Shared Charging Hubs for Medium- and Heavy-Duty Electric Vehicles
September 2025

Charging sites that can be used and shared by multiple fleets are a growing charging solution for electric trucks and other medium- and heavy-duty (MDHD) fleet vehicles across the country. This brief, informed by interviews with four charging hub companies, outlines the planning and siting considerations that go into developing these hubs and provides recommendations for how utilities can improve coordination with shared charging hub developers.[1]

The electrification of MDHD vehicles can reduce greenhouse gas emissions and air pollutants that can have long-lasting impacts on people's health. Studies show that communities of color and socioeconomically disadvantaged populations disproportionately live near ports and warehouses, areas that see more air pollution from diesel trucks and other freight operations (Nowlan 2023, EPA 2024).

Successful electrification requires sufficient charging infrastructure. Shared charging hubs are one electric vehicle (EV) charging solution that is gaining traction across the country. According to CALSTART's National Medium & Heavy Duty Zero-Emission Infrastructure map, there are now 24 shared and semi-public charging stations for MDHD vehicles with 284 ports open, and 406 ports either in development or in the pre-construction phase (CALSTART 2025).[2] These stations can ensure access to chargers and distribute the cost of electrification by eliminating the need for fleets to make an up-front investment in the infrastructure.

Shared charging hubs reduce up-front costs for fleets

Shared charging hubs are charging sites accessible to and shared among multiple fleets (Joseph 2024). The hubs are typically planned and constructed by third-party developers who manage and own the site.[3] While shared charging hubs can be built for all types of electric vehicles, this brief focuses on their use for electric medium- and heavy-duty vehicles. Shared charging hubs are typically semi-public, with the hub developers making chargers available for use by any fleet (i.e., multi-tenant), either through a reservation system or on a contractual basis (Smart Freight Center 2024).[4]

Shared charging hubs are a solution to problems that fleet businesses may face with public and private charging. While private charging at a depot location can guarantee charger availability, it can present challenges such as high up-front costs for charger installations, the need for experience with setting up and managing EV charging, and low charger utilization. In the case of public chargers that are best suited for en-route charging, drivers may face uncertain availability of chargers on their route (especially for larger vehicles), need to wait for chargers to become available, or have to pay higher charging rates ($ per kilowatt-hour) (Smart Freight Center 2024).

All the shared charging hub developers we interviewed were targeting use cases such as MDHD short-haul drayage trucks at ports, warehouses, and airports. Some companies also develop sites for last-mile delivery vehicles, and one company was also building for long-haul trucking. Use cases with shorter ranges, multiple shifts, and shorter charge times are easier to plan for and electrify. They also tend to have multiple fleet businesses operating in a concentrated area. These hubs will expand charging options for drayage trucks and other fleets that lease depot space and may not want to install expensive chargers on land they do not own or where the landowner may not wish to install EV chargers.

Shared charging hub business models

Developers are pursuing various business models. The companies we spoke to either enter fixed contracts with fleet businesses or offer publicly accessible chargers accessible by reservation. Both options ensure that fleet customers have access to a charging spot.

Contract-based: Most of the companies we interviewed offered contract-based charging services for electric fleets that guaranteed a certain level of service for customers over a period of time (e.g., monthly or annually), with the level of service often being customizable based on the customer's needs.

In the most common contract type, fleets get access to charge their EVs at a set monthly price. Depending on the shared charging hub company, fleet customers may have a dedicated stall, or only access to charging with the EV being moved when it is done charging to make space for the next vehicle. In addition to providing charger access, some developers also offer complete turnkey services including access to the EV (a benefit to fleets interested in testing EVs without purchasing them).

Reservation: Another model for shared charging hubs centers on fully public, high-power chargers. Under this model, all chargers at the charging hub are completely publicly accessible. Fleet drivers and managers can reserve spots and pay through an online mobile phone application, or fleets can pay for charging sessions without a reservation.

Key planning considerations for shared charging hubs

When building charging hub stations, third-party developers incorporate the following factors into their site selection and planning:

Location requirements: The presence of fleet customers is one of the most important factors for siting a charging hub. **Developers will look for sites in hot spots with a high concentration of fleets or areas with heavy truck traffic,** such as sites near ports, industrial warehouses, and distribution centers that are logistically convenient. Ideally, these sites will be close enough to ports/industrial hubs that fleet vehicles do not have to go out of their way. Some developers will purchase telematics data to obtain detailed information on through-traffic near warehouses/industrial hubs, airports, etc.

Customer guarantee: Developers may often, but not always, need to show local customer demand before developing a site, in the form of a few anchor tenants. Two companies told us that they need to demonstrate to their investors some level of commitment from intended customers before they are allowed to begin construction on a site. Commitments can be in the form of letters of intent, agreements, and deposits; anything that helps establish revenue certainty to investors. One company told us that the market in their area was not ready to set up anchor tenants yet, which made their siting assessments (narrowing down hot spots with the ideal use-cases and screening for available grid capacity) an important precursor to initiate development.

Space and land requirements: While charging hubs will be sized according to the number of chargers, our interviews found that **shared charging companies generally need around 2–2.5 acres of land for an average site**. There are instances where companies will build sites smaller than 1 acre with fewer charger stalls or bigger ones if there is customer demand and the economics make sense. The expense of purchasing land can be a barrier for companies, especially near ports and urban areas. Remediating brownfield sites can also add to land-related costs. Land is generally cheaper in rural areas; however, access to power can be challenging.

Available grid capacity: After selecting a potential location, developers need to determine whether there is enough capacity on the local grid to support charging needs for the number of chargers they

plan to install. **Developers will look at local grid capacity hosting maps if available.** Granular circuit-level data is generally ideal to help determine available capacity. While utilities in California and New York tend to have public hosting capacity maps, not all utilities do. This can make it difficult for developers to determine available capacity without contacting the local utility, which can be time consuming. Hosting maps are a good starting point to determine grid capacity, but developers may still need to contact the utility to obtain the most current data on the status of the grid.

Power needs at a shared charging hub: The amount of power required at a shared charging hub will typically depend on its size, which can vary from a few stalls (e.g., 4–8 chargers) to a larger multi-stall operation with over 80 ports. Given the need to guarantee charger availability to the extent possible, direct current fast charging (DCFC) chargers (starting at 350–400 kW for at least two of the companies) are the main types of chargers almost all developers that we spoke to were installing (or planning to) at their hubs. Only one company mentioned wanting to install some level 2 chargers initially at their stations but emphasized that future hubs and construction would not seek to install any level 2 chargers. For the most part, **developers are considering DCFC chargers because the economic viability of having DCFC at their sites favors fast charging over level 2 chargers.**

Our conversations with companies revealed that developers are looking to build hubs with power demand anywhere between 3–30 MW, depending on the size of the site. **Most companies we talked to plan to start on the lower end of power demand, in the 3–7 MW range, and gradually ramp up to the full planned capacity of around 15–30 MW.** Some methods that developers have undertaken to lay the groundwork to increase charging capacity include phasing their construction by laying the trenching and plumbing early-on and upgrading the electrical infrastructure later. Several developers were already installing megawatt chargers (MWC) at their hubs, and one developer planned to upgrade its stalls to megawatt charging systems (MWCS) two to three years in the future. Given the high power demand anticipated from these shared charging hubs, some developers also manage and optimize the charging load through load management systems.

Setting up sites in the several MW range can require expensive distribution upgrades, and one developer introduced the idea of shared charging hubs sites potentially being primary customers instead of secondary customers. As a primary customer, hub sites would have their own power transformers, which would allow them to distribute power more efficiently across their site and step down the power at the charger more easily, reducing costs and energization timelines. Since transportation use cases have traditionally not held primary customer status at utilities, some EV program teams at utilities may have more experience than others when working with primary customers.[5]

Charger utilization: The shared charging hub companies we spoke to were in different stages of figuring out the desired utilization rate. Utilization rates can vary by site, but there was no single utilization rate that developers looked to satisfy when planning their sites. **All the companies mentioned that utilization rates are expected to be low in the initial years and gradually increase** over time once MWCS is in place. Similar to public charging stations, utilization rates are expected to be high for shared charging hubs, but with the added guarantee of a spot (Smart Freight Center 2024).

Additional considerations: To improve the economic feasibility of building charging hubs, **developers prefer siting their projects in areas with state-level and/or utility make-ready incentives, grants, and voucher programs, and in places with favorable rate designs.** All the companies we spoke to were funded by private investors in the several million-dollar range. Nevertheless, the shared charging hub companies noted that they could utilize public funding such as grants and make-ready incentives to offset their private project costs where possible if the amount was sufficient.

Developers typically incorporate all the above considerations to determine the financial feasibility of a project. However, developers often will need to site a charging hub regardless of the land cost and electricity rates because that is where the customer demand, truck traffic, and power capacity are expected to be.

Recommendations for utilities

Collaboration between developers and utilities is a critical part of setting up and energizing these multi-megawatt sites. From our discussions with companies, we have developed the following recommendations for utilities.

Improve communications and clarify processes: Utility processes for EV customers can be slow and entail a lot of back and forth before proceeding to the next stage, especially if a utility is new to EV programming. Some utilities may have extensive processes in place for potential customers to check local capacity. As a result, customers can sometimes spend resources upfront to learn that there is no capacity. As utilities become more familiar and experienced with transportation electrification, it is important to have clearly defined processes and timelines.

Recommendations:

- Having a dedicated utility business development team can help utilities manage communications and customer connections.
- Utilities can improve their processes by clearly laying out what is required of customers. For example, this could include providing a list of design requirements or a checklist of to-do items that utilities need from developers at each stage so that developers know all the requirements up-front.
- Additional suggestions for utility-side resources include guides on cost estimates for utility-related infrastructure necessary for upgrades, energization and process timelines, and step-by-step processes.
- Making grid capacity maps publicly available at the circuit level can save customers time and resources by allowing them to investigate potential sites with sufficient grid capacity to host a shared charging hub.
- Utilities could explore speeding up energization timelines so that customers do not lose out on available capacity to other candidates.

Utility program design: Most of the companies we spoke to said that utility-side incentives and other make-ready programs can be helpful in reducing the cost of a shared charging hub. Two have benefited from utility make-ready incentives. One company said that they avoided applying for incentives for utilities where program requirements were overly complicated or there was too much paperwork. Another company noted that the public accessibility requirement for utility make-ready incentive programs usually makes them ineligible for incentives and prevents them from benefiting from it (although they are able to benefit from make-ready incentives by other utilities in a different state without this limitation). One developer mentioned that make-ready program participation requirements that mandate EV truck ownership can also be a hurdle since it is not applicable to shared charging hub developers that only provide charging services.

Recommendations:

- For shared charging hub companies to benefit from applicable utility incentives, ensuring that the application and onboarding process is easy and smooth can improve the applicant experience.
- One company noted that the public accessibility requirement for make-ready incentive programs is common among several utility programs. In its experience, requiring only public access for MDHD transportation utility programs can deter MDHD EV adoption since there is a potential risk that vehicle drivers will not have guaranteed access to chargers. Reconsidering public accessibility requirements for chargers built through make-ready programs targeting MDHD vehicles and expanding eligibility requirements to other types of business models may expand the EV charging ecosystem for this use case.
- Some developers prefer to be in charge of designing the "behind-the-meter infrastructure" at a site and maintaining infrastructure ownership. As a result, make-ready programs that offer the option for customers to design, build, and operate behind-the-meter infrastructure can be helpful.
- Transparency on how incentive and rebate amounts are calculated in utility programs can help developers factor these into their economic analyses.
- Although not directly tied to utility programs, two companies mentioned that they saw value in proactive grid planning and investment by utilities as a way to ensure necessary grid infrastructure in the future. Depending on the level of anticipated MDHD EV (and other electrification) load, and to the extent possible, utilities can work with their commissions to raise the idea of proactive grid planning in states that do not have such processes in place yet.
- Utility programs can future-proof sites by enabling phased buildouts through incentives for innovative solutions such as mobile batteries and other temporary power sources.

Flexible and transparent demand charges: Most of the shared charging hub companies we interviewed mentioned that demand charges can be cost-prohibitive, so flexible rate options, if offered by a utility, can be helpful.[6] Clarity on the rate options available can further help companies incorporate different utility rate options into their economic analysis and planning when assessing sites.

Recommendations:

- Utilities should consider a combination of EV-specific rates to mitigate demand charges, introducing time-of-use electricity rates for MDHD fleets, and/or instituting temporary demand charge holidays until charger utilization reaches sufficient capacity.
- Easy-to-understand electricity rates can improve the overall customer experience.

Flexibility in interconnections: The potential for flexible interconnection options to energize and activate a site may not always be clear during initial conversations. Customers may not know to ask for the options available to them unless they are familiar with the possibility. Utility site assessment and fleet advisory services can potentially help identify these opportunities. This includes understanding the potential to build a site in phases if the full power capacity was not available immediately or the potential to incorporate load management strategies for a few peak demand days of the year.

Recommendations:

- Utilities should be prepared to talk through a full suite of options with developers early in the process (such as through site assessment or equivalent services, if any) to help them understand the energization and interconnection options available.
- One company noted that it was easier for shared charging hubs to work with static utility load management programs (as opposed to dynamic day-ahead demand response programs) given that they need to ensure charger availability. Static programs are easier to plan around.

Expanding shared charging hubs

By providing EV charging access to multiple fleets, shared charging hubs concentrate resources in one place so that MDHD EV owners do not have to worry about their own capacity to install and manage charging. However, setting up these hubs successfully depends on a combination of factors, as detailed above, and must be economically justifiable. These multi-million dollar charging stations have been primarily funded by private capital, and public funding has been minimal. As utilities and state agencies develop and expand their transportation electrification programs and funding opportunities, decision-makers at these agencies can consider the role of these non-traditional EV charging stations in helping states achieve their EV goals, especially through grants, incentives, and other procedural support. Supportive policies and financial incentives can encourage shared hub developers to locate their hubs in an area, benefiting states by attracting charging solutions that contribute to clean air and mitigate impacts on disadvantaged communities.

References

CALSTART. 2025. "National Medium & Heavy Duty Zero-Emission Infrastructure Map" calstart.org/mhd-infrastructure-map/.

EPA (Environmental Protection Agency). 2024. "Quantifying and Characterizing Near-Port Populations in the Conterminous United States." nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101CZCP.pdf.

Joseph, Michael. 2024. "Shared Charging Sites: Accelerating the ZEV Market and Delivering Public Benefits." CALSTART. calstart.org/shared-charging/.

Nowlan, Aileen. 2023. "Making the Invisible Visible: Shining a Light on Warehouse Truck Air Pollution." Environmental Defense Fund. globalcleanair.org/wp-content/blogs.dir/95/files/2023/04/EDF-Proximity-Mapping-2023.pdf.

Smart Freight Centre. 2024. "Shared Charging for e-Trucks." smart-freight-centre-media.s3.amazonaws.com/documents/Shared_Charging_for_e-Trucks.pdf.

Whited, Melissa, Jason Frost, Ben and Havumaki. 2020. "Best Practices for Commercial and Industrial EV Rates." Synapse Energy Economics. www.synapse-energy.com/sites/default/files/Best_Practices_for_Commercial_and_Industrial_EV_Rates_18-122.pdf.

[1] The information from all four interviews has been anonymized in this resource

[2] As of August 13, 2025; Semi-public charging stations include shared and public charging stations as per definitions listed on the zero-emissions vehicles infrastructure map (CALSTART 2025)

[3] Shared charging hub sites where fleets share and open up their charging infrastructure to other fleets are another type (Joseph 2024). This topic brief focuses on sites owned and operated primarily by third-party operators.

[4] Public charging: accessible to all vehicles, usually on highways; Private charging: behind-the-fence charging with usage limited to private fleet depots for whom it is built

[5] Primary customer status is usually meant for large-scale customers with high voltage needs (such as industrial facilities and sports stadiums).

[6] For more details on demand charges and best practices for EV rates, see Best Practices for Commercial and Industrial EV Rates