

Buy vs. Build: How Heavy Duty Fleet Operators Should Weigh Their EV Charging Infrastructure Options

As the United States sets its sights on achieving net-zero emissions by 2050, the momentum towards electric vehicle (EV) adoption has begun to move beyond just passenger vehicles. With federal incentives through the Inflation Reduction Act and mandates like California's Advanced Clean Fleets regulation, heavy-duty fleets will be electrifying rapidly in the coming years. And while various factions (public sector, private sector, utilities) are all joining forces to accelerate the transition, charging infrastructure as it stands today is woefully inadequate to support the anticipated scale.

For heavy-duty fleets, the EV charging challenge is particularly complex. The freight industry's success has been built on a reputation of dependability and consistency — factors that have been underpinned by easy access to diesel. Understandably, trusting in a new system of electric charging infrastructure is daunting, especially given the inherent complexities and challenges posed by the infrastructure itself.

EV Charging Infrastructure is Expensive

The cost of replacing your diesel-powered trucks with electric counterparts is already financially daunting for fleet operators — the cost of a Class 8 EV truck sits somewhere around [4x of that of a diesel-powered one](#) (before incentives or rebates). Then there's the capital expenditure required to build your own charging infrastructure.

Based on a scenario in which zero-emissions vehicles account for half the vehicles sold in the US by 2030, which is in line with federal targets, McKinsey estimates that the total cost of chargers, hardware, planning and installation for the required public charging could amount to [more than \\$97 billion](#). \$12 billion of that represents fleet infrastructure for commercial vehicles.

Studies show that the cost of charging materials is already coming down, but the majority of expenses actually come from soft costs — things like setting up communications between utilities and providers and permitting processes. When you build and manage your own site, you're installing chargers, but you're also navigating procurement and contracts — potentially for the first time.

Infrastructure partners do this at scale, helping to minimize many of these costs — and allowing you to turn the capex you would have otherwise put towards the infrastructure into an opex line item on your monthly budget.



EV Charging Infrastructure Requires Space and Power

Charging heavy-duty vehicles requires a lot of power ([several megawatts, to be precise](#)), and to power an entire commercial fleet, you need a location that's capable of delivering that amount of power. The amount of electricity it takes to power one truck is the [same as one big box store](#) — and working with your local utility to get the power you need can take several years.

While a charging station in front of a grocery store might only require ~15-20kW of power for two L2 chargers, a charging center capable of charging 10 semi trucks will likely require several megawatts of power, not to mention take up a lot more space than two passenger vehicle parking stalls.

The demand for charging power and grid capacity will increase not only as more trucks transition to EVs, but also as the technology moves to increasingly faster charging standards. These trends happening at the same time will intensify the search for more grid capacity.

What's more, you want to make sure you can amortize your infrastructure costs over the long term to build a defensible business model for operations — and that can be a challenge if a property is leased.

Infrastructure providers, on the other hand, are already in the business of navigating space and power constraints, enabling their customers to avoid navigating long wait times for power or space constraints. They optimize for the overlap between where fleets need to be and where there's available power, as well as the possibility to build quickly at a low cost — thanks to existing relationships with utilities and suppliers.

EV Charging Infrastructure Needs to be Future-Proofed

Current range constraints mean that battery electric trucks are best suited for “back to base” routes of 150 miles or less in the short term. If your fleet is small and you have adequate power, building and managing the charging infrastructure behind your own fence may be feasible.

Things are changing fast, though. With less than 2kWh/mile of energy consumption, the Tesla Semi can travel up to 500 miles on one single charge and recover up to 70% of range within 30 minutes of charging. Battery ranges on most other Class 8 electric trucks are expected to significantly increase in the next couple of years, which will begin to unlock the long haul use case.

Charging technology will undergo rapid advances as well, as soon as the MegaWatt Charging System (MCS) gets rolled out in the next few years. This will require current charging systems to get swapped out for the latest technology, in order to enable the fastest possible charging.

All of this points to the need for future-proofing any infrastructure build outs — and where dedicated solutions providers come in handy. When working with an infrastructure provider, fleet operators don't need to spend time staying ahead of the latest technology or investing in costly upgrades — that's all expertly planned for and taken care of. It also opens fleets up to a network of charging solutions, including those that serve both short haul (like behind your fence or within industrial areas) and long haul (along major highway corridors).



Unreliable Supply Chains May Affect Infrastructure Delivery Timelines

As it stands, supply chains can be convoluted and unreliable, which can result in costly delays and uncertain project deadlines. Current lead times on electrical equipment like switchboards, for example, have been stretched out to upwards of 50 weeks.

As interest grows and more government grants get issued, we also predict that lead times on charging equipment will continue to elongate.

Working with an infrastructure partner can often unlock access to shorter lead times thanks to ongoing relationships with suppliers. TeraWatt, for instance, has access to 26-32-week lead times for most electrical equipment.

EV Charging Technology is Unreliable

Even once chargers are installed, there's still the crucial issue of reliability. Current DC Fast Charger charging [failure is 22.7%](#) — that's one breakdown happening twice a week for

drivers... and therefore not a feasible option for fleet operators whose businesses are built on dependability.

A variety of factors contribute to such extreme unreliability — parts break, information screens freeze, and payment systems malfunction. Working with a team of experts who can deploy and manage the technology, operations, and maintenance — on top of the infrastructure — is crucial.

Summary: The Pros and Cons

While the self-build and manage process can serve as an infrastructure entry point, things become exponentially more complex at scale.

Charging solutions providers like [TeraWatt](#) handle every component of the charging infrastructure ecosystem for you — everything from procuring equipment to dealing with permitting to utility coordination to customer support and charge management software. They're deeply embedded within the industry, too, so they know where things are evolving and moving and changing.

Here are the top-line benefits of working with a third-party provider:

1. **Space and power:** Can build behind your fence or can acquire property in strategically relevant locations (within close proximity to distribution centers or along highway corridors).
2. **Pricing transparency:** Turn your capex into opex — either pay on a usage basis, or pay a flat monthly fee.
3. **Reliability:** Chargers that work when fleets need them.
4. **Speed:** Fastest chargers available: 200+ miles in 30 minutes or less is the goal.
5. **Scalability:** Possibility to start small and add more trucks and chargers over time. Technology upgrades are embedded into site designs, so performance is continually improved.
6. **Sustainability:** Meet sustainability targets through transportation emissions reductions, as well as potential for onsite solar generation or purchasing 100% clean energy.

By collaborating with a trusted partner, fleet owners can seamlessly integrate electric vehicle charging infrastructure into their operations, driving sustainability goals while maximizing productivity and profitability.