



Powering fleet decarbonization with fleet charging hubs

Everything you need to know about fleet charging hubs, and how they can help fleets to deliver operational reliability and efficiency while managing energy demands and costs.

SHELL FLEET SOLUTIONS
TOGETHER ANYTHING IS POSSIBLE



Why meeting the needs of tomorrow's fleet means a mindset shift today



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In the fast-paced world of delivery and operational fleets, electrification is accelerating. New zero-emission vehicles are predicted to make up 30% of medium and heavy-duty fleet sales by 2030.¹ Additionally, EV market unit sales are projected to reach 2.1 million in 2027.²

That shift is already underway, with electrification offering important opportunities to:



Reduce total cost of ownership (TCO)³



Help achieve decarbonization targets



Help meet regulations



Gain a competitive advantage by offering customers sustainable services



Maintain access to low- and zero-emission zones

We're seeing a similar journey with heavy-duty fleets as well, with McKinsey & Company predicting that the majority of new trucks in Europe, the US, and China will be electric by 2035.⁴ Given that many organizations operate mixed fleets, electrification across all vehicles presents an effective decarbonization pathway.

What we must remember, however, is that this transition goes way beyond just the vehicles themselves. Fleets must also replace the energy sources they use to power their operations. Where they previously had a need to access conventional fuels, they now need the ability to charge their vehicles. And there are several factors to consider as part of this.

Unlike managing internal combustion engine (ICE) vehicles, the choice for EVs isn't as simple as 'gasoline or diesel'. Instead, EV charging offers businesses the flexibility to build their infrastructure strategy around their specific requirements – from their fleet size and vehicle mix to their location and energy usage.

Shifting mindsets also means rethinking when and where vehicles charge, using this enhanced flexibility to make the most of available downtime during the day and at night. This offers fleets an exciting opportunity to explore fleet charging hubs – also referred to as eDepots.

Fleet charging hubs are not an emerging solution. They are available today and have the potential to revolutionize the way delivery and operational fleets operate.

For delivery and operational fleets – where vehicles are critical to delivering their goods and services – most charging will take place at the depot. Therefore, businesses need solutions that make EV charging reliable and accessible – giving them peace of mind that their vehicles will be ready to go when needed. Fleet charging hubs can provide that, helping fleets to: enhance the efficiency of their operations and their drivers; aid energy management; and reduce operating costs – all while supporting decarbonization.

To realize the true potential of electrification – and unlock the benefits that come with it – businesses need to explore ways of driving sustainable growth. This means accelerating decarbonization while maintaining profitability through improved efficiency and operational expenditure (OpEx), by considering the needs of their fleet today and anticipating the requirements of tomorrow.

Regards,
Hilmar Van Den Dool

¹ The White House. "Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability." December 08, 2021.

² Statista. "Electric vehicle market unit sales are expected to reach 2,131.2K vehicles in 2027". 2023.

³ McKinsey Sustainability, 2020. 'Charging electric-vehicle fleets: How to seize the emerging opportunity' (estimates based on urban and regional use cases for commercial fleet vehicles)

⁴ McKinsey & Company, [Preparing the World for Zero Emissions Trucks](#), 2022.

What are fleet charging hubs?

Fleet charging hubs provide businesses with the ability to charge electric vehicles using private charging stations installed at a fleet's hub, or depot.

Typically, this combines the hardware that powers vehicle charging, the software that manages that charging process, and the operational support to maintain EV operations. For some fleets, it also includes on-site energy solutions – such as solar panels or stationary batteries – to help provide the power needed to charge the vehicles. Together, these elements deliver an end-to-end fleet electrification solution that helps EV fleets to deliver goods and services effectively.

Why is a customized fleet charging solution important?



Currently, there are some common **misconceptions** around EV charging for fleets:

1. EV charging is one-size-fits-all
2. EV charging begins and ends with the charging stations
3. Charging solutions are both costly and confusing
4. Electrification will impact uptime and cause operational disruption

The range of solutions available can be complex and overwhelming for businesses looking to electrify their fleets, especially as decision-making will involve buy-in from multiple stakeholders – from drivers and procurement teams to facility and sustainability managers. Also, as highlighted above, there are many factors to consider when bringing EV charging capabilities to a facility. Running an EV fleet involves a lot more than simply installing a selection of charging stations.



Fleet charging hubs should be **designed** to encompass all these factors – creating a long-term, purpose-built solution based on the specific needs of a business – no matter their fleet size or vehicle type. Customized solution design can simplify the electrification process and help businesses transition to an EV fleet, which can have a lower TCO.⁵



⁵ McKinsey Sustainability, 2020. 'Charging electric-vehicle fleets: How to seize the emerging opportunity' (estimates based on urban and regional use cases for commercial fleet vehicles)

How fleet charging solutions enhance a fleet's electrification strategy

75% of the 200 largest US fleet operators have already committed to decarbonization targets for public fleets.⁶ Furthermore, 16% of companies have made a formal commitment to decarbonization via a key performance indicator.⁷ Fleet operators need to know that their charging process is reliable and that their uptime and operations won't be negatively impacted by the transition to EVs. Fleet charging solutions allow for this, by enabling them to:

-  Create and implement a scalable solution to meet changing operational requirements
-  Access hardware that is a good fit for their operations
-  Use software that streamlines their EV charging processes
-  Access monitoring and maintenance services that help drive efficiency
-  Schedule charging around operational commitments for drivers
-  Facilitate energy management to balance power loads while managing capacity and charge times

Like any business decision, a fleet electrification strategy requires planning. The EV transition will look different for every fleet depending on their needs. Fleet charging solutions can provide the opportunity for innovation and customization, offering businesses the flexibility to meet the demands of today, while preparing for the future.

Here are a few examples of how fleet charging solutions can address some of the common misconceptions around EV charging for fleets:

- They can be retrofitted in existing spaces or purpose-built, using data modeling and site design
- Fleet operators can use software to manage their charging stations, helping to secure uninterrupted and cost-effective charging, so vehicles are ready when needed
- The data captured from the fleet charging software and energy management solutions can be used to facilitate budgeting and help reduce capital expenditure (CapEx) and ongoing OpEx
- By working with an expert that understands the needs of the business – for example, the voltage requirements and speed of charging stations – fleet operators can make sure they are investing in a fleet charging solution that meets their needs



Raising reliability for customers in California

Since 2019, Penske Truck Leasing has powered a fleet of medium-and heavy-duty electric trucks, which it rents and leases to customers in California and the Pacific Northwest.

For Penske, reliable EV charging infrastructure is critical to ensure its vehicles are fully charged when needed, so that customers can use them consistently. Alongside adopting high-powered hardware that charges its vehicles in 1–2 hours, Penske has worked with Shell to connect its chargers to the Sky™ EV Charging Network Software, to make managing its charging infrastructure more efficient and improve charging operations. Coupled with on-site improvements delivered by Shell, this has allowed Penske to increase the uptime of its charging stations to 98%.

⁶ Saral Chauhan, Malte Hans, Moritz Rittstieg and Saleem Zafar. "Getting to carbon-free commercial fleets." McKinsey & Company, December 13, 2022.

⁷ Shell Fleet Solutions Global Segmentation. Kantar 2022.



10 questions all fleet operators should ask about their charging infrastructure strategy

Fleet charging solutions present many opportunities for businesses. For delivery and operational fleets, it's expected that the majority of charging will take place at fleet hubs, and the remainder will be completed through on-the-go charging. Operational requirements and vehicle mixes change, so it's crucial to approach an EV infrastructure strategy holistically, choosing solutions that are scalable and robust enough to support an evolving fleet.

Factors fleet owners must consider to implement a reliable EV infrastructure strategy include:

- 1 How quickly do I need to charge each vehicle to keep my operations running as effectively as possible?
- 2 When is the most convenient time to charge each vehicle so they are ready when needed?
- 3 Where do my drivers usually leave their vehicles overnight – at home or at the fleet hub?
- 4 How much space do I have on-site to install charging stations?
- 5 What are the grid tariffs and regulations on charging in my market?
- 6 How can I manage the impact of our extra electricity usage on my grid and operations?
- 7 How will I maintain and repair my charging infrastructure to keep my fleet running smoothly?
- 8 How can these solutions work with each other to make it easier to manage my EV fleet?
- 9 How can I monitor and make the best use of my charging infrastructure to drive performance?
- 10 Do my operations drive a need for fast charging stations?



Fleet owners don't have to answer these questions alone – by working with experts, they can unlock the potential of fleet charging solutions.



Fleet charging solutions and energy empowerment

A key factor – and often a concern – for fleets in the EV transition is the extra electricity demand their operations will generate, the impact this will have on their existing electricity infrastructure, and any limitations it might highlight. Fleets also need to ensure the transition is in line with their decarbonization goals as their power consumption increases. To address this, and limit the indirect emissions produced from their EVs, fleets will need to explore an energy strategy.

Energy management is the process by which businesses can balance their power needs across their facilities – and there are two aspects to this. Firstly, managing the electricity demands of their operations, reducing the peak load and avoiding higher energy prices. Secondly, fleets can work to reduce the carbon intensity of the power they draw from the grid, for example by using renewable energy.

Effective energy management capabilities give fleet owners the ability to take control of their power usage, improving operational reliability, keeping costs low and reducing the carbon intensity of their fleets. Fleet charging hubs and integrated energy solutions can support this across three key areas:

1. Costs

Having software to meet the specific EV charging needs of each fleet means they can schedule charging times around energy and grid pricing – helping to minimize peak demand times and reduce charging costs.

2. Energy sources

By adding on-site energy solutions such as solar panels or stationary batteries to their hub, fleet owners can work to make efficient use of the energy sources powering their vehicles, while creating their own energy stores to supplement the grid.

3. Grid constraints

Insights from charging software data can be used to enable Dynamic Power Management (DPM), prioritizing the distribution of power between buildings and charging infrastructure. Equally, Dynamic Power Sharing (DPS) software solutions can be used to equally distribute the available power of the grid connection between all active charging stations – helping to efficiently charge all connected EVs.



Effective energy management, when considered as a key element of a wider eMobility strategy, helps fleets to optimize their operations and take advantage of innovative new solutions as capabilities evolve. This includes the potential to implement solar integration⁸, battery integration⁹, and bidirectional charging to support vehicle-to-everything (V2X) charging at their hubs.

Ultimately, creating a robust fleet charging solution requires collaboration. Working with an expert to understand what's possible for each site, now and in the future, is vital – to help fleet owners explore different scenarios for hardware and dispatch schedules that can improve TCO and help with decarbonization.

⁸ Solar integration enables EVs to be charged with the solar energy surplus. When a fleet charging hub's photovoltaic system produces more energy than the facility's appliances require, the charging station charges using the surplus of energy.

⁹ Battery integration enables large-scale stationary batteries to be integrated with photovoltaic systems, so fleet operators can use the battery systems for their preferred applications, such as increasing charging capacity or to drive CO₂ reduction.

How can we help?

At Shell, our Powering Progress strategy is to accelerate the transition to net-zero emissions, purposefully and profitably, by working together to provide more and cleaner energy solutions. However, accelerating decarbonization also requires the mutual support of government, industry, and customers, to drive innovation and ensure that low-and zero-carbon solutions are available at scale.

To thrive during this transformation, fleet operators will need to drive sustainable growth. Achieving this requires an ecosystem of solutions to support every aspect of fleet operations. As well as changing the way vehicles are powered, it includes ongoing consultancy support to engage drivers and stakeholders as they navigate the complex pathway to reduced emissions.

With more than 60 years of experience, Shell Fleet Solutions is one of the global leaders in business mobility. We are committed to driving innovation, and providing simple, smart, and sustainable solutions.

Our evolving portfolio of eMobility solutions plays a critical role in this. Through our innovation centers across the globe, from our Shell Recharge Innovation Lab in Los Angeles to our Energy Transition Campus in Amsterdam, we are undertaking ongoing research around energy innovation in the EV charging space. We are also continuing to invest in our charging technology to ensure electrification solutions are available at scale, so our customers have solutions that grow in line with their needs.

Therefore, our range of eMobility solutions are designed to provide robust, reliable, and accessible charging solutions for our customers at fleet hubs.



Fleet charging solutions

Our fleet charging solutions allow customers to create robust and scalable customized charging infrastructure tailored to meet their specific business needs. We provide high-performing hardware and software to manage infrastructure easily and efficiently, as well as energy management solutions to help improve efficiency, performance, and reliability.



[Learn more about our fleet charging solutions and how they can help your business.](#)

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