+ E-BOOK

Best Practices for Building Smarter, Scalable EV Fleets

9-MINUTE READ

Contents

By 2030, medium- and heavy-duty zero-emission vehicles are projected to make up more than 30% of new sales in leading markets, driven by falling battery prices.

For fleet managers at commercial, industrial, and municipal organizations, the question is no longer *if* you should electrify; it's *how quickly* you can move without disrupting operations or exceeding budget.

Yet vehicles are only half the story. The true test of fleet electrification success is whether your charging infrastructure can reliably support your routes, scale with your needs, and keep energy and demand charges under control.

This e-book walks through best practices for designing scalable EV charging infrastructure for fleets, key financial and operational considerations, and how PowerFlex's integrated solution helps organizations de-risk and accelerate their transition to electric fleets.

The Strategic Advantages of Fleet Electrification

One of the most compelling reasons to electrify a fleet is the significant reduction in maintenance costs. Electric vehicles have fewer moving parts than gas-powered vehicles, meaning there are no oil changes, spark plugs, or exhaust systems to service. Fleet operators can expect a lower total cost of maintenance because EVs don't require engine and transmission repairs as frequently as gas-powered fleets.

Beyond the balance sheet, shifting to EVs has a meaningful impact on an organization's environmental, social, and governance (ESG) goals. While conventional vehicles emit substantial carbon dioxide and local pollutants, EVs produce zero tailpipe emissions. For municipal fleets and schools, this transition contributes to improved air quality in urban areas, directly enhancing public health.

Furthermore, electrifying now ensures long-term regulatory compliance. In New York, for example, all state fleet vehicles must be zero-emission by 2040. By switching to EVs today, organizations can avoid future penalties and ensure they are prepared for the eventual phase-out of internal combustion engines.

Core Elements of EV Fleet Charging Infrastructure

A successful fleet electrification program starts with a smart, scalable charging ecosystem. The right infrastructure ensures vehicles are ready when needed without overwhelming your site's electrical capacity or budget.

Selecting the Right Charging Hardware

EV chargers are the backbone of your fleet solution, and selecting the right combination is crucial for operational efficiency.

> **Level 2 (L2) Chargers:** These deliver AC power to the vehicle's onboard charger, which converts it to DC for the battery. Providing around 25 miles of range per hour, L2 chargers are the standard for overnight or depot-based charging where vehicles dwell for extended periods.

> **DC Fast Chargers (DCFC):** These deliver DC power directly to the vehicle's battery. DCFCs can bring many vehicles to an 80% charge in as little as 20 minutes, making them best suited for high-utilization fleets or locations where vehicles must return to service rapidly.

Intelligent Management Systems

While hardware provides the power, the software provides the intelligence. A Charging Management System (CMS) orchestrates the process by automatically distributing power across multiple vehicles to avoid overloading the electrical system. This is paired with an Energy Management System (EMS), which oversees the entire facility's energy profile. An EMS coordinates EV charging

with onsite solar panels or battery storage, allowing the site to shift charging to off-peak hours when utility rates are lowest.

To get full value from this infrastructure, fleet managers rely on telematics and fleet management integrations. These systems provide real-time data on vehicle location, state of charge, and route analysis. By integrating these data streams, managers can ensure that the most energy-efficient paths are taken and that every vehicle is sufficiently charged.

Implementing a Successful EV Charging System

The implementation process begins with a thorough onsite assessment to confirm that the facility can support additional electrical load. This assessment involves meeting with operations personnel to ensure the site layout allows for easy vehicle ingress and egress without interrupting daily business. If the assessment reveals that the existing infrastructure is insufficient, the provider coordinates with the utility to create upgrade timelines and calculate potential costs.

Once the design is finalized, the project moves into construction and deployment. This phase involves the physical installation of chargers, trenching, and conduit work, followed by rigorous testing and commissioning to ensure the system meets safety standards.

Post-installation success depends on a comprehensive operations and maintenance plan. Because EV chargers have a useful life of seven to 10 years, regular software and firmware upgrades are necessary to maintain performance and security.

Financial Considerations and ROI

Electrifying a fleet is a signficant investment, and organizations must choose between different ownership models. Some prefer a traditional capital expenditure (CapEx) approach, purchasing the equipment outright to maintain long-term control and add property value.

Others opt for alternative financing like Charging as a Service (CaaS), which functions as an operating lease with flexible terms. This allows fleets to avoid large upfront costs while keeping the equipment off the balance sheet.

To offset these costs, fleet managers should evaluate incentives, tax credits, and utility “make-ready” programs. Many of these incentives are stackable, significantly reducing the initial capital requirement and improving return on investment.

Integrating solar arrays or battery storage can further accelerate this ROI by reducing expensive peak demand charges from the utility.

The PowerFlex Fleet Charging Solution

As a national provider of clean technologies, PowerFlex checks all the boxes for fleets that need a scalable, cost-managed charging system.

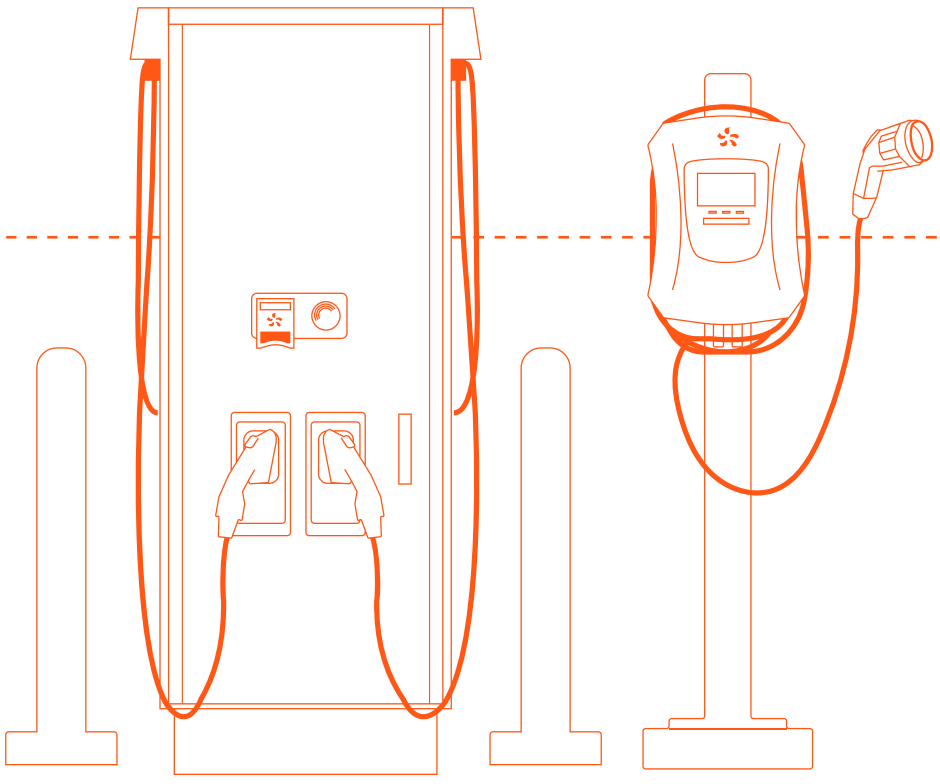
PowerFlex serves as a single-source fleet charging solutions provider, handling every stage of the project lifecycle. From the initial site assessment and charger selection to permitting, financing, installation, and ongoing asset management, PowerFlex removes the complexity of electrification.

The foundation of this solution is the PowerFlex X™ energy acceleration platform. This sophisticated software combines charging and energy management into a single platform that optimizes EV charging based on changing site conditions.

A key feature of the platform is Adaptive Load Management® (ALM) technology. ALM dynamically balances the EV charging load based on fleet schedules and available power, enabling more ports to be installed than in conventional setups.

This technology eliminates the need for costly utility upgrades, saving organizations up to 60% on implementation costs. By creating a flatter power draw, ALM reduces power spikes that trigger expensive peak demand charges, significantly lowering ongoing operating expenses.

For daily fleet operations, personnel utilize the Fleet+ dashboard within PowerFlex X. This destination allows managers to monitor charger and vehicle status, schedule and edit charging sessions, and track critical metrics like vehicle range and location through seamless telematics integrations.



Case Study: Powering DHL's Last-Mile Delivery

PowerFlex manages more than 50,000 EV chargers in the United States, including for fleets such as DHL. As a global logistics leader, DHL has committed to net-zero emissions by 2050, with a specific goal to electrify 66% of its last-mile delivery vehicles by 2030. To support this mission, PowerFlex provided a turnkey charging network consisting of more than 730 Level 2 chargers across 16 sites in 10 states.

> "We selected PowerFlex to complete our EV charging stations because of their deep industry experience that helped us find a creative solution to meet our EV fleet charging needs. We look forward to scaling up our EV fleet and ensuring reliable, eco-friendly deliveries to our customers."
>
> —**Laurice Bancroft**, SVP of Network Operations, DHL Express U.S.

By leveraging Adaptive Load Management®, DHL installed twice as many chargers as would have been possible with unmanaged charging, all while staying within the limits of their existing electrical infrastructure. Today, DHL uses the Fleet+ dashboard to maintain total visibility over its electrified sites, ensuring that vehicles are charged and ready for departure as early as 6 a.m. to meet their nonnegotiable delivery windows.

Contact a PowerFlex expert today to learn more about our fleet EV charging solutions

About PowerFlex

PowerFlex is a clean technology solutions company making the transformation to carbon-free electrification and transportation possible. Our energy acceleration platform PowerFlex X™ monitors, controls, and co-optimizes onsite assets like EV chargers, solar, energy storage, and microgrids — reducing overall energy costs through patented algorithms that maximize distributed energy resources.

PowerFlex is the second-largest installer of commercial solar in the United States, with over 500 megawatts (MW) of total solar capacity plus 50+ megawatt-hours (MWh) of battery energy storage. Combined, our solar and energy storage projects offset 460,000 metric tons of CO_2 each year. We also manage more than 50,000 EV chargers nationwide, making us the second-largest EV charging provider in the U.S. in terms of Level 2 port management.

PowerFlex is backed by EDF power solutions and Manulife Investments.

Visit powerflex.com for more information, and connect with us on LinkedIn and YouTube.

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