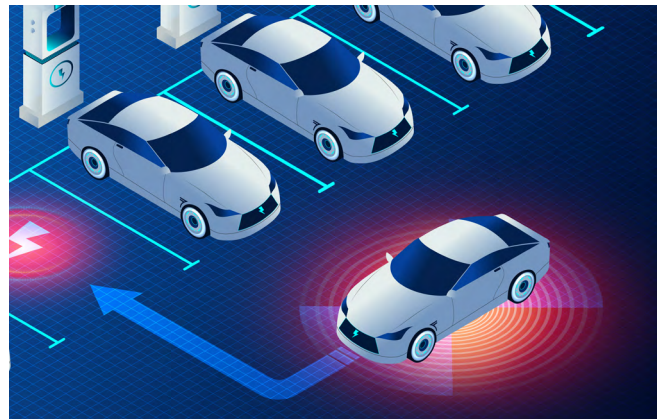


# Fleet Electrification: Strategies for Optimizing Fleet Operations

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# Executive Summary

According to McKinsey & Co research, TCO for EVs will outperform internal combustion engines across all vehicle classes, potentially, as early as 2025. Lower TCO is just one of the benefits of fleet electrification and the right infrastructure and right strategies lead to success.



## Benefits

- Lower TCO - fuel costs and maintenance
- Reduced Emissions
- Meet Sustainability and Regulatory Goals
- Improved Vehicle Performance



## Choose the Vehicles and Infrastructure

- Vehicle Options - Models and options are improving
- Battery Tech - Longer ranges and better performance
- Charging Networks - Improve reliability and station performance
- EV Charging - Power management simplified with multiple models
- EV Infrastructure - Learn to leverage public charging



## EV Fleet Strategies for Success

- Experience and Expertise with EV Fleets is Vital
- Scalability is Standard, Not a Superpower
- NovaCHARGE's Fleet Director Drives Operational Readiness
- EV Fleet Capability = Visibility, Reliability, Flexibility, Scalability
- Your EVSE Provider's Support and Warranty Matter
- Take Advantage of Incentives and Rebates



## Introduction

Increasingly, businesses and municipalities, from delivery and service providers to rental car companies, are making the switch to EV fleets. The process of fleet electrification isn't a single step, nor is it a simple decision; it's a journey. And, just like fleet operators will tell you, route planning is essential.

Mapping out a strategy requires understanding not just the final destination, but the stops along the way. This guide is intended to help you create a strategy for fleet electrification success and will provide you with concrete strategies for optimizing fleet operations using today's available technology.

Let's hit the road together!

# Fleet Electrification: Making the Move

EV adoption among passenger car drivers has steadily increased. In fact, at the end of 2023, EVs were nearly 20% of all light-duty vehicle sales. With the need to replace vehicles more often, it's no surprise that fleets are following suit and electrifying as well.

It's also no surprise that we've reached a crucial crossroads; one that, in many ways, will change the future of transportation and fleet operations for the better. With a greater understanding of the impact of fleet transportation on the environment (the transportation industry is responsible for nearly 30% of all emissions) also comes technological advances to help combat and counterbalance that impact.

Advances in nearly every aspect of the charging process from batteries to charging infrastructure itself is helping to simplify the fleet electrification process. Now, software and integrations, including telematics communicating with charging platform management systems (CPMS), means fleet operators and owners have an unprecedented level of flexibility, transparency, and control.

The only question remaining for fleet owners and operators is not how, but when. First, let's look at the why.



# Benefits and Challenges of Fleet Electrification

For some fleet operators, the challenges of managing and monitoring an EV fleet have been daunting. In fact, we've heard from fleet operators that the biggest obstacles to a seamless EV transition include:

- ✓ **Route planning**
- ✓ **Vehicle charging**
- ✓ **Depot and worker management**
- ✓ **Infrastructure planning and investments**
- ✓ **Training and administration**

As a result of these challenges, fleet operators aren't seeing efficient use of labor along with poor quick turnaround times.

Thankfully, we're finding ways to overcome these obstacles by leveraging both public infrastructure and improved technology enabling us to maximize the benefits of fleet electrification. Among the notable benefits:



**Lowered TCO** - From maintenance and fuel cost savings to dropping EV prices.



**Same safety with better performance and efficiency** - NHTSA standards still apply and vehicles are better designed for stop and go traffic, including better acceleration and handling.



**Meet sustainability/ESG goals** - Decreasing carbon emissions and lessening environmental impact with socially responsible business practices.



**Boost public perception and corporate reputation** - Reputation matters and more consumers are interested in how businesses are prioritizing ESG efforts. Lead by example in your community and industry.

And those are just some of the benefits of EV charging. When paired with robust support, powerful software, charging flexibility, vehicle and worker visibility, and methods to maximize public infrastructure, moving to an EV fleet becomes a powerful business decision that puts you ahead of the curve.

# Strategies for Optimizing Fleet Operations

When we ask fleet managers what it takes for success, we're met with some unsurprising and common answers: maintenance plans, driver safety and preparedness, optimized routes, efficient fueling, compliance, vehicle readiness, and overall efficiency.

And, for most fleet managers, this means fairly powerful fleet management software enabling them to track multiple moving parts which must be frictionless. It means optimized processes and procedures, which often take years to perfect, to ensure fleet readiness.

Enter EV fleets and charging needs and suddenly there's a new element that must be factored into your fleet management. While it needn't replace all systems, it does, however, change the ways you optimize your fleet and maximize their potential.

Thankfully, as we've noted, technology has caught up and is providing EV fleets with improved functionality and performance. Let's move on to the strategies!

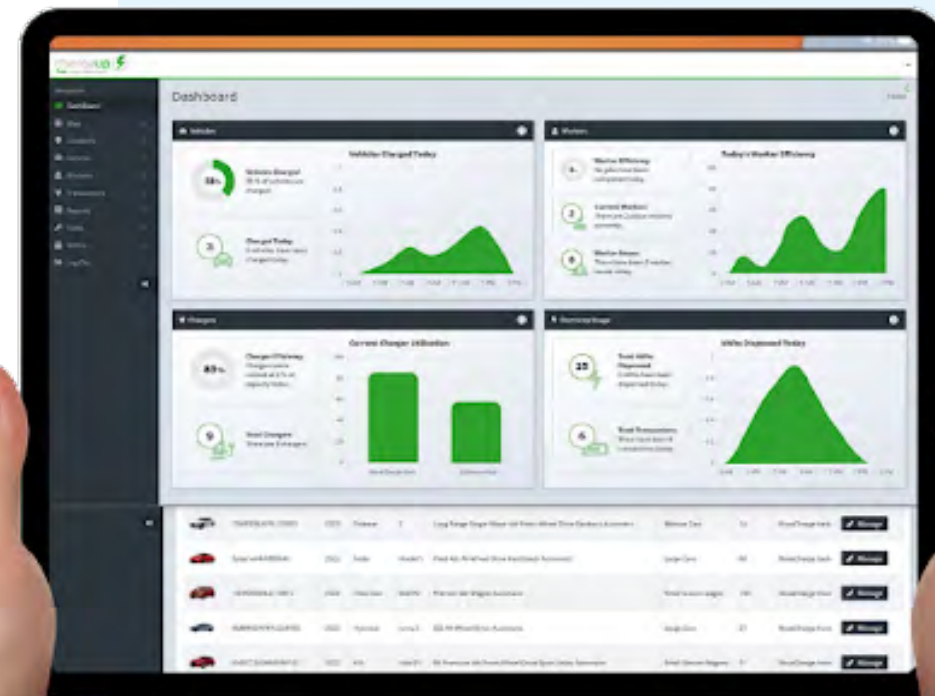


# Charging Platform Management System (CPMS)

Fleet operators, perhaps more than any others, understand how essential visibility is when it comes to managing EV charging. For any EV charging station owner, the charging platform management system (CPMS) is now an essential component to a successful charging solution, but for fleets it can act as a command center, enabling even quick-turn EV fleets to maximize charging opportunities.

The CPMS can help you manage and monitor all aspects of your EV charging. This includes connectivity that lets you leverage public EV infrastructure as well as your vehicles and workers, so you can prioritize tasks to meet demands. This is essential for EV fleet management, especially for quick-turn EV fleets.

And, the CPMS or “charging network” must be reliable, providing 99.999% (or greater) uptime. EV charging stations are only as reliable as the network and, when it comes to maintenance and functionality, if you can’t see your stations or your vehicles, you can’t see your needs and you can’t optimize EV fleet operations.





A CPMS helps you manage your EV charging stations and provides:



**Charger status and performance**



**Power usage and power sharing/management**



**Charging sessions and history**



**Driver/user data**



**Software updates**



**System and maintenance alerts**



**User administration (including hosts)**

# Balancing Power and Charging Needs

Power management is vital for utilities, fleets, multi-dwelling units, and any other location with limited available power. In fact, one of the biggest challenges faced by fleet operators making the move to EV fleets is balancing power loads with charging needs.

Without a major investment in infrastructure, how can fleet operators ensure they can get EVs charged, on demand, and out on the road, as needed, without paying premium electricity rates or taxing or overburdening the grid? fleet readiness.

From the start of your EV charging implementation, you should have, via a site analysis, a sense of what your site can handle, from the number of charging stations on site to the type (level 2 or DC fast chargers). From there, it's a case of balancing on site capabilities.

First, with improved visibility into your vehicles and chargers, you're better able to prepare for incoming vehicles and quick-turn demands. With insights into chargers, you're able to free up the type of charger you need and insights into employees means you've got the human resources to move vehicles as needed.

With EV charging station insights and control, you can set how vehicles charge, in what order, and how fast. For typical power management, you've got 3 options:

**First in, First Out (FiFo)** - The first vehicle at the EV charging station charges first and gets the fastest charge possible. Other vehicles may still charge, but at a slower rate.

**Round Robin** - Each car charges at maximum for a set amount of time. Once that time limit is reached, the station charging at max rotates, allowing every car to charge at max during the cycle.

**Even Charge** - All vehicles charge at the same rate, sharing the available power equally, regardless of how many vehicles are charging.

Depending on your needs, time of day, and demands, you can move between these power load management schemas, ensuring vehicles are charged quickly and efficiently without ever overburdening the grid.



**Looking for something more advanced? NovaCHARGE has you covered with three advanced options for power management:**

**Fixed Hardware Power Limiting:** Enables you to limit an EV charger’s total output. For example, you can restrict a 40A charger to just 32A.

**Dynamic Local Power Management:** Load balance multiple chargers on a single panel allowing the entire bank to power up and down, as needed, without exceeding the total panel capacity.

**Virtual Circuit Technology™ (VCT):** NovaCHARGE developed this ground-breaking technology based on over a decade of real world experience. Open standard OCPP-compliant EV chargers running on the ChargeUP CPMS with limited power available can connect to this cloud-based version of Dynamic Local Power Management, which provides enhanced and sophisticated multi-level cloud power management to chargers, across any number of panels, transformers, geographic regions, and more.

It can also connect to DERMs or ADR APIs, to allow external input and control. With VCT, the power demand from the chargers will not exceed the infrastructure’s limitations no matter the time of day, ensuring that no driver is left without a charge and that the infrastructure is not overloaded.

The three different power management options each have unique benefits in specific circumstances and, thankfully, may be used in conjunction with each other, ensuring each vehicle gets the charge it needs without overloading the grid.

Further, advanced technology, such as V2G (vehicle to grid) can allow your fleet to sell energy back to the grid during downtimes or peak demand elsewhere. For example, during peak demand, you may opt to have vehicles charge more slowly, such as overnight, further reducing costs for your fleet.



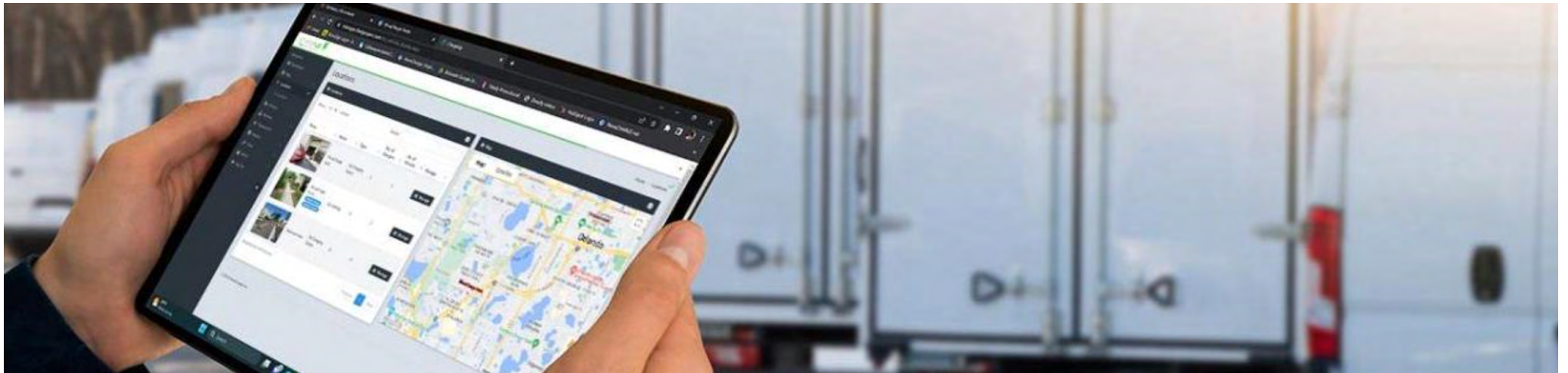
# Reporting and Remote Monitoring

Telematics have been an essential part of fleet management for decades and that means fleet managers are well-versed in translating that data into actionable insights when it comes to fleet operations. In short, based on driver, vehicle, and route, needs become predictable, and preparation becomes possible. This is, in many ways, the key to efficiency.

Similarly, when GPS arrived on the scene, it improved remote monitoring capabilities (and route planning) even further. And now, a CPMS provides even more

data and flexibility around your EV's charging, in motion and at rest, increasing the predictability of your fleet and resources.

And, with robust reporting, tailored to your needs, you can gain valuable insights into charger, vehicle, and driver utilization. With that data, you can reduce charging costs by charging vehicles around utility demand rates and maximize charging capacity through optimizations like matching vehicle charging performance to available charger outputs.



# Optimizing Quick-Turn EV Fleets with NovaCHARGE's Fleet Director™

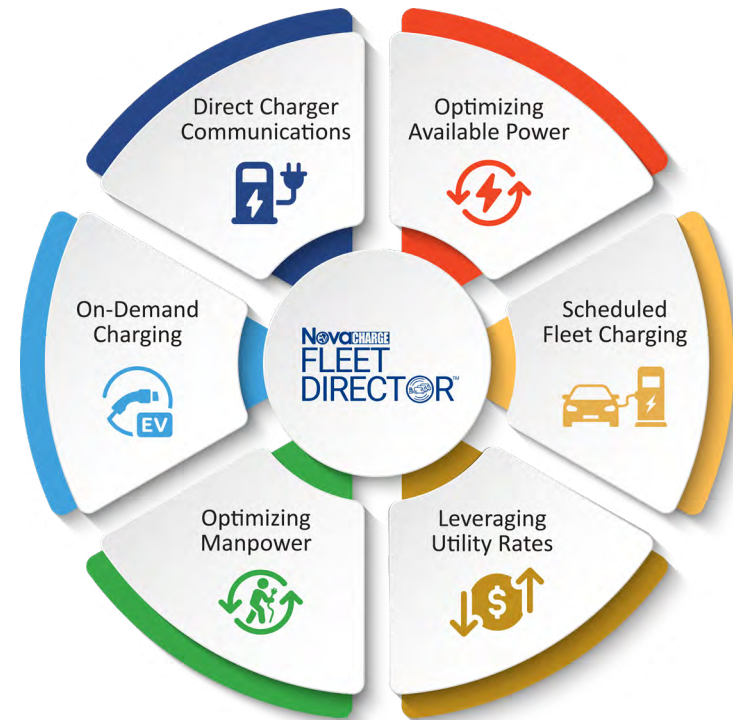
EV Fleet Operational Excellence = Readiness ÷ Cost

When it comes to fleet and depot management, maintenance and downtime prevention are key factors. Obviously, one of the biggest benefits of fleet electrification is that you, significantly, decrease maintenance time and costs. Still, you need to move vehicles in the depot to prep them for service and charging does add in a new element.

While refueling may be fast, and your team may be efficient at loading, unloading, or cleaning vehicles, you do need to maximize depot EV chargers and vehicles to ensure quick-turns. In order to do that you need visibility into your vehicles, your chargers, and your drivers.

For example, if you have a vehicle coming in or out on a route, and its battery is low, you need to know which of your fast chargers is available to make that quick turn possible or what EV chargers are available in the public to “top off”. In other words, quick-turn fleet needs are a bit different from overnight fleets and that holds true in the EV fleet space as well.

Quick-turn EV fleets need flexibility and the ability to charge on the fly. While overnight fleets can take time to charge, quick-turn fleets need options and DC fast charging isn't always the best answer, especially with potential power limitations or the cost of electricity.



Quick-turn fleet EV charging solutions must accommodate the unique demands, typically involving a combination of deployment of fast chargers at depots, leveraging available public charging infrastructure, or the integration of mobile charging units to support on-the-go charging needs. All of that takes coordination and, sometimes, complex orchestration. It's a bit like air traffic control.

Regardless of your fleet type, optimizing depot management, from vehicles and chargers to your employees, you need visibility into all of them, in one place. You need to know which chargers are performing at optimum, which chargers are open, where the vehicles are, which vehicles need charging (and how much) and which team members are available to move and charge vehicles and more.

And, perhaps more importantly, you need to be able to schedule tasks and direct depot traffic to make all of that happen, efficiently and on demand. That requires powerful, and integrated software, like Fleet Director.

With [NovaCHARGE's Fleet Director](#), fleet operators can finally have full visibility including networked chargers, vehicles, and workers, directing efficient utilization of fleet resources.



Managers can assign jobs and tasks to nearby available workers ensuring optimal labor workflow and the desired quick-turns. You get the right vehicle ready with the specified charge exactly when, and where, it's needed.

In short, Fleet Director enables profitable quick-turn fleet electrification by increasing overall fleet readiness through:



Optimal vehicle and EV charger utilization



Improved labor efficiencies, with staff tracking and reporting



Lower total cost of charging

And, in the near future, you'll be able to analyze historical data to predict required labor for upcoming timeframes and incoming demand; expand to AI-driven insights into charger and labor availability to further optimize workflow; and see better prediction of required labor resources, and recommended public chargers to further cut costs.

Fleet Director can be integrated into the ChargeUP CPMS or can be implemented as standalone software, creating a true command center delivering operational excellence.

| Photo | VIN               | Year | Make      | Model   | Trim/Style   | Class                | Battery % | Location         |
|-------|-------------------|------|-----------|---------|--|----------------------|-----------|------------------|
|       | 1G1FX6507P4184905 | 2023 | Chevrolet | Bolt EV |  | Small station wagon  | 0         | none             |
|       | 75AYGDEE0NF481177 | 2022 | Tesla     | Model Y | Long Range 4dr All-Wheel Drive Sport Utility Automatic           | Small SUV 4WD        | 100       | NovaCharge back  |
|       | YSMEG3KA1PL125935 | 2023 | Polestar  | 2       | Long Range Single Motor 4dr Front-Wheel Drive Fastback Automatic | Midsize Cars         | 14        | NovaCharge back  |
|       | Syjsa1e64nf459940 | 2022 | Tesla     | Model S | Plaid 4dr All-Wheel Drive Hatchback Automatic                    | Large Cars           | 68        | NovaCharge back  |
|       | 1G1FZ6503L4119912 | 2020 | Chevrolet | Bolt EV | Premier 4dr Wagon Automatic                                      | Small station wagon  | 100       | NovaCharge front |
|       | KMBKND4F4PU224195 | 2023 | Hyundai   | Ioniq 5 | SEL All-Wheel Drive Automatic                                    | Large Cars           | 27        | NovaCharge front |
|       | KNDC3LGG5160182   | 2022 | KIA       | Niro EV | EX Premium 4dr Front-Wheel Drive Sport Utility Automatic         | Small Station Wagons | 51        | NovaCharge front |

# Charging Hubs and Public Infrastructure

Perhaps one of the biggest evolutions in EV infrastructure is public EV charging station density. As more communities and businesses invest in EV infrastructure, including the proliferation of charging hubs, the more it enhances opportunities for EV fleets to leverage that infrastructure to increase charging opportunities, decrease demand for at depot charging, and improve vehicle performance and efficiency.

**Lower total cost of charging**  
**Reduce capital costs by leveraging existing offsite charging**

Among the most challenging aspects of EV fleet management, currently, is route planning. While charging station density is improving, it can still be a challenge to “charge on the fly” as some vehicles may need. As drivers adjust to routes, to driving EVs more efficiently, and as routes evolve to better reflect EV performance strengths, leveraging public infrastructure will become a key part of the game.

One of the added advantages to leveraging public infrastructure is not just the ability to “top up” while on the move but the potential to negotiate with key stakeholders on charging rates. Because fee structures can be adapted and adjusted to accommodate specific drivers and vehicles, EV fleets can tap EV charging hubs for reduced rates based on usage.

This is an exciting time. EV performance is improving as is the supporting infrastructure and technology. With incentives, rebates, and partnerships forming, fleets who get in early will be able to help shape, improve, and leverage the technology supporting effective EV fleet and depot management.





# And Finally, Another Part of Our Total Solution: FLEXX Mobile Charging

NovaCHARGE is an authorized distributor of ChargeRigs FLEXX Mobile Charging Systems. [FLEXX mobile units](#) are easy to operate, have low downtime, and, where infrastructure needs might make EV solutions seem far off, these systems are priced for smaller budgets. When EV charging needs to come to the vehicle, this mobile charging system was specifically designed to meet the use cases that traditional charging solutions fail to meet.

Flexx charging units increase your fleet readiness, optimize your charging infrastructure and increase the ROI on your entire fleet!





The only question remains how you will choose to grow your EV Fleet. At NovaCHARGE, we've been an industry leader for over a decade, helping shape the EVSE industry, the technology that supports it, and you.

We're ready to put you in the driver's seat and create an EV fleet future that scales with you by improving EV charging performance, operational readiness and TCO.

Let's get chargedUP!

[Contact Us Today](#)

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