliable stations. In this section, we’ll break down the key components that go into making a station a high-performer and reliable and provide you with guidance on assessing providers against these criteria.

Uptime

Every minute your station is down damages its return on your investment and can significantly impact your brand reputation. When EV drivers encounter non-functioning stations, they often share their frustrations on social media and charging apps, leading to negative reviews that can deter future customers and damage

brand trust. Ask your proposed provider what their uptime targets are and how they ensure their systems can deliver on this promise. Understanding how a provider determines if a station is up or down is critical. For example, some providers will class a station as “available” if 1 port of 8 is up and the other 7 are down. Others evaluate downtime on a per-port basis. Make sure to get clear on how providers calculate and measure their standards and availability and ask if they are willing to financially back their uptime guarantee.

Successful Charge Attempt Rate (SCAR)

Station uptime and availability goes hand in hand with SCAR (Successful Charge Attempt Rate) as the essential metrics that allow you to evaluate station performance and driver experience. SCAR is a measure of how many sessions are successfully initiated and completed the first time a driver attempts to plug in their vehicle. Ask your provider for details on their current SCAR %; anything below 90% would fail to meet some regulatory requirement, like in California.

Payment Processing

Creating a seamless and intuitive process for customers to pay for charging plays a key role in operating a successful station. Today, between 25% and 50% of payments fail on the first attempt at typical charging stations in the U.S. Paying for a charge should be no more complicated than paying for gas, groceries, or coffee. Customers should be able to pick up the cable, plug-in successfully on the first attempt, charge quickly and efficiently, and then tap to pay to check out. However, many providers require an app with pre-loaded credit or a membership to a specific software ecosystem. More often than not, these apps create a poor user experience. Understand your chosen vendor's payment infrastructure. How simple is it for the driver to use? What type of redundancy does it offer if a terminal goes offline? Do they require an app or sign up to pay?

Other Operational Issues

At some point, the station will likely encounter issues that require some sort of intervention. Understanding how your chosen vendor detects and responds to issues will help you assess their ability to deliver on their uptime guarantees. Some questions to ask include: Do they use any form of automatic fault detection? How do they monitor the solution? Where are their support teams based? What if a site visit is required? What are the service level agreements associated with such visits?

Operational Visibility

Visibility into your charging operations will allow you to monitor the performance of your EV charging assets. It will allow you to assess your station's actual performance vs guaranteed performance. Look for a solution that provides you with access to data analytics and monitoring capabilities that provide real-time monitoring and remote management, advanced data analytics for performance optimization, and insights into user behavior.

Power Management

Ensuring sufficient power for an EV fast charging station is a significant and complex challenge. A small station can consume as much power in a single day as the average American home uses in an entire month, and demand spikes dramatically when multiple vehicles charge at once, complicating power management further. To address this, large pad-mounted transformers are typically installed at EV charging stations to handle peak power needs. For instance, a station with four 200kW chargers would traditionally require 800kW of transformer capacity. This approach has three major drawbacks:

1. **Extended Lead Times:** Sourcing and installing large transformers can take up to two years, delaying station commissioning. This slows time-to-market, reducing the speed at which you can start generating returns on your investment.
2. **High Operating Costs:** Utility bills for EV charging stations are calculated based on various factors, including peak power demand and time-of-use charges. Without mitigation strategies, these costs can significantly erode profitability.
3. **Grid and Space Constraints:** In some areas, space for transformers or grid capacity may be insufficient, making upgrades impractical. This can prevent certain locations from hosting charging stations altogether.

So, how do you address these challenges? Battery-backed solutions offer innovative solutions that ensure faster deployment, reduced costs, and a better return on investment, all while delivering a seamless experience to the driver. Below, we evaluate the advantages of this approach.

Battery-Backed Charging

Battery-backed solutions place a battery energy storage system on-site alongside the charging station. The battery is charged during times of low utilization, and then, when required, it is utilized in conjunction with the grid to deliver high-speed charging to vehicles. When executed correctly, this architecture delivers several significant benefits:

1. **Reduced Lead Times:** The ability to combine battery and grid power means the charging station isn't wholly reliant on the grid at peak times. This means that battery-backed sites typically require a smaller grid upgrade (none, in some cases). This dramatically reduces not only the cost of implementation (grid equipment upgrades are costly) but also allows site owners to put a functioning station in the ground much faster, accelerating time to value from investments.
2. **Reduce operating costs:** Battery-backed solutions allow station operators to set limits on the maximum power pulled from the grid at any given time. This tactic, called demand charge mitigation, reduces peak loads drawn from the grid and avoids demand changes imposed by utilities, all while protecting the driver experience. Battery-backed solutions can also mitigate time-of-use charges by programming the system to use the battery more aggressively during peak times. This approach provides station operators with more control over operational costs, shielding them from fluctuating grid energy prices and improving return on investment.

3. **Deploy Anywhere:** Battery-backed EV charging stations are ideal for areas where traditional grid-connected solutions are impractical. They can be deployed in locations with weak or limited grid infrastructure, bridging the gap in EV accessibility for underserved rural regions. Their compact designs eliminate the need for large-scale substations or transformers, making them a viable option in urban or space-constrained environments. Additionally, these systems enhance energy resilience by providing backup power, ensuring consistent charging service even in areas with unreliable grid connections.

Retail Integration Maximizes Profitability

Rather than viewing EV chargers merely as utilities, retailers can capitalize on them as platforms that drive additional revenue streams for core business operations. By integrating charging stations into their retail environments, businesses can create interactive touchpoints that not only serve drivers but also enhance the overall shopping experience.

This approach can lead to increased foot traffic, improved customer retention and loyalty, and in-store conversion, ultimately translating into increased sales and driver lifetime value, as discussed in the Benefits to Retailers section. Additionally, more drivers means increased levels of digital engagement for monetizing on-screen advertisements.

The concept of driving customer conversion from gas pumps to in-store has been widely adopted for decades. With the right solution provider, retailers can easily adopt this concept for their EV charging programs and turn parking lot dead space into revenue-generating entities.

To maximize driver lifetime value, retailers should consider solutions with the following:

Loyalty & Rewards Integration

EV charging stations present an opportunity to extend loyalty and rewards programs to new and existing customers. For example, integrating loyalty programs which allow drivers to earn and spend rewards through their interactions with charging stations. Integrating loyalty programs with EV charging boosts brand awareness and encourages repeat business by rewarding customers for their continued engagement. This reduces churn and builds lasting brand equity. This concept maximizes customer lifetime value (LTV).

Point of Sale Operations

By integrating POS (Point of Sale) systems with EV charging stations, retailers can create an ecosystem that not only serves the immediate needs of EV drivers but also significantly boosts retail performance and customer engagement.

Having the EV charging station directly connected to the retailer's POS system allows for real-time data exchange and the ability to track additional sales outside of charging revenue. During charging sessions, EV drivers will be able to browse and purchase products or services directly from the charging screen display and pick their order up in store. This is an opportunity for retailers to gather valuable data insights on charging

behavior, purchase patterns, and customer preferences and create personalized promotions based on existing profiles and purchasing history.

On-screen Advertising Capabilities

Retailers can increase their revenue by leveraging advertising space on EV charging screens, offering a valuable supplemental income stream beyond traditional sales channels. A key advantage of this medium is its ability to reach a captive audience—drivers who are idle for 20 to 30 minutes during the charging process. This extended viewing time enhances message retention and brand recall. Unlike basic advertising displays on gas pumps, EV charging screens offer advanced, personalized digital engagement tailored to each driver. These screens can display customized promotions based on shopping preferences or deliver real-time offers. This targeted, driver-specific capability makes EV charging screens a highly effective tool for maximizing advertising impact and boosting retailer revenue.

Data Insights

Data plays a pivotal role in maximizing the value derived from EV charging stations. As a baseline, your EV charging vendor should provide real time data visibility for session transactions, station usage, energy delivered, power levels, charging revenue, electricity costs, customer satisfaction scores, dwell times, uptime, downtime faults, and charging speed. Additionally, retailers equipped with analytics tools can track customer behavior and preferences. This data can be utilized to craft personalized marketing strategies and experiences that deeply engage drivers, while also assessing the success of existing programs. For instance, analyzing the conversion rates of digital coupons tailored to customer profiles offers valuable insights into the effectiveness of ad campaigns.

Retail integration positions businesses to capture market share early against competitors, diversify revenue streams, and establish driver behaviors early, while capitalizing on the evolving landscape of retail opportunities.

Business Models, Funding, and Available Incentives

EV Charging Business Models

EV charging companies have only existed for about a decade, so there are many flavors of operational models. Retailers have also not landed on one central go-to-market strategy or business model for incorporating EV charging into their existing operations. This can make navigating the wide variety of models confusing, so we'll attempt to break these down below.

1. **Direct Purchase Model:** Companies like Costco, Walmart, and others purchase charging hardware from electric vehicle supply equipment (EVSE) manufacturers. They own the charging station and sell electricity directly to their customers. Companies who choose this model also procure software to run the station and contract for operations and maintenance packages. Occasionally, these capabilities are developed or bought in-house. It can be easier to manage all these concurrent processes when these items all come from the same vendor. Some third-party vendors offer flexibility when retailers need flexible hardware options or require combining different solutions.

2. **Site Host Model with Fixed Monthly Payment:** This model includes a fully funded station deployed on a retailer's property, with a capital partner, a third party, or even the hardware provider itself owning the charging hardware and paying a fixed lease payment for the use of the parking stalls dedicated to EV charging. The lease payment is not tied to station utilization, and all operational expenses, including electricity, are handled by the third-party owner.

3. **Site Host Model with Revenue/Profit Sharing:** This is a more complex approach that involves some level of shared risk with the retailer and the hardware provider. Typical arrangements include no costs for the site host. In this model, the hardware owner covers the costs, but charging revenues or profits are also split between the retailer and the hardware owner. This split may stretch out indefinitely and may cover operational expenses or may only continue for a specified period and is used to "pay off" the station with the hardware eventually transferring ownership to the site host.

	Operating Model		
	Direct Ownership	**Site Host - Fixed Lease**	**Site Host - Revenue/Profit Share**
Capex/Opex	Retail business is responsible for station capex and opex costs	Site host has zero capex or opex costs	Retail business usually has zero capex costs, sometimes has opex costs shared (electricity, software)
Revenue from $/kWh sales	Retail business retains 100% of revenues generated from charging	Site host does not receive revenue from charging cars	Site host splits revenue or splits profit with the hardware owner
Repair / operations / maintenance	Depending on details, retail business pays an annual fee, or pays per instance	Site host not responsible for repair, operations, or maintenance	Site host is potentially responsible for these costs, depending on the arrangement with the provider

Funding Opportunities

Transportation electrification is a rapidly growing market with billions of dollars of incentives and tax credits flowing into businesses that are deploying EV charging infrastructure. For federal and state programs, much of this infrastructure investment has funneled toward highway-adjacent locations along key corridors. Utility programs are often more broad, incentivizing development in any part of their service territory. Below, we'll take a look at a few federal, state, and utility programs for EV charging.

1. Federal

There are several types of federal incentives for building EV charging stations. First is the 30C tax credit, a provision of the Inflation Reduction Act of 2022 for eligible businesses installing EV charging infrastructure on their properties. After incurring costs for building EV charging equipment, businesses are eligible for a minimum of 30% tax credit on their federal taxes. This can potentially increase to 40% or even 50% if the site is in a disadvantaged community, the hardware is made in the U.S., and prevailing wage conditions are met during construction and installation.

Another federal program is the National Electric Vehicle Infrastructure (NEVI) Formula Program, established by the Bipartisan Infrastructure Law. This program provides funding to states to strategically deploy EV charging stations along designated Alternative Fuel Corridors, focusing on major highways and interstates. This program emphasizes fast charging capabilities to minimize charging times for travelers, requiring 97%+ charger reliability and 150+ kW per-port power.

In addition to NEVI, the Charging and Fueling Infrastructure Discretionary Grant Program offers funding for EV charging infrastructure across a wider range of locations, including public roads, schools, parks, and publicly accessible parking facilities. This program prioritizes projects in rural areas, low- and moderate-income neighborhoods, and communities with limited access to private parking or a high density of multi-unit dwellings.

2. State

State-level incentives for EV charging infrastructure vary significantly. Many states offer rebates, grants, tax credits, and other financial incentives to businesses and individuals investing in EV charging. Some examples include:

- **California:** The California Energy Commission's (CEC) California Electric Vehicle Infrastructure Project (CALeVIP) provides incentives for installing charging stations in public places, workplaces, and multi-unit dwellings.
- **New York:** The New York State Energy Research and Development Authority (NYSERDA) offers rebates for Level 2 and DC fast chargers through its Drive Clean Rebate program.
- **Washington:** The Washington State Department of Commerce operates the Washington Electric Vehicle Charging Program, focused on rural, low-income, and underserved communities.
- **Colorado:** The Charge Ahead Colorado program provides grants to support the development of public fast-charging stations throughout the state.

Many states also have programs specifically designed to support charging infrastructure in disadvantaged communities and to address equity concerns related to EV adoption.

3. Utilities

Utility companies across the country are playing a crucial role in expanding EV charging infrastructure. Many utilities offer a variety of programs to encourage the installation of charging stations, including:

- **Rebates and incentives:** Utilities often provide direct hardware rebates to customers who install EV chargers at their businesses, dependent on power level and public accessibility
- **Make-ready costs:** Utilities are sometimes required to cover the costs associated with upgrading the electrical infrastructure required for fast charging stations like transformers, wiring, trenching, and conduit (common in California). In other cases, this is something that the utility offers as an incentive.
- **Time-of-use rates:** Utilities may offer special electricity rates that encourage EV charging during off-peak hours when electricity demand is lower.
- **Direct installation programs:** Some utilities offer programs to install and maintain charging stations for their customers, often at reduced costs.
- **Technical assistance:** Utilities can provide valuable technical assistance to businesses and individuals planning to install EV charging infrastructure.

Utilities are also investing in grid modernization efforts to ensure the electric grid can handle the increased demand from widespread EV adoption. Prioritizing EV charging solutions that include battery integration is often a benefit for the utility company.

Station Costs

Businesses evaluating EV charging need to fully understand the total picture of station costs. These come in two main buckets: capital expenses at station construction and operating expenses over the life of the station. Electric Era recommends consulting with your accounting provider for guidance on expense classification. Some ways companies report expenses are as follows:

1. Capex - One-time costs associated with the deployment of a new station

- **Hardware:** The purchase of hardware assets to run the station. This typically includes charging hardware (ports, posts, chargers, power cabinets, etc.), battery systems (if using), and any additional power hardware necessary (switchgear, site controller, etc.)
- **Engineering and design:** Site assessments, site layouts, single line diagrams, and technical scoping work
- **Project management and coordination:** Utility coordination, city/state permitting coordination, management of contractors and subcontractors for various project elements, and organizing all parties to hit deadlines

- **Construction and installation:** Labor, trenching, wiring, concrete, landscaping, and striping
- **Commissioning:** Equipment testing and any fees for inspection and certification (i.e., weights & measures)

2. Opex - Ongoing costs related to continued operation of the station

- **Electricity:** Cost of electricity is the single most important operating expense for an EV charging station owner. Choosing a partner that understands the utility rate and tariff schedule is key, as the way that this rate is structured greatly impacts the cost of delivering energy to customers. The two main considerations are your $/kWh charges (energy consumed) and your $/kW charges (peak power used).
- **Operations and maintenance:** These expenses are the physical costs of keeping your station up and running. Any repairs, parts, labor, maintenance, etc. that the business is responsible for should be taken into consideration
- **Software:** all EV charging stations require software to run the chargers for customer use, as well as software to give the station owner visibility into charging sessions, customer transaction data, reliability, uptime, power, and additional relevant information.

Next Steps

Webinars | Scheduled a call | Case studies

Questions to ask while evaluating charging station providers

General Solution Overview

- [ ] What types of chargers and power levels do you offer?
- [ ] Which hardware provider supplies the charging infrastructure?
- [ ] What software provider supports the back-end system?
- [ ] How simple is it for the driver to use?
- [ ] Do you require an app or sign-up to pay?
- [ ] Can chargers integrate with loyalty programs or POS systems?

Technology and Reliability

- [ ] How is uptime measured—per port, per charger, or per station?
- [ ] Do you track Successful Charge Attempt Rate (SCAR)? Is your average above 90%?
- [ ] How do you provide visibility into station performance and telemetry?
- [ ] What type of redundancy does your solution offer if a terminal goes offline?
- [ ] Do you offer battery-backed charging for grid flexibility and cost savings?

Costs and Deployment

- [ ] What is the average deployment timeline?
- [ ] What milestones are in-scope to install DC fast charging?
- [ ] What grid upgrades are typically required? What size?
- [ ] How do you minimize electricity costs and demand charges?
- [ ] Can you provide ROI projections for specific locations?

Retail Extension

- [ ] Can chargers be customized for branding and loyalty integration?
- [ ] What percentage of drivers engage with retail during charging?
- [ ] Do you provide data on station usage and customer behavior?
- [ ] How do you improve driver loyalty and repeat visits?

Support and Scalability

- [ ] What post-installation support and SLAs do you offer? Does this include site visits?
- [ ] How do you automatically monitor, detect, and resolve issues?
- [ ] Where are your support teams based?
- [ ] Can chargers adapt to higher power needs or future standards?
- [ ] Do you have case studies showing success with similar retailers?