Curve Ahead: The Future of Commercial Fleet Electrification

A 2018 UPS/GreenBiz Research Study

GreenBiz

Executive Summary

Commercial fleets are making the transition to a clean energy future and fleet electrification is leading the way. This shift is driven by various factors, including a technology and market evolution, renewed attention on global climate risks and the improving economics based on a more favorable total cost of ownership.

According to the U.S. Environmental Protection Agency (EPA), the transportation sector accounts for the largest portion of total U.S. greenhouse gas (GHG) emissions (28 percent), and the medium-and heavy-duty truck sector accounts for 23 percent of those emissions. The same trend holds true globally, and emissions reduction goals are emerging in cities across the globe. Electric commercial vehicles help fleet operators reach challenging global emissions goals, and more renewable energy projects coming online create an opportunity to power commercial fleets with cleaner sources, further reducing total emissions.

At the same time, electric options are increasingly becoming more cost competitive, offering comparable (or even favorable) features to their diesel alternatives and becoming more widely available from a range of manufacturers. While curves are ahead in the road to widespread electric fleet adoption, many fleet operators are seeing opportunities and challenges — in short, those in the ecosystem can learn from each other. Overall, signs indicate progress is being made and we're moving in the right direction.

UPS joined with GreenBiz to conduct this research to better understand the transition toward commercial fleet electrification, including barriers, motivators and strategies for accelerating the market. For the purposes of this study, "commercial fleets" refers to vehicles across the light-, medium- and heavy-duty categories. While a range of alternative fuel technologies is available, including natural gas, hydrogen fuel cell and hybrid options, this research project focuses on fully electric commercial vehicles.

Our research revealed several key findings from large companies and government agencies, including:

- The primary motivators for electrifying fleets are achieving sustainability goals (83 percent of respondents) and lowering total cost of ownership (64 percent).
- The top barriers are a prohibitive initial purchase price (55 percent), lack of EV charging infrastructure at facilities (44 percent) and lack of product availability (35 percent).
- 92 percent of GreenBiz web survey respondents indicated that their organization is not well-equipped with onsite EV charging infrastructure for commercial vehicles.
- There is an opportunity for businesses to work together with suppliers, government and utilities — 70 percent of survey respondents indicated that they collaborate with suppliers but less than half currently collaborate with government or with utilities.

Handling the Curves on the Path to EV Fleets

Fleet Electrification - A Market Evolution

The driving forces for commercial vehicle electrification include vehicle technology improvements (and subsequent cost declines), the changing policy landscape around emissions reductions and commitments by vehicle manufacturers.

Technology Improvements (and Subsequent Cost Declines)

According to the North American Council for Freight Efficiency (NACFE)'s Guidance Report, "Electric Trucks Where They Make Sense," there are various technology and cost considerations for comparing commercial electric vehicles to diesel systems. The battery, the core technology for electric vehicles, is continuously improving in both technology and cost. The 2018 Bloomberg New Energy Finance Electric Vehicle Outlook reports that from 2010 to the end of 2017, average lithium-ion battery prices dropped by 79 percent while average energy density of EV batteries improved at 5-7 percent per year.

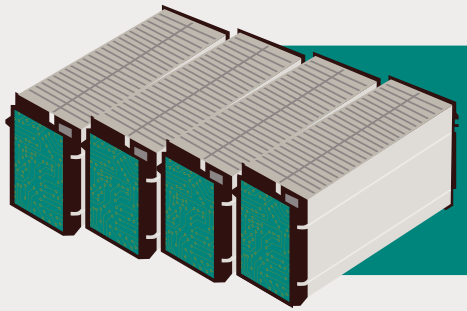
Local and National Policy Changes

In 2017, GreenBiz and UPS conducted a study titled "The Road to Sustainable Urban Logistics," which evaluated more sustainable approaches for maintaining the flow of goods in urban environments. The report highlighted the overall complexity of doing business in urban environments. Perhaps most notably, 95 percent of companies recognized the business challenges in growing cities. Furthermore, the top two issues concerning respondents were "air quality" at 58 percent followed by "traffic congestion" at 53 percent.

The report cited various examples of local governments taking action to address challenges associated with congestion and air quality. For example, London, Los Angeles and Mexico City have taken action to create low-emission zones, congestion pricing or other schemes.

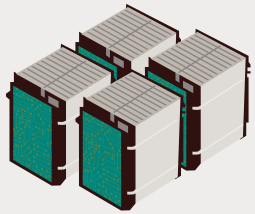
Over the past few years, more than a dozen countries and territories have taken steps to create various forms of restrictions on the future sales or registration of new vehicles powered with gasoline or diesel fuels. Since then, even more countries and cities across Europe, Asia and beyond have followed suit.

Nearly every person interviewed for this research study on fleet electrification mentioned the potential to reduce the initial purchase price and infrastructure upgrades based on government incentives, grants or tax breaks. These types of programs include a $2 billion nationwide charging infrastructure investment called Electrify America, which stems from the Volkswagen emissions settlement, and an additional $1 billion of investments in approved state-by-state utility programs for charging infrastructure. In the U.K., the Office for Low Emission Vehicles offers grants to help fund charging infrastructure projects.



PRICES DROPPED **79%**

ENERGY DENSITY IMPROVED **5-7%** PER YEAR



2010 Battery Technology

2017 Battery Technology

Source: 2018 Bloomberg New Energy Finance Electric Vehicle Outlook

Rising Commitments from Manufacturers

Over the past few years, numerous automakers, including GM, Nissan and Volvo, have announced plans for a near-term, all-electric future. While this movement largely affects passenger vehicles, the commitments have direct implications on commercial vehicle manufacturing, especially with regards to battery technology improvements. These enhancements, and the overall market potential, are leading to increased attention on commercial fleets from other manufacturers, startup and investment communities and large fleet managers.

Several automakers and startups recently have entered the market to provide commercial electric vehicles. Manufacturers including Tesla, Daimler, Arrival, Workhorse, Chanje, Thor Trucks, TransPower and Hyliion, as well as city bus manufacturers such as Proterra and BYD, are increasing their options for various types of fleets.

The early commitments and investment by manufacturers, and associated demand by large fleet managers, are a positive sign. However, many manufacturers, including Tesla with its Semi truck, are still only taking pre-orders, creating uncertainty about the availability and feature set of these vehicles. Additionally, in many cases, facilities lack adequate charging infrastructure and sufficient vehicle maintenance expertise to support these vehicles once they are delivered.

Newer manufacturers can overcome these challenges by partnering with leasing companies or service providers to accelerate the adoption of vehicles nationally. Several GreenBiz interviewees also suggested the need for increased training, interactions and overall comfort with electric technologies across the entire set of internal stakeholders, including procurement, fleet management, facilities management, operations, maintenance and engineering teams.

What Motivates Large Organizations?

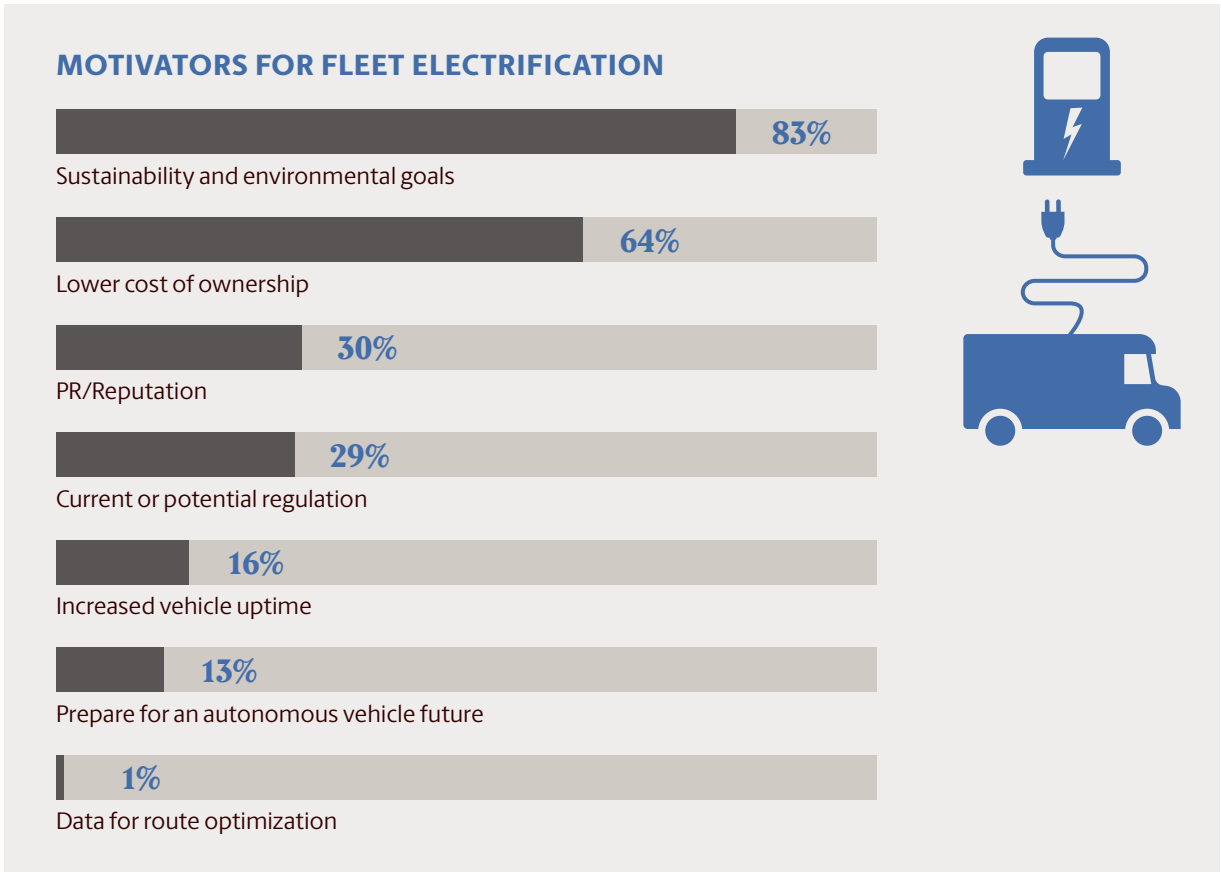
The GreenBiz web survey found that 83 percent of large organizations — companies with $1 billion and greater revenue and government agencies — are motivated to electrify their fleets to address "sustainability and environmental goals" followed by 64 percent that are motivated by achieving a "lower cost of ownership." In addition, interviewees reflected the sense that there is high demand for electric vehicles across a range of classes and use cases.

It Starts with Setting Goals

According to the 2018 GreenBiz "State of Green Business" report, about 60 percent of global companies have GHG targets. However, 53 percent of web survey respondents from large organizations said they do not have fleet electrification goals for 2020 or beyond. Therefore, while fleet electrification remains an opportunity to significantly reduce a company's GHG footprint, it is often not specifically called out in a corporate plan or target.

Several GreenBiz interviewees, however, indicated the importance of setting GHG targets with a specific goal on fleet conversion. According to Richard Battersby, assistant director for the city of Oakland, "The [city of Oakland's] green fleet policy dates back to 2002. More recently our climate action plan goes into some very specific goals regarding greenhouse gas emission and also includes the acquisition of zero-emission vehicles to help speed up the pace of the fleet replacement."

As the market for commercial electric vehicles and financing mechanisms continues to evolve, GreenBiz interviewees indicated that many companies are looking to their fleets as a way to drive business value and reduce environmental impact. Long-term value may come from risk mitigation and preparation for potential regulatory measures, and short-term value can be seen in lower maintenance and fuel costs.



Opportunity for Lower Cost of Ownership

One common strategy to justify the costs for fleet electrification is the use of a total cost of ownership (TCO) model, which looks more broadly at the direct and indirect financial costs and savings over the lifetime of the vehicle. Among the primary motivators for large organizations, 64 percent of web survey respondents indicated the potential for a lower TCO. The savings are the result of reduced fuel costs, a major expense for fleet owners, as well as reduced maintenance and supplies costs, as electric vehicles have fewer and less complex parts compared to their diesel counterparts.

Placing electric trucks on routes that maximize the battery range helps the ROI based on fuel savings. The potential cost savings are directly related to fleet size, miles and routes driven, type of terrain, as well as the geographic distribution and types of vehicles. According to Patrick Browne, director of global sustainability at UPS, "The locations where we put electric trucks first are where we're able to fully utilize the battery range capability – a significant factor in the return on investments. We are purchasing 50 medium-duty electric trucks, and we anticipate those vehicles will be at cost parity with conventional gas diesel."

Many GreenBiz interviewees cited this potential to reduce overall costs and offered various applications across their businesses where fleet electrification makes sense.

Three Applications That Make Sense for Fleet Electrification

1 Light-duty delivery vans and small trucks

Delivery vans and small trucks, especially in urban areas, often take many shorter routes to and from a central hub. Electrification can make sense when accompanied by a large enough set of routes between 40 and 100 daily miles in order to generate sufficient fuel savings and accommodate downtime associated with charging. This is a market where many manufacturers are focusing their attention and one where we can see significant transition over the next five to 10 years.

2 Medium-duty delivery trucks

Medium-duty urban delivery trucks with a stable route of between 50 and 100 miles per day also make a good option for electrification. The vehicles often can be charged predictably and stop-and-go traffic can increase operational efficiency by using regenerative braking features. In addition, new vehicle technologies, including lightweighting, can help reduce the need for larger batteries. According to several GreenBiz interviewees, these medium-duty delivery trucks can be deployed today at the same cost as diesel vehicle alternatives.

3 City buses and school buses

A fleet of city or school buses with dozens of stops and a predictable route has proven to be an increasingly common application of fleet electrification. Of all the vehicles in the heavy-duty category, many predict that these forms of electric conversions will happen the fastest. Partially motivated by the need to address air pollution across China and Europe, electric buses provide the potential to offer cleaner alternatives to diesel and leverage advanced bus charging technologies unique to the stop-and-go nature of bus pickups.

Factors Accelerating Progress

GreenBiz interviewees indicated that the movement toward electrification offers many potential benefits. For example, electric fleets can be more efficient, less carbon intensive and generally cleaner — especially when powered by renewable energy. Electric fleets also can be quieter, require less maintenance and offer newer safety features. GreenBiz interviewees suggested many drivers prefer electric vehicles.

> "It offers a significant opportunity not only to be more efficient, but less carbon intensive. They're a simpler, more elegant technology and run with fewer maintenance requirements and fewer complexities and lower fuel costs."
>
> **– Nate Springer, future of fuels and sustainable logistics, BSR**

Additionally, many interviewees discussed risk mitigation as a factor in fleet electrification. In some cases, organizations are choosing to electrify to get ahead of potential regulation and emerging trends. According to Chris Nordh, senior director of advanced vehicle technologies and energy products at Ryder, "Beyond the environmental and the regulatory changes, the commercial vehicle industry is clearly moving towards electrification and it will continue to gain momentum as the vehicles become more readily available and financially viable."

Ramping up Fleets and Infrastructure in the UK

Aggressive sustainability goals help to align large companies around specific targets. For example, UPS declared one-fourth of annual vehicles purchased by 2020 will use alternative fuel or advanced technology, and one-fourth of its electricity will come from renewable energy sources by 2025. According to Peter Harris, director of sustainability at UPS Europe, the journey in the U.K. originally started with risk mitigation and the need to address London's poor air quality challenges. Harris said, "Once UPS started down the electrification road, the other reasons became apparent. It's also about getting ahead of the risks and identifying opportunities around innovation, leadership, brand enhancement and the ability to connect more effectively with regulators and customers."

Electrifying a portion of the UPS London fleet required a broader smart-grid strategy, partnerships with several agencies and creative approaches to overcome various hurdles. The first hurdle required a significant electrical infrastructure upgrade at the charging depot, which previously enabled a maximum of 65 electric vehicles. As UPS operates an older legacy building in London, there simply was not enough power in the building. The process for upgrading the infrastructure required UPS to spearhead and fund the capital equipment costs of the local distribution network.

UPS secured funding from the U.K.'s Office for Low Emission Vehicles and is working also with a series

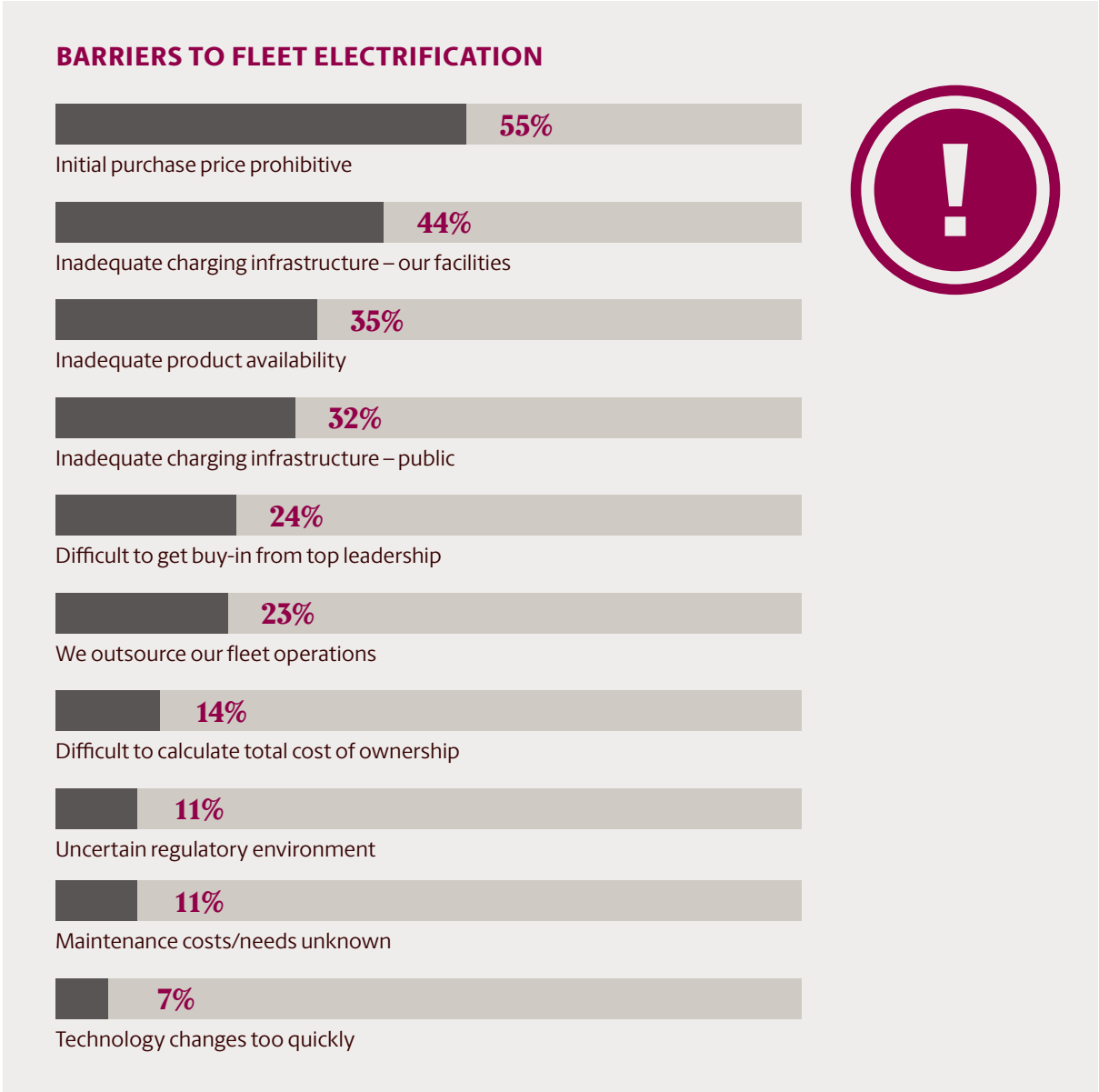
of partners to help reform the market to make it easier to share costs for future infrastructure upgrades. This project is also part of a broader smart-grid initiative that provided building efficiency upgrades, including onsite energy storage batteries. This "intelligent" approach helps to spread charging throughout the night to maximize the available power during the day for daily business operations.

Another hurdle was justifying the initial cost for both the infrastructure upgrades and the upfront cost of the new vehicles. According to Harris, UPS is close to deploying an electric vehicle and associated charging infrastructure at similar upfront capital costs to a diesel vehicle. Over the next few years, UPS plans to expand its Central London fleet from 52 to 170 electric vehicles. Harris says it's a similar trajectory of what we've seen over the past decade with renewable energy technologies such as wind and solar.

What are the Barriers for Fleet Electrification?

While the market for commercial electric fleets continues to evolve, it is still relatively nascent in terms of the number of readily available vehicles, especially for larger classes. The business case for converting to an electric fleet is highly dependent on specific vehicle use cases, the size and distribution of fleets across a geographic region, the cost of electricity and access to adequate charging infrastructure.

When we asked our web survey participants about top barriers to fleet electrification, those from large companies responded "Initial purchase price prohibitive" (55 percent), followed by "Inadequate charging infrastructure at our facilities" (44 percent), then "Inadequate product availability" (35 percent). In essence, the top barriers were focused on the relatively new nature of the electrification market for commercial vehicles. The market evolution for comparable, available and cost-competitive vehicle and infrastructure technologies is not yet at a point where most large organizations can overcome those barriers at scale. These barriers were reflected in many phone interviews with fleet managers.



Making the Business Case

Several interviewees discussed setting clear cost guidelines for making the decision to move toward an all-electric option. Although it can be a challenge to calculate the direct benefits of meeting environmental goals, improving reputation or gaining a competitive edge, only 14 percent of large company respondents indicated that the total cost of ownership (TCO) calculation was difficult to make.

Others mentioned not only a lack of internal resources both in terms of upfront purchasing of the vehicles and infrastructure upgrades, but also the ongoing operations, maintenance and training challenges of shifting to electric vehicles. According to Marty Tufte, corporate fleet director for Waste Management, "If you have to pay a major extra cost of the vehicle, and if you have to then on top of it pay for extra infrastructure to make that vehicle viable without stable fuel cost, now it becomes not economically viable."

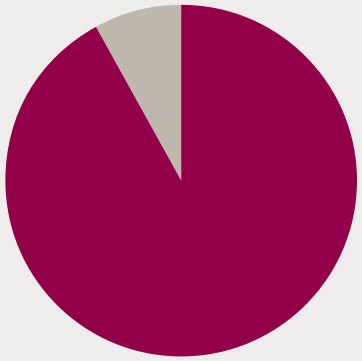
Charging Infrastructure Needs Vary by Region and Use Case

In the GreenBiz web survey, 44 percent of respondents from large organizations cited the barrier of "Inadequate charging infrastructure at our facilities." The need for infrastructure upgrades requires a fairly sophisticated understanding of electrical capacity onsite and a solid projection of future charging requirements. According to Mike Whitlatch, vice president of global energy and procurement at UPS, a significant increase in the demand for charging electric vehicles could require increased electrical capacity at a given site, which could be five to 10 times (or more) beyond the current capacity. These upgrades can be costly and require time and labor-intensive planning with engineering and operations teams on both the facility side and utility distribution side of the power grid.

The charging infrastructure requirement will vary greatly by region and utility market structure. Utilities are beginning to develop programs, offer incentives and prioritize infrastructure upgrades according to their system needs and customer requirements. Many utilities share the vision that a fleet of electric vehicles can act as a set of battery storage assets to help balance the power grid, which is especially relevant in a largely renewable energy-powered future.

"We have to recognize that there is still an upfront cost premium for the technology we're looking at largely driven by the battery cost. We have a good opportunity on fuel costs to save operational money. But the question is, is that fuel cost and maybe the maintenance cost savings, enough to compensate for the upfront purchase prices of the vehicle to make the total cost of ownership work?"

– Kellen Schefter, senior manager, sustainable technology, EEI



92%

OF SURVEY RESPONDENTS FROM LARGE ORGANIZATIONS INDICATED THEIR ORGANIZATION IS NOT WELL-EQUIPPED WITH ONSITE EV CHARGING INFRASTRUCTURE FOR COMMERCIAL VEHICLES.

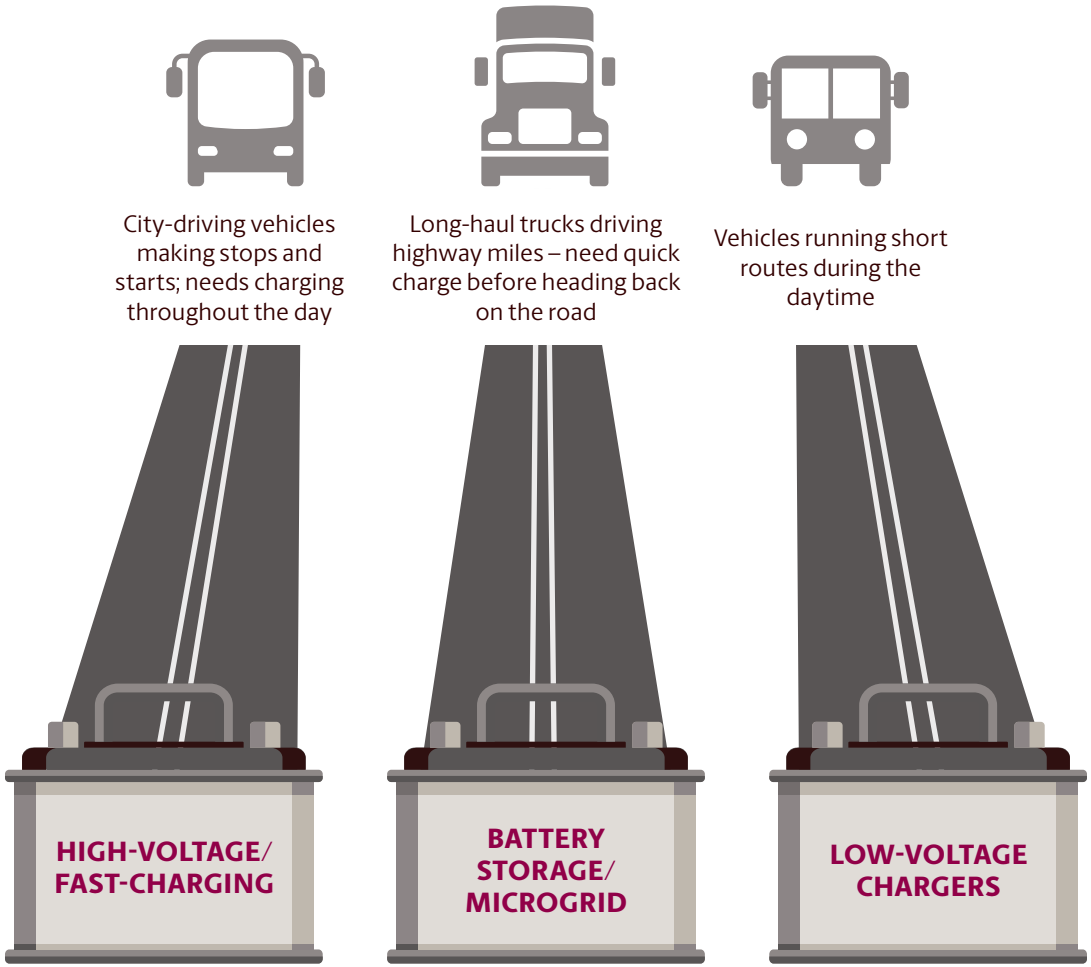
Emerging Business Models: Partnering with Utilities

Edison Electric Institute (EEI) recognizes the important role that electric companies play in the race to electrify fleets. EEI is the association that represents all U.S. investor-owned electric companies, and has more than 60 international members in 90 countries. Any large company or government agency looking to electrify its fleet needs to understand how electric companies and the associated set of state regulations enable infrastructure upgrades, set rates, engage with customers, and offer programs to help offset both the vehicle and infrastructure costs.

According to Kellen Schefter, Senior Manager, Sustainable Technology at EEI, one of the biggest challenges is charging infrastructure and the potential need for infrastructure upgrades at customer locations. EEI is working with its member companies to develop new investment models to help streamline the process and offset the costs of the often expensive upgrades needed to make charging infrastructure available. These models include customer rebates, installing "make ready" equipment to support customer-owned charging stations, and owning and operating charging stations at customer locations.

In May 2018, the California Public Utilities Commission approved $768 million in transportation electrification proposals from PG&E, San Diego Gas & Electric, and Southern California Edison, which includes installations for 15,000 medium and heavy-duty vehicles across Northern and Southern California. There are also proposals or approved plans for incentive programs in many states, including Ohio, Michigan, Nevada, Oregon, and Hawaii. Nationwide, as of July 2018, more than $1 billion of electric company investments in customer programs related to transportation electrification have been approved.

Fast Lanes to Onsite Charging



Believe the Bold Product Claims from Manufacturers? It Depends.

In the GreenBiz web survey, 35 percent of respondents from large organizations and 41 percent of smaller organizations cited "Inadequate product availability" as a top barrier. While electric vehicle technologies are readily becoming more available and affordable, there was still a consensus among interviewees that the technology takes time to develop and needs to be optimized. Despite the number of manufacturer announcements, medium- and heavy-duty commercial electric technologies are still not developed at scale, but rather produced in small batches or for specific conversion options.

"We haven't found a version of electrification yet that stands up to the Class 8 heavy-duty cycle that will run our routes. Our trucks are work trucks — the propulsion is a minor piece of the energy consumed."

– Marty Tufte, corporate director, Waste Management

Ramping Up for Onsite Charging

Charging a commercial fleet of electric vehicles can be challenging. A fleet of 200 to 300 electric trucks, for instance, requires up to four times the power needed for a facility designed for diesel trucks. Getting that scale of power to the facility requires careful planning, new technology and collaboration with local utilities, fleet operators said.

The charging infrastructure also must be cost effective and convenient. Companies look for facilities that allow them to deploy their fleet at the lowest incremental infrastructure cost possible. This often means prioritizing deployment to locations that offer financial incentives.

Utilities can help fleet operators evaluate and develop charging strategies, providing guidance on rate structure and site tariffs that deliver the strongest return on investment. The expertise of local power providers can be invaluable.

"We really want to see more EV adoption occur and we think helping to reduce the cost of the customer's infrastructure is a great way to do it," said Kellen Schefter, Senior Manager of Sustainable Technology at EEI. "Plus, it gives us a little more insight and control and ability to manage the energy grid."

When possible, new facilities should be positioned close to power stations and designed to maximize electric charging capacity, while existing facilities may rely on distributed energy sources or high voltage charging systems.

Mike Roeth, executive director of NACFE, recommends prioritizing smaller trucks, but deploying them in places where there is ability to scale.

"It will start where the project can be manageable by adding chargers first to power a small amount of trucks," he said. "Next, add enough chargers where you expand distribution center improvements. Then ultimately tear up more concrete to get more power to that location via substation expansion."

Because new technologies demand updated protocols, it is important to allow adequate time to prepare the facility's charging infrastructure and thoroughly train operators and mechanics.

Looking at the process end-to-end and making sure systems and processes are in place before the vehicle arrives is recommended as a best practice.

Strategies for Accelerating the Market

Despite the barriers that large organizations face when it comes to commercial fleet electrification, numerous strategies can help to minimize the challenges and maximize success. Transformation requires a systems approach, and many stakeholders have a role to play in the journey to widespread fleet adoption.

Many fleet managers are starting small with initial deployments and capturing early learnings. This includes prioritizing electric options when replacing individual vehicles, or considering electric leasing options. Many indicated they are moving as quickly as possible despite limited product availability and the need to navigate charging infrastructure requirements.

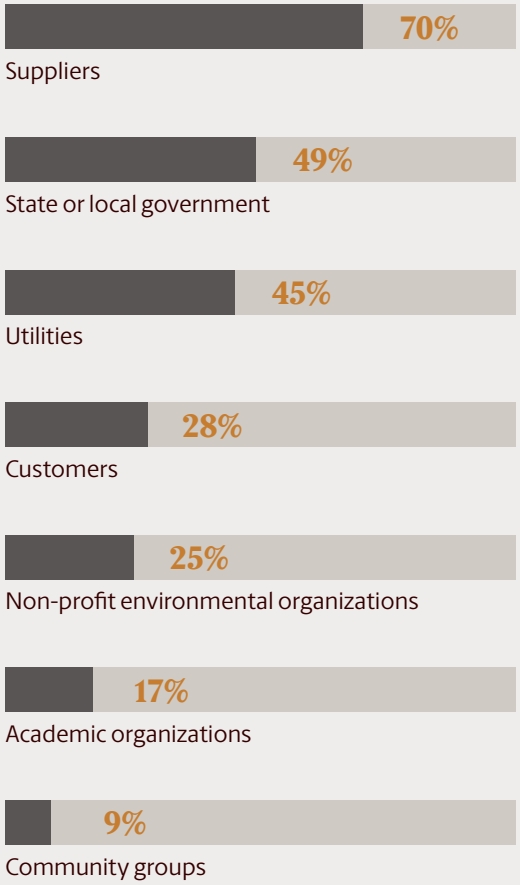
Collaboration is Key

A wide range of internal and external stakeholders is needed to engage in the planning and execution of fleet electrification. Since converting vehicles from diesel fuels to run on electricity likely has broader financial implications across organizations, companies need to work to avoid having an individual department unpleasantly surprised by potential financial impacts to internal budgets. It is important to plan and budget accordingly to balance the impact if, for example, the fleet team sees decreased fuel costs and the facilities team sees a rise in electric costs.

Externally, it is important to engage suppliers, local/state/federal government, utilities, NGOs, academic institutions and community groups. According to Mike Whitlatch, vice president of global energy and procurement at UPS, the first point of engagement should be with local utilities to plan for infrastructure upgrades, followed by vehicle manufacturers, then the system integrators who are the hardware and software vendors providing control systems that interact with the power grid.

One recommendation is to create an internal cross-functional task force across procurement, fleet operations, maintenance, engineering, facilities and ideally include senior leadership, sustainability and finance.

COLLABORATION PARTNERS



According to the GreenBiz web survey, 70 percent of large organizations responded that they are regularly in touch with manufacturers and other suppliers to determine the latest electric vehicle roadmaps and feature sets. Perhaps surprisingly, only 49 percent are directly interacting with local/state governments and only 45 percent are regularly collaborating with local utilities.

TCO, Creative Financing, and New Business Models

Many companies have a set of vehicle purchasing guidelines for their particular use cases based on a total cost of ownership (TCO) model. Given the potential upfront cost premium of electric vehicle and infrastructure upgrades, it becomes important to factor in both "hard" and "soft" costs.

Celine Cluzel, director at Element Energy, a U.K. and France based consultancy, suggests, "Companies have the opportunity to save a lot of money on the total cost of ownership, be ahead of the competition and take advantage of incentives to make the decision, thanks to the air quality agenda. They could also start to see an upside on insurance cost in time not going to repairs."

There are opportunities to leverage local, state or federal incentives, tax breaks and grant programs for both vehicles and chargers. According to Chris Nordh, senior director of advanced vehicle technologies and energy products at Ryder, "The utilities in California, for example, are being very progressive in regards to helping fleet operators adopt EVs, and they're paying for a significant part of the infrastructure in order to basically create a larger customer base and create more energy usage and at optimal times of day." Nordh also pointed to innovative partnerships between established companies such as Ryder and newer start-ups including Chanje and Workhorse to offer leasing, maintenance and warranty options at a wider scale.

Source: NACFE Guidance Report — "Electric Trucks: Where They Make Sense"

Shared Progress

As more cities, local governments and various utility partners develop programs for vehicles and infrastructure upgrades, the opportunity for collaboration and shared learning has increased. Organizations such as EEI, the Electric Power Research Institute (EPRI), the U.S. Department of Energy (DOE) and its national laboratories offer technology roadmaps, forums and regular policy updates to keep stakeholders informed. Similarly, the U.K. Low Carbon Vehicle Partnership has an electric energy vehicle task force that brings in manufacturers, energy providers, equipment vendors and system integrators to develop frameworks for acceleration.

Several noteworthy organizations and partnerships offer insights and information that can help accelerate fleet electrification deployments:

- Established in 1933, the American Trucking Association (ATA) is the largest national trade association for the trucking industry. As the voice of the industry America depends on most to move the nation's freight, ATA educates policymakers and the public about topics including electrification.
- Established in 2009 through a partnership with the Rocky Mountain Institute, the North American Council for Freight Efficiency (NACFE) offers the ability to leverage deep bodies of research to better understand markets and technologies, and access data and tools for the evaluation of new technologies. NACFE partners with fleets, dealers, manufacturers, tech suppliers, government and non-government groups to accelerate the pace of more efficient freight vehicles.
- Business for Social Responsibility (BSR) created the Sustainable Fuel Buyer's Principles in 2017, with 18 companies aligning toward a common collaboration framework and vision for commercial road freight fueled by low-carbon and sustainability technology.

More recently, there have been various public/private and public sector campaigns for electric vehicle options. For example, the Climate Group and C40 Cities initiated a collective fleet purchasing coalition across large cities including New York, London and Mexico City, and across multinational businesses including Unilever, EDF Energy and Lease Plan.

The Path Forward

As the market for electric commercial vehicles continues to grow and evolve, organizations are creating a demand signal for the technology and sharing their deployment best practices.

Get started early and learn – The first large-scale fleet electrification project will take time and resources. Start the process early and learn from testing electric vehicles and navigating infrastructure upgrades.

Establish an internal cross-functional electrification task force – Align procurement, fleet operations, engineering, maintenance and facilities teams. More broadly consider including members from senior leadership, sustainability and finance.

Collaborate and join coalitions – Do not approach this alone. Collaborate with manufacturers, suppliers, utilities and government agencies. Consider joining a coalition that can help make a public commitment and share resources.

Gaining Buy-in at the Top

When it comes to EV fleet deployments, leadership commitment and an integrated business strategy are key elements in setting the stage for success. When top-level executives demonstrate support, the path is paved for connectivity and collaboration between internal and external stakeholders.

Having active communications and a shared vision can lead to a holistic view of the total cost of ownership across a vehicle's lifecycle, as well as of the benefits that electrification brings to a company's environmental footprint and its reputation.

"If we rely on the fleet person and facilities person to report through their own metrics, it can be a hang up," said Kellen Schefter, senior manager, sustainable technology at EEI. "The CFO needs to see that it's actually saving money over the life of the vehicle."

With top leadership involved, a broader view can be established. As an example, embracing EVs to help address air quality and other environmental concerns can help fleet operators get ahead of potential regulatory issues and reduce risks. This aspect will resonate with the highest staff level charged with steering the business.

Richard Battersby, assistant director from the city of Oakland, suggested, "Be proactive so you can mold the program how you want to as

opposed to being mandated to do something later on down the road."

Experience is important, too. The leaders of UPS's alternative fuel strategy team personally drove EVs, sharing their experience firsthand with other corporate leaders.

"When the majority of your core team members are driving EV's for personal use, it helps to generate credible discussion about what's possible," said Mike Whitlatch, vice president of energy and procurement at UPS.

"There is no doubt that along the road, there will be lots of humps and bumps, and you just have to be prepared to weather those. Nobody's going to get it right the first time round. We found with all of our projects that we've learned things as we've gone along, and you just have to be prepared to accept that you can't have all the answers out of the gate. You've got to be ready to learn, to help each other."

– Peter Harris, director of sustainability, UPS Europe

About This Research

This report summarizes the results of both quantitative and qualitative research. The quantitative results are based on a survey of the GreenBiz Intelligence Panel, consisting of 3,800+ leaders representing fleet, facilities and procurement managers and thought leaders in corporate sustainability, transportation, logistics and energy. For the web survey, panel members participate in brief monthly surveys to provide their expertise and perspective on corporate sustainability initiatives across a range of topics.

In early June 2018, GreenBiz conducted a web survey which was sent to 3,801 members of the GreenBiz Intelligence Panel. The web survey received 206 responses, which represents a 5.4 percent response rate. GreenBiz also received support from several organizations that helped facilitate outreach to their members and broader network of transportation experts. Those organizations include:

- The North American Council for Freight Efficiency (NACFE)
- The Low Carbon Vehicle Partnership (LowCVP)
- The American Trucking Association (ATA)

Responses were analyzed in two groups for the purposes of comparison: large organizations, defined by companies with annual revenues of $1 billion and greater and government agencies, and small organizations, defined as companies with annual revenues of less than $1 billion. About 46 percent of respondents are from organizations with revenues greater than $1 billion and 12 percent represent government agencies or NGOs.

Photo courtesy of Tesla Motors

In addition, GreenBiz conducted phone interviews with 16 leaders representing a range of industries and roles. Those interviewed represent large, private-sector companies and public-sector agencies. Their roles include fleet and energy managers, facility managers and infrastructure experts who are purchasing or leasing commercial electric vehicles. GreenBiz also interviewed non-fleet managers from relevant stakeholders representing infrastructure providers, industry organizations, NGOs and consultants.

It is important to note that the quantitative data in the report reflects the demographic of the GreenBiz panel and the partner organizations — those respondents represent a broad span of sustainability experience. The qualitative research consisted of one-on-one phone interviews with active members of the GreenBiz community, including members of the GreenBiz Executive Network, a membership-based, peer-to-peer learning forum for sustainability executives from the world's largest companies (more than $1 billion in annual revenue).

GreenBiz