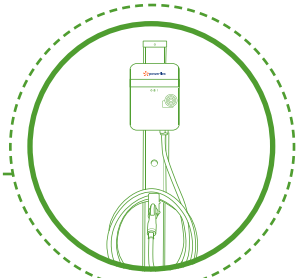


+ E-BOOK

Load Management for Fleets

Why It’s Needed, the Different Methods, and How It Can Save Thousands on Electrification

5-Minute Read



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Electric vehicle charging is one of the largest strains on the power grid today. A PwC analysis estimates that EV load could grow to 468,000 gigawatt-hours by 2040, accounting for 9 to 12% of grid capacity in the U.S.

This is why many fleets looking to electrify their operations must first undertake costly and time-consuming electrical upgrades to support EV charger installation. California utility Pacific Gas & Electric reported in 2023 that the average time to deliver new service — which can involve upgrading electrical panels and transformers — was 198 days. Permitting complexities, along with supply chain constraints that make equipment expensive and hard to procure, often drive these delays.

As the bottleneck tightens and electrification projects multiply, utilities and fleets alike are increasingly open to solutions that help avoid lengthy upgrades. A sophisticated charge management system (CMS) can allow fleets to install more charging capacity while reducing the scope of a grid upgrade or even avoiding one altogether.

Two key CMS features help make this possible:



EV Load Management

Strategically distributes power across EV chargers installed at a site to stay within a predetermined range



Site-Integrated Load Management

Adjusts the total power available to EV chargers based on building loads and other onsite power demands

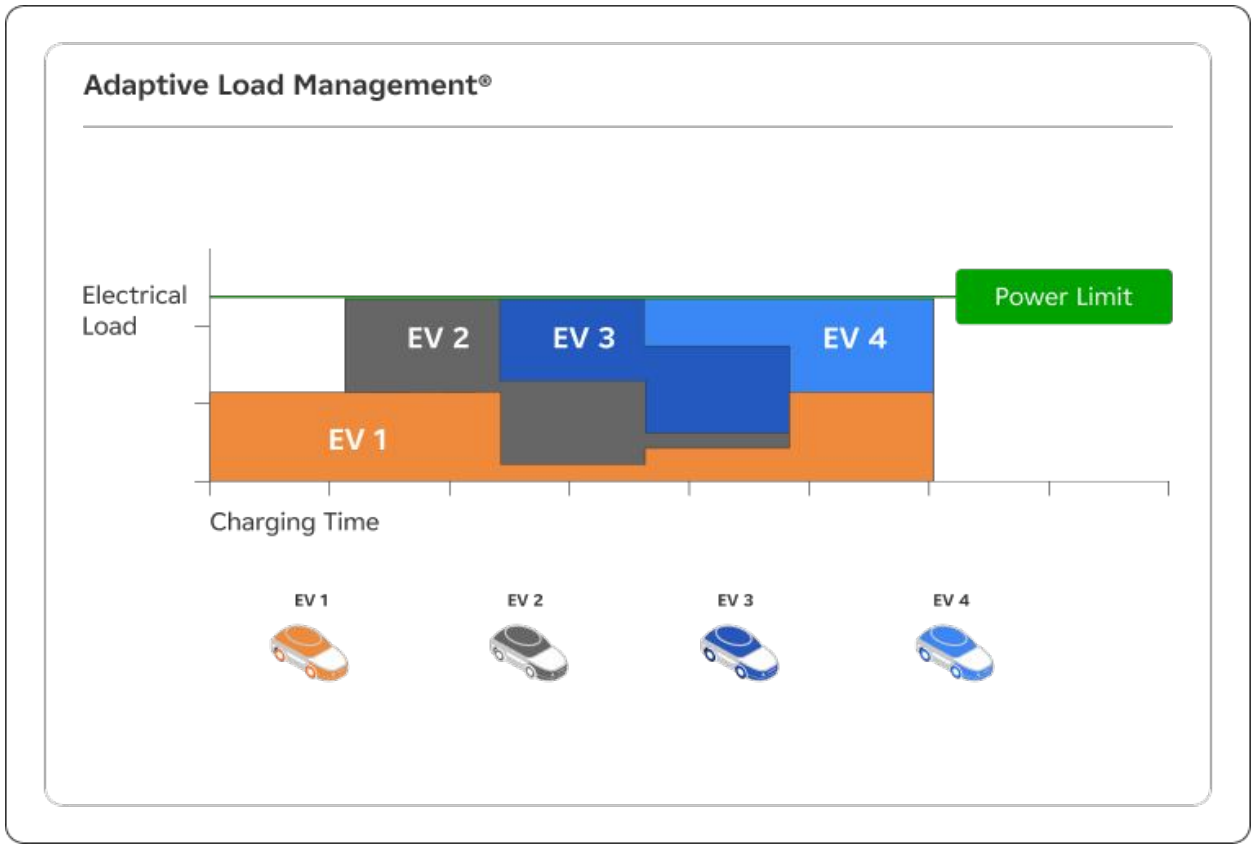
What Is EV Load Management?

EV load management allows the total capacity of chargers to exceed the panel's rated capacity by strategically sharing power across multiple charge ports.

How EV Load Management Works

The CMS enables unlimited charging until the site's total load approaches the set point — a predefined maximum total kilowattage. As the total load approaches the set point, the CMS reduces charging power to stay within the limit. The proprietary charging logic of the charge management system determines the distribution of power to individual chargers:

- In its simplest form, the CMS may equally distribute power across all chargers.
- At a higher level of complexity, it may take into account which vehicle plugged in first.
- At a sophisticated level, it may consider each vehicle's scheduled departure and route-cycle requirements, as with PowerFlex's **Adaptive Load Management®** technology.



A sophisticated CMS may also optimize a fleet's charging schedule to minimize energy costs according to the local utility rate structure. This can include optimizing vehicle charging to reduce demand charges and avoiding the peak hours of a time-of-use rate.

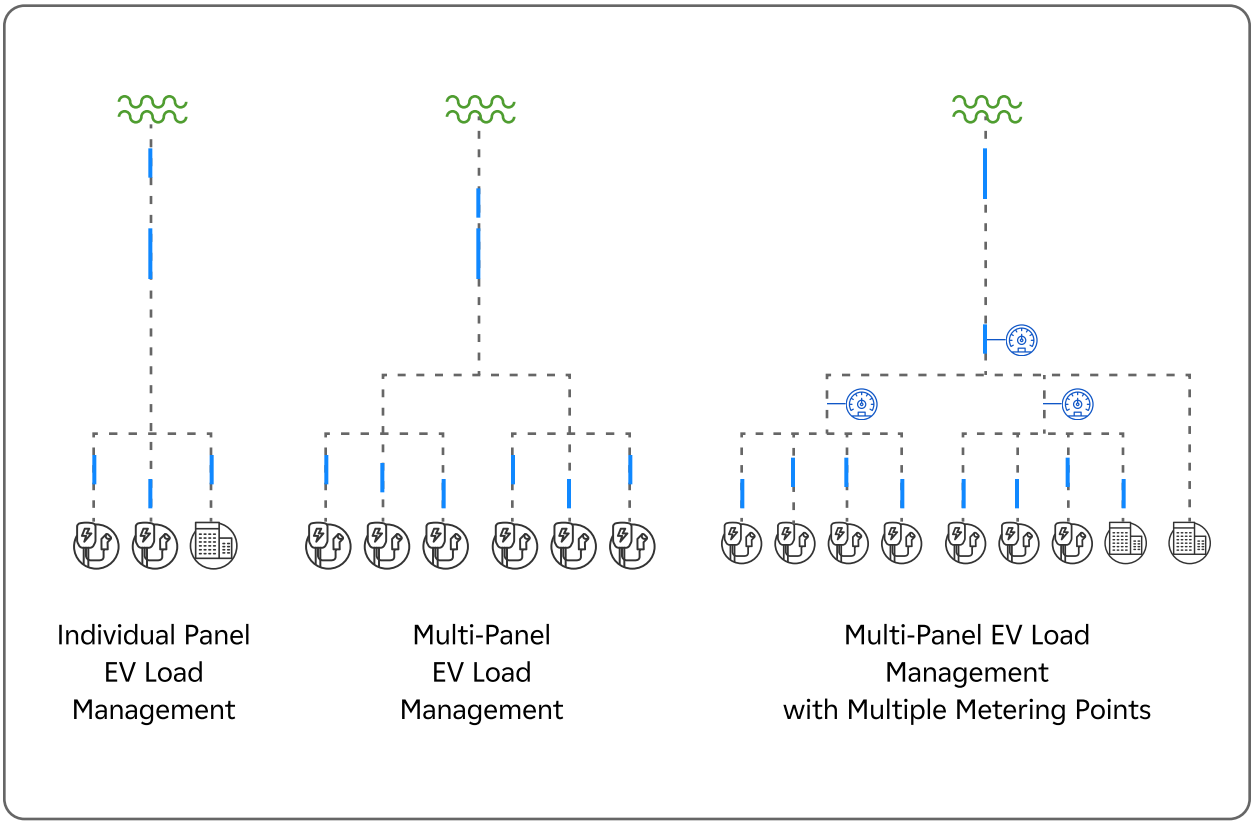
Not all charge management systems have these capabilities, so fleet managers must be discerning when choosing a CMS. PowerFlex offers not one but two platforms capable of optimizing around utility rates: **ChargePilot® by PowerFlex** and **PowerFlex X™**.

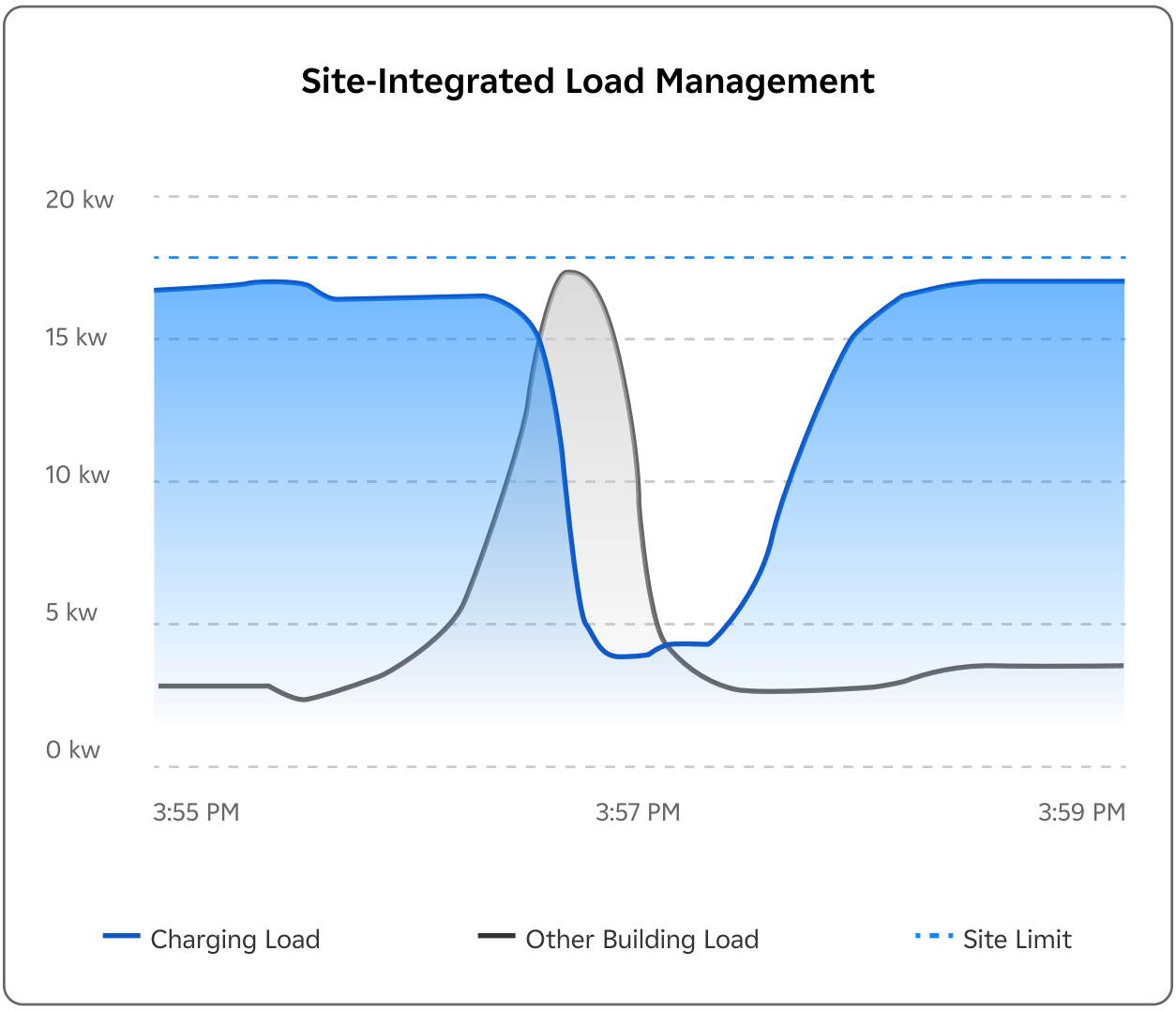
Talk to an expert to explore which platform is right for your site's needs.

What Is Site-Integrated Load Management?

The next level of load management is the ability to control EV load across multiple electrical panels while respecting all controlling equations.

For example, a site might have two subpanels, each with a group of EV chargers, feeding into a main service panel and connected to a single interconnection. In this case, the CMS must be able to solve a system of three equations — one per panel. These equations must be processed simultaneously, limiting charging load according to each subpanel's capabilities while continuously respecting the main panel's limit.

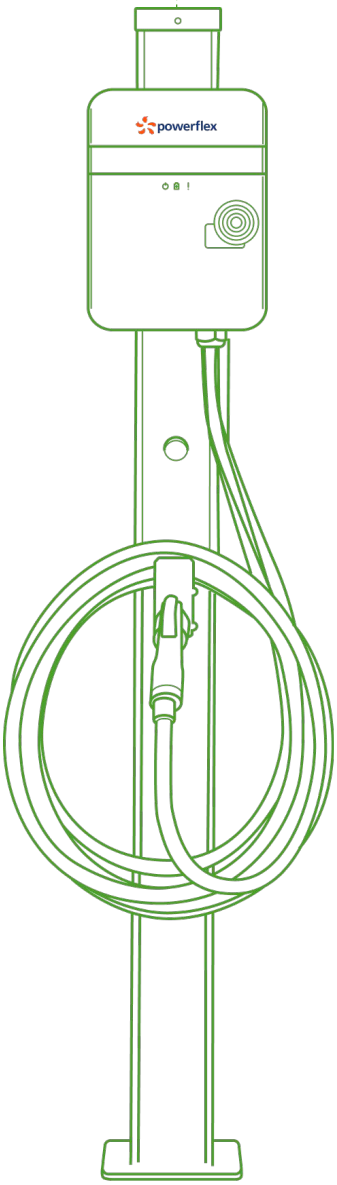




Site-integrated load management is one step beyond multi-panel EV load management. This describes the CMS' ability to meter across multiple panels with uncontrolled loads and adjust EV charging in response to real-time power availability. Rather than assuming static values for buildings or HVAC systems, for example, site-integrated load management allows charging to ramp up when other site loads are low and ramp down when they are high to stay within overall site capacity.

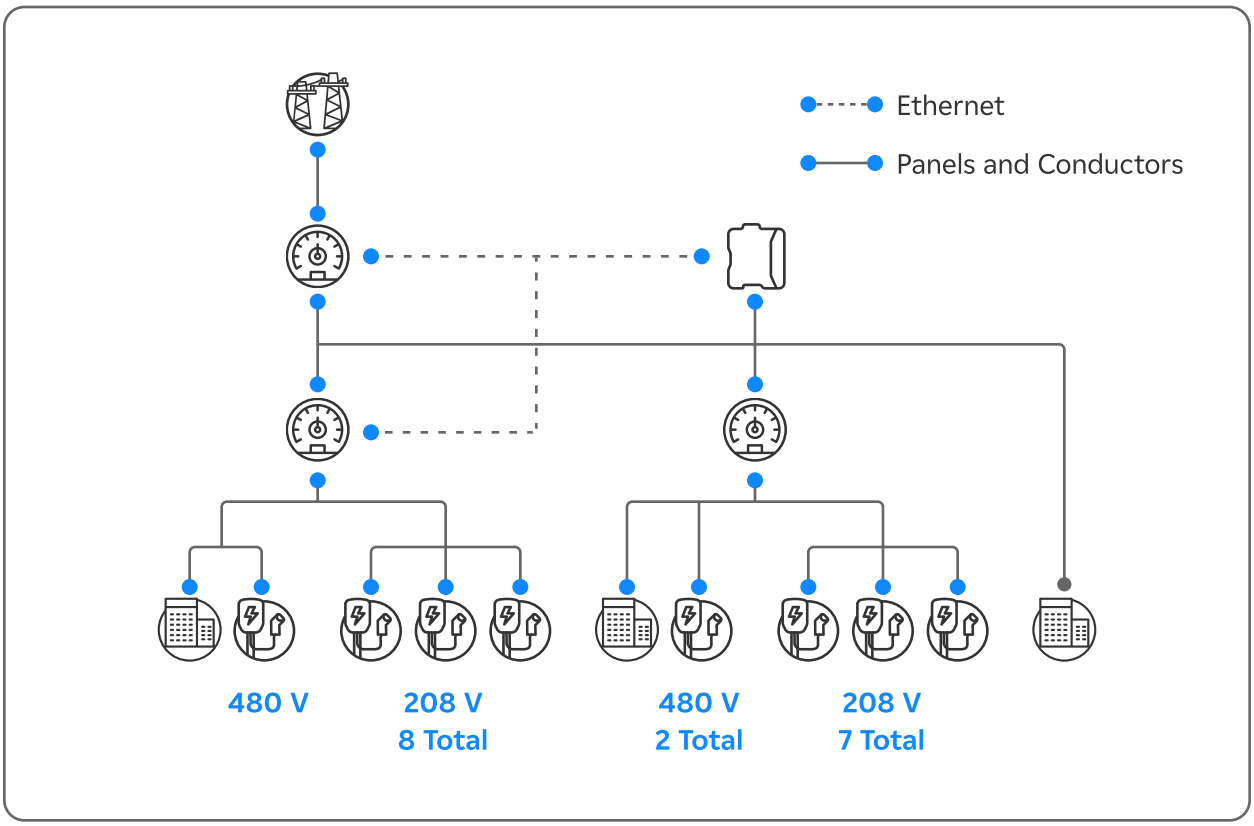
Case Study: Global Logistics Hub in Canada

PowerFlex partnered with a leading global logistics company that hosts a fleet of cargo vans near a major international airport.



Electrification presented a unique set of challenges for this high-demand site, as logistics runs on tight schedules and downtime is not an option. Using ChargePilot® by PowerFlex, the distribution depot now benefits from sophisticated charge management software.

At the core of this solution is EV load management and site-integrated load management combined with three integrated energy meters to monitor and manage power usage across different parts of the facility. With multiple electrical loads to track — including delivery vehicle charging, building HVAC, and lighting — ChargePilot® by PowerFlex ensures the EV charging system operates smoothly by reading total available capacity in real time and distributing power intelligently to the chargers. This is particularly important for sites that share EV charging load and existing loads across multiple panels.



At this site, the 15 chargers are split across two panels, with each group limited by the available capacity of its own feed and the overall main panel. When non-EV loads are at maximum, only 155 amps are available for charging across all chargers. Accidental overloading of the system could result in significant disruptions and safety issues.

By deploying ChargePilot® by PowerFlex, additional EV charging capacity is unlocked while other onsite loads are using less power. This solution has been a game-changer for the site's operations, ensuring that delivery vans are charged and ready when needed despite site power constraints.

Even during sudden demand spikes or unexpected power fluctuations, the robust controls of ChargePilot® by PowerFlex keep the fleet ready without straining the local grid. Integrating this real-time load management into our partner's managed and operated infrastructure has allowed the site to scale efficiently while maintaining high reliability.

Talk to a PowerFlex expert today to get started with EV load management that can electrify your fleet despite power constraints.

Contact Us →

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About PowerFlex

PowerFlex is a clean technology solutions company making the transformation to carbon-free electrification and transportation possible. Our intelligent energy management 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 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. PowerFlex also manages more than 70,000 EV chargers nationwide, making it the largest hardware-agnostic EV charging provider in the U.S.

Through intelligent charging management and bidirectional vehicle-grid integration technology, PowerFlex enables electric vehicles to serve as flexible energy resources for transit agencies, school districts, and fleet operators.

PowerFlex is backed by EDF power solutions North America, Manulife Investments, and The Mobility House.

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

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