

CHARGING

AHEAD

AHEAD

TEVVA

 YUTONG

Pelican 
Bus + Coach

voltera

BROADSCALE

Electric Vehicles
OUTLOOK

 **zeelo**

FOREWORD

Sam Ryan, CEO + Co-founder - Zeelo

As we stand at the threshold of a new era in transportation, the urgency to address climate change has never been more palpable. The COP28 climate conference in Dubai will undoubtedly underscore the critical need for decisive action in the face of escalating environmental challenges. The dire warnings from scientists and the impassioned pleas from global leaders serve as an unambiguous call to arms for all of us, individually and collectively, to combat the impending climate crisis.

It is against this backdrop that I am thrilled to present this collaborative report on the future of electric vehicles (EVs) and fleet electrification within the mobility sector.

It is abundantly clear that the imperative to educate and build awareness around zero-emission vehicles (ZEVs) is more pressing than ever. The report before you delves into the multifaceted benefits of ZEV adoption, not just for the environment but for the longevity of our cities, economies, and the well-being of future generations. As the global community grapples with the harsh realities of climate change, the

transition to electric mobility emerges as a pivotal solution with the potential to reshape our world for the better.

Fleet electrification is at the heart of this transformative journey. Whether in the realm of commercial or shared transportation or personal vehicles, the electrification of fleets represents a linchpin in our collective effort to reduce emissions, mitigate climate change, and build a sustainable future. This report navigates the intricacies of fleet electrification across diverse verticals, underscoring its significance in the broader context of environmental stewardship and responsible resource management.

Yet, as we embark on this ambitious journey towards a cleaner, more sustainable future, it is essential to acknowledge the indispensable role of infrastructure. The success of fleet electrification hinges on the development of a robust and expansive charging infrastructure. Governments, businesses, and individuals must collaborate to build the necessary support systems that will facilitate the seamless integration of electric vehicles into our daily lives.

In this pivotal moment, I call upon climate activists, policymakers, private individuals, and organisations to embrace the urgency of fleet electrification. Let us arm ourselves with the tools, information, and resources needed to Charge Ahead. The choices we make today will shape the world we pass on to future generations, and it is our collective responsibility to ensure that we leave a legacy of sustainability, innovation, and environmental stewardship.



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INTRODUCTION

In an era where the world stands at a pivotal crossroads, facing the formidable challenges of climate change and environmental sustainability, the electrification of the mobility sector emerges as a beacon of hope. As we navigate the complex and interconnected web of issues confronting our planet, the need to revolutionize the way we move, travel, and transport goods becomes ever more apparent. It is within this context that **Charging Ahead** takes its place as a significant and timely contribution.

Our world is inextricably linked by mobility. The ability to move people and goods efficiently and sustainably is fundamental to the functioning of modern society. Yet, this very mobility system has, for decades, been a primary contributor to the environmental crisis we now face. The internal combustion engine, once celebrated for its innovation and convenience, has become synonymous with pollution and inefficiency.

This whitepaper, with contributions from leading voices in the electric mobility space, is a response to the urgent need for change. It provides a comprehensive analysis of the elec-

trification revolution that is sweeping through the sector. As the transportation industry undergoes significant transformation, we find ourselves at a defining moment, one that will shape the future of our planet for generations to come.

This report is not just a glimpse into the future; it is a call to action. It is an invitation to join the conversation about how we can forge a greener future for transportation. It is a testament to the ingenuity of human innovation and our capacity to adapt and evolve in the face of daunting challenges. It is a rallying cry for governments, businesses, researchers, and individuals to come together and chart a new course toward a more sustainable and environmentally responsible world.

Within these pages, you will find a snapshot of the current state of electrification in the mobility sector—a sector where electric vehicles, sustainable infrastructure, and cutting-edge technologies are reshaping the landscape. The thorough research, insightful analysis, and forward-thinking recommendations from our

contributors offer a roadmap for a future where clean, efficient, and accessible transportation is not just a dream but a reality.

As we delve into this whitepaper, let us be mindful of our shared responsibility to the planet and to future generations. Let us remember that our choices today will determine the world we leave to future generations. **Charging Ahead** serves as a much needed resource for all who seek to understand, influence, and accelerate the electrification of the mobility sector.

In the spirit of collaboration and innovation, let us embark on this journey together, charging ahead toward a more sustainable, cleaner, and brighter future for mobility.



AT A GLANCE

A snapshot of the 2022 market, projected growth and factors driving growth opportunities in the EV sector:



ELECTRIC CAR

2022 Market Size:
\$384.65B_U

**Projected Growth
(2023-2030):** 22.1%
CAGR

Factors Driving Growth:
Supportive government subsidies and policies to boost market growth, favorable initiatives by governments to help market recover from covid-19 aftermath and charging infrastructure investment.



ELECTRIC BUS / COACH

2022 Market Size:
\$45B_U

**Projected Growth
(2023-2032):** 12% CAGR

Factors Driving Growth:
Increased government investments in North America Charging Infrastructure, European Battery Tech R&D.



ELECTRIC TRUCK

2022 Market Size:
\$0.64B_U

**Projected Growth
(2023-2030):** 26.3%
CAGR

Factors Driving Growth:
Investments in research and development by government and key market players, rapid industrialization and urbanization and the rising costs of gasoline, fuel, diesel, and petrol.



ELECTRIC BIKE

2022 Market Size:
\$37B_U

**Projected Growth
(2023-2030):** 15.6%
CAGR

Factors Driving Growth:
Covid-19 accelerated consumer adoption, government incentives and increased production capacity.



EV CHARGING

2022 Market Size:
\$12B_U

**Projected Growth
(2023-2030):** 36%
CAGR

Factors Driving Growth:
Surge in demand, increase in government initiatives for the development of electric vehicle charging infrastructure and rising sales/EV penetration.



THE OPPORTUNITY

Pete Schork, Principal - Broadscale

Given road transportation is responsible for ~15% of global greenhouse gas emissions, it is no surprise that an increasing number of enterprises are exploring standardizing their fleets on electric vehicles (EVs).

EV adoption by fleets is being spurred by a much greater availability of vehicles at lower prices - and the greater availability of EV charging infrastructure. Leading logistics and enterprise fleets such as Amazon, Comcast, DHL, Duke Energy, FedEx, and Hertz have all announced fleet EV orders, some at incredible scale (e.g., Hertz's 100K EV order), with many more deliveries to come by the end of this decade (see: Uber and Lyft plans to go 100% electric in many markets by 2030).

EVs have always been cleaner than ICE vehicles, but out of consideration for many fleets for price reasons. This calculus has recently changed as EV prices have lowered. Fleets greatly benefit from EVs' 20% lower service, maintenance, and repair costs vs. Internal Combustion Engine equivalents, and also benefit from lower fueling costs, resulting in an overall lower total cost of ownership for EVs vs. ICEs.

Enterprises who partner with Zeelo and the other contributors of this report are in many ways already leading the way in "going green". Zeelo, as with all bus

transportation services, has significant emissions benefits vs. single passenger car commuting (one-sixth lower at 14 pounds of CO2 per 100 passenger miles vs. 89). EV buses offer even greater emissions savings, which is critical during this period of ever-increasing scrutiny of corporate emissions.

So if "going green" is cheaper - what's the challenge? Well, first and foremost, fleet operators need EV fleets to be just as reliable, efficient, affordable, and bankable as ICE vehicles. Fleet operators cannot be burdened with new fueling or maintenance processes more onerous than the status quo. At Broadscale, we're actively investing in firms to lower the barriers for fleets to go electric, and are proud investors in EV fleet charging solutions firms EV Realty and Revel.

Zeelo's electric fleet offering for enterprises is a fantastic end-to-end solution for green commuting as it de-risks your EV operations. It allows your fleet to procure "green miles" "as-a-service", handling all the critical logistics. Zeelo integrates best-in-class EV charging and vehicles from partners including Zenobe and Pelican Yutong so you don't have to worry about evolving technology standards. You and your stakeholders simply benefit from a commuting service that resembles your current one - but one that is greener.

The market needs more solutions like the ones outlined in this report which lower the barrier to going green. Your employees, stakeholders, and P&L can be proud that by partnering with such forward thinking organisations, your firm is providing a sensible green commuting solution. Soon, thanks to the efforts of leaders such as Zeelo, its partners, and firms like yours, green transportation will become the market standard.



BROADSCALE



THE CHALLENGE

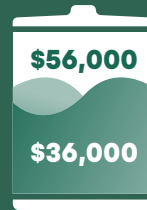
Global transportation pollution amounted to 7.97 billion tonnes of CO2 in 2022



Transport as a contributor to world emissions

Transport sector accounts for ≈21% of total emissions, road transport accounts for 15% of total CO2 emissions

● Total emissions ● Transport emissions

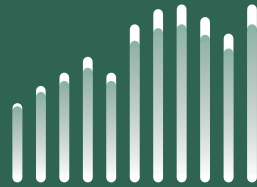


The disparity between cost and affordability

The price threshold which customer are willing to pay vs the cost of a new electric car.

Price of fuel since the start Of the war in Ukraine

Since Feb 2023 the cost of petrol has fluctuated over 32% with speculators still uncertain about future prices of petrol and diesel due to global events

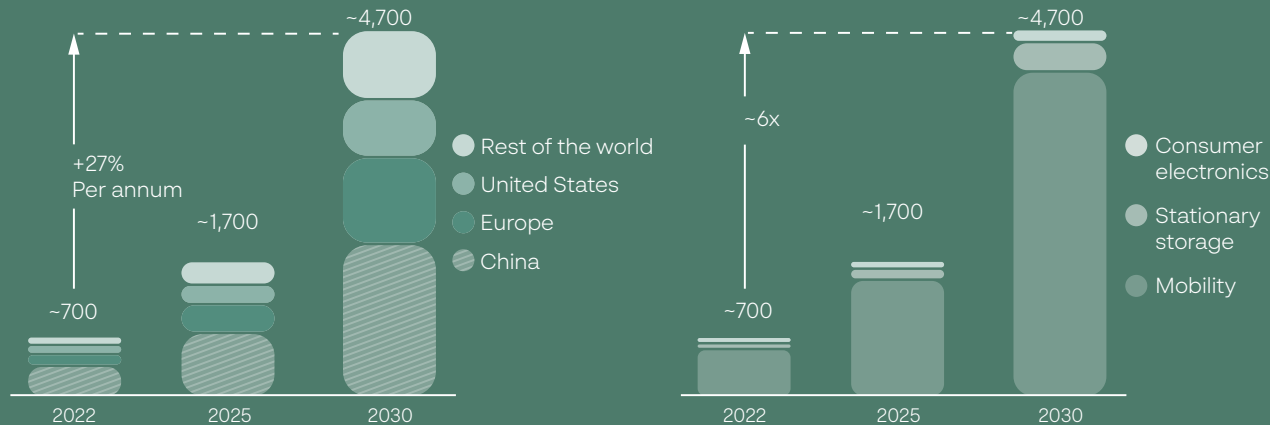


40 Battery-electric vehicle models available in the US

Consumers who say they would consider making the switch if there were more makes and models of EV to choose from

54%

Li-ion battery demand is expected to grow by 27% annually to reach around 4,700GWh by 2030, where will the demand be, by region and sector?



The needs Vs the wants

- A single charge range (km)
- Average mks driven per week

On average cars in the UK drive an average of 127 miles a week with the average EV battery range 211 miles

355km

● A single charge range (kms)

469km

● Consumer range demand

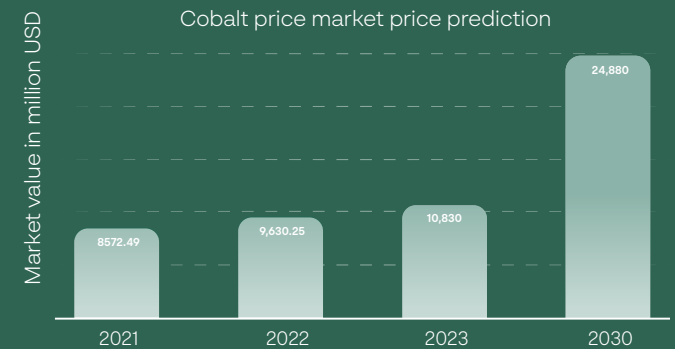
The disparity between what the average vehicle can achieve and the range the majority of consumers consider the tipping point for them to consider purchasing.

The cost of professionally installing a charging point in your home

The national average cost range for EV charging station installation is between \$1,000 and \$2,500



What does the implications of cobalt price increases have for EV cars and the second hand battery market?



Published by Statista Research Department, Oct 30, 2023



THE CHALLENGE

In an era where the world stands at a pivotal crossroads, facing the formidable challenges of climate change and environmental sustainability, the electrification of the mobility sector emerges as a beacon of hope. As we navigate the complex and interconnected web of issues confronting our planet, the need to revolutionize the way we move, travel, and transport goods becomes ever more apparent. It is within this context that **Charging Ahead** takes its place as a significant and timely contribution.

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In the spirit of collaboration and innovation, let us embark on this journey together, charging ahead toward a more sustainable, cleaner, and brighter future for mobility.



THE SOLUTION

As we delve deeper into our exploration of electrification across the spectrum of mobility, Charging Ahead reaches a pivotal juncture—contributions dedicated to highlighting various solutions that will propel the widespread adoption and seamless transition to electric vehicles (EVs). In this electrifying journey through buses, coaches, cars, bikes, trucks, as well as the infrastructure required to power them, we confront the challenges and barriers that have, at times, cast shadows on the path toward electrification.

Our mission is two-fold: first, to lay bare the obstacles, uncertainties, and complexities that have deterred many from embracing electric vehicles. From the lingering uncertainties of upfront costs to concerns about charging infrastructure, range anxiety, and perceived maintenance intricacies, we confront these challenges head-on. By doing so, we aim to arm stakeholders with the knowledge and strategies needed to overcome these hurdles effectively.

From the contributions that follow, we will introduce you to innovative solutions, policies, and

strategies that will enable governments, operators, and end users to charge ahead confidently, secure in the knowledge that the transition to electric vehicles is not just feasible but a step toward a brighter, cleaner, and more prosperous tomorrow. With invaluable insights from thought leaders in the EV, technology, and charging industries, our mission is to not only provide concrete answers but also to quell any lingering doubts, dispel rumors, and address any hearsay that may have cast a shadow of uncertainty over your EV adoption journey.

The transition to electric vehicles represents a pivotal moment in the history of transportation and the sustainability of our planet. It has sparked a multitude of queries, ranging from the practical and technical to the economic and environmental. These questions have weighed heavily on the minds of individuals, businesses, and policymakers alike, and rightly so. After all, embracing EVs signifies more than just a shift in the way we move; it represents a commitment to a cleaner, greener future.

We aim to provide a nuanced understanding of

the EV landscape, offering clarity on the challenges and opportunities that lie ahead. Moreover, we hope to highlight the collaborative efforts of visionaries and experts who are tirelessly working to shape a sustainable, electrified future.

Are Electric Cars The Future Of Personal Transportation?

Can Electric Buses (Re)Revolutionize The Daily Commute?

Can Shared Mobility Solve Scope 3 Emission Reduction for Organizations?

Is The Future Of Freight Haulage Electric?

Is The Electric Bike Revolution Pedaling Towards A Greener Future?

Are Electric Coaches The Sustainable Solution For Long-Distance Travel?

Is Charging Infrastructure Really Ready For The EV Revolution?



ELECTRIC CARS

Are Electric Cars The Future Of Personal Transportation?



ELECTRIC CARS

Are Electric Cars The Future Of Personal Transportation?

One of the primary driving forces behind the rise of electric cars is the growing concern over environmental sustainability and climate change. Traditional internal combustion engine (ICE) vehicles are a significant source of greenhouse gas emissions, contributing to air pollution and global warming. As a response to these issues, governments, industries, and consumers are increasingly embracing electric vehicles as a means to reduce carbon emissions and their environmental footprint.

Electric cars produce zero tailpipe emissions, making them a cleaner and more environmentally responsible option. They rely on electricity, which can be generated from renewable sources such as wind, solar, and hydropower. As the global energy grid shifts towards cleaner energy generation, the overall carbon footprint of electric cars is expected to decrease further.

As of September, 2023, the number of plug-in cars in circulation exceeded 1,450,000 units. Among these, approximately 900,000 were fully electric vehicles (BEVs), while 550,000 were plug-in hybrid electric vehicles (PHEVs).

Over the past year, there was a notable uptick in the registration of plug-in hybrid and battery-electric cars, totaling more than 365,000 new registrations.

This represents a 20% growth compared to 2021. Interestingly, there was a discernible trend away from plug-in hybrids in favor of battery-electric cars. Plug-in hybrid sales saw a decline on a year-on-year basis, while the sales of battery-electric vehicles experienced an increase.

According to the International Energy Agency (IEA's) forecasts, electric vehicle (EV) sales are expected to account for 35% of the market by 2030. China is poised to become the largest market, the United States is set to double its market share, and Europe is projected to maintain its current share.

This shift toward EVs carries profound implications for energy markets and climate objectives. Both the European Union and the United States have enacted legislation in line with their electrification aspirations, and battery manufacturing is expanding to meet the growing demand for EVs. The outlook is promising, with the potential for even higher market shares than what current government policies and national targets envision.

The continuous advancement of electric vehicle technology has made electric cars more attractive and practical for consumers. Battery technology has improved significantly, leading to extended driving ranges, shorter charging times, and lower costs. This

progress has enabled electric cars to become more competitive with traditional ICE vehicles in terms of performance, convenience, and affordability.

Additionally, electric cars have seen substantial enhancements in terms of safety, connectivity, and autonomous driving capabilities. Features such as regenerative braking, over-the-air software updates, and advanced driver-assistance systems have enhanced the overall driving experience, making EVs more appealing to a wider range of consumers.

EV supply chain considerations are becoming increasingly central to EV-related policy development as a means of enhancing resilience through diversification. The European Union is proposing the Net Zero Industry Act, which sets a goal of sourcing nearly 90% of the EU's annual battery demand from European battery manufacturers. Meanwhile, India is bolstering domestic production of EVs and batteries through the implementation of Production Linked Incentive (PLI) schemes.

In the United States, the Inflation Reduction Act is geared towards fortifying domestic supply chains for EVs, EV batteries, and battery minerals. Notably, major EV and battery manufacturers have disclosed





collective investments of at least USD 52 billion in North American EV supply chains following the passage of the IRA.

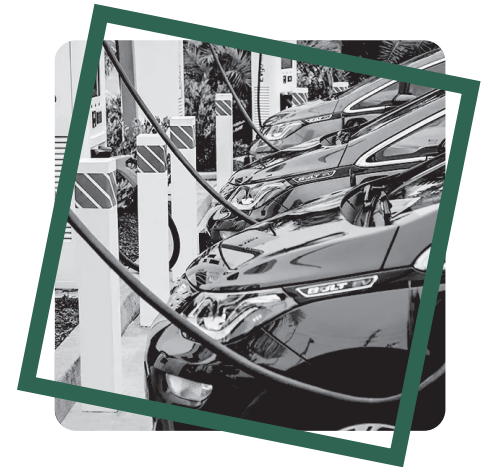
The MCI survey, which has been expanded to cover almost 13,000 consumers across 18 countries, is a significant global research program conducted by EY. This program has been monitoring changes in consumer mobility behaviors and purchasing intentions since the onset of the pandemic in 2020. While overall travel levels are still lower when compared to pre-pandemic standards, there's a growing trend of consumers emphasizing the importance of having constant access to a personal car. Notably, for the first time, over half of the surveyed individuals, 52%, who plan to purchase a vehicle express their intent to opt for a fully electric, plug-in hybrid, or hybrid vehicle.

On the flip side, consumers continue to shy away from using public transportation whenever possible. Despite the efforts of various city authorities and transportation companies, public transport usage remains below 2020 levels, a trend influenced by two years of strong public health messaging regarding social distancing. In cities like London and New York, extensive advertising campaigns are striving to convince travelers that it is now safe to use buses, subways, and trains again.

In contrast to the pre-pandemic period when consumer sentiment toward shared mobility services like ride-hailing, car-sharing, and car rental was on the rise, these services have suffered setbacks due to COVID-19. Journeys are down by 11% in North America and 4% globally, a change partly attributed to concerns about hygiene and partly driven by increased journey costs and reduced availability.

While electric cars are not without their challenges, including concerns about battery recycling and the environmental impact of raw material mining, they hold great promise as the future of personal transportation. The environmental imperative, technological advancements, economic considerations, and the growth of charging infrastructure collectively indicate that electric cars are well-positioned to transform the way we commute and travel.

As we continue to make strides in electrifying the mobility sector, it is increasingly evident that electric cars have a crucial role to play in achieving a more sustainable and eco-friendly future. Their integration into the personal transportation landscape is not just a possibility but a growing reality. To this end, further research and investment will be pivotal in driving the widespread adoption of electric vehicles, ensuring a cleaner, greener, and more sustainable future for personal transportation.





ELECTRIC BUS



Can Electric Buses (Re)Revolutionize The Daily Commute?

Ian Downie, Head of Yutong Sales - Pelican Bus and Coach



Pelican 
Bus + Coach

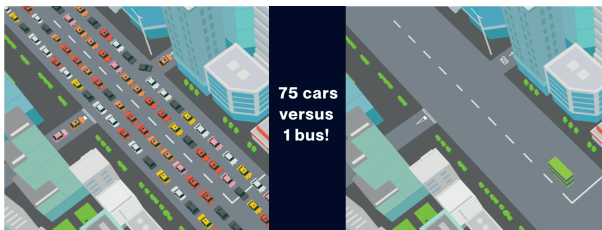


ELECTRIC BUS

Can Electric Buses (Re)Revolutionize The Daily Commute?

Buses are one of the most efficient means to move people in cities, towns, and rural communities. Each bus can remove up to 75 cars from the road. As we strive to decarbonise, the use of zero-emission buses can accelerate the positive impact on the environment.

Purchasing a zero-emission vehicle is not a traditional capital purchase. The methodology Pelican employ is to enter into a partnership with the operator to understand their needs and ambitions. We then collectively work to plan the vehicles, infrastructure and staff training to meet their aspiration not only in day 1, but in the years to follow. We work with the operators on upskilling their employees on zero-emission vehicles; this training covers drivers, shunters, and engineers.



Pelican are the sole supplier of Yutong vehicles in the UK and Ireland. Yutong have been at the vanguard of

developing zero-emission passenger-carrying vehicles. They launched their first vehicle in 1999, and now have delivered over 177,000 vehicles, which have now completed over 38.7 billion kms of operation. These figures provide ample evidence to fleet operators regarding the reliability, viability, and experience of Yutong zero-emission vehicles.

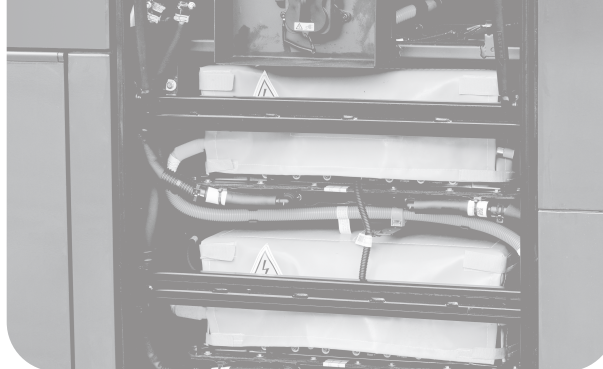
Yutong products have a high degree of commonality of components and a high percentage of well-established original equipment suppliers systems such as ZF axles, WABCO systems, and CATL batteries. CATL is the world's leading battery manufacturer and supplies other automotive manufacturers including BMW, Volkswagen, and Tesla. The Yutong product is an integral vehicle and all systems have been optimised for reliability and ease of maintenance. There is no compromise between a separate chassis or body system.

All Yutong electric buses and coaches are completed in the UK by Pelican Bus and Coach. While the principal part of the vehicle is built at Yutong, Pelican then completes the sourcing and fitment of high value items in the UK. These items include seats, passenger information systems, destination gear, closed-circuit television systems, additional fire suppression systems, and vehicle commissioning.

In the UK, we have seen our vehicle's battery capacity increase from 295kWh to 422kWh, with no loss on passenger capacity and energy efficiency in operation, providing over 200 miles of operation on a single charge. As an example, Pelican delivered a fleet of electric vehicles to an operator and completed the 280-mile journey with 30% energy still remaining in the vehicle.

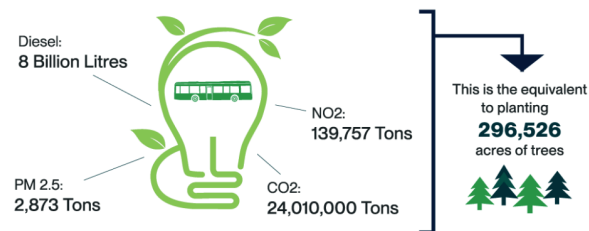
As the typical diesel bus completes 150 miles operation per day the range of zero-emission vehicles is not an issue. As most buses return to their same garage after a day's work, the use of overnight charging provides customers with peace of mind that the vehicles can easily be used repeatedly. To further reassure customers, we have increased charging speed capabilities over the past few years to minimise the impact on the grid by moving charging to off-peak requirements.

Operating a zero-emission vehicle removes the necessity, where clean air zones are implemented, to go from different environmental standards such as from Euro 5 to Euro 6 as a zero-emission vehicle cannot be enhanced further.



The benefits of zero-emission vehicles are illustrated by this graphic:

Yutong Zero Energy Vehicles have saved our planet from:



To encourage multi-modal charging options, we also provide a standard charging interface, which allows the charging infrastructure to be shared with other road users ranging from HGVs to cars. This allows charging assets to benefit more of the road users and removes a barrier to transition.

Yutong only offer DC charging due to its two fundamental characteristics of enhanced safety and increased feed of charging. This focus on safety is further demonstrated by the use of Lithium Iron Phosphate (LFP) for the battery chemistry, which has enhanced safety properties compared to other battery chemistry. All Yutong products benefit from

the use of the Yutong Electric Safety System (YESS). YESS provides industry-leading multi-layered safety features for both the vehicle and the batteries.

Customers are already seeing the benefits of zero-emission vehicles on the environment, however, that is only part of the benefits:

Repair and maintenance costs can decrease by up to 40%

Driver performance is benefitted with a pleasant working environment, increasing driver retention and recruitment

The electric driveline is more efficient than that of a diesel.

Reliability of the product is increased compared to diesel as fewer moving parts are required to drive the vehicle.

Passenger satisfaction is increased as they are travelling in a quieter, smoother air-conditioned environment.

Vehicle electrification in the transport sector is fast-evolving and continually being refined. For example, Yutong invests 7% of their turnover in

Research and Development of new cutting-edge technology: this amounted to £179M in 2022! Their research and development team consider at all aspects of the vehicles and charging. Yutong currently employs 3,500 people in their Research and Development department alone.

Pelican can offer UK operators midi-buses, full-size single-deck, double-deck, and airport buses. We are also the only supplier to offer a right-hand drive zero-emission coach product. This range has been recently enhanced with a tri-axle coach joining our current two-axle product.

The government has supported the transition to zero-emission buses, but still hasn't provided any support to the coach sector, which plays a vital role in passenger transport. There is still too much focus on car and rail, and not enough on the Bus and Coach industry. In England there have been various different funding streams from the government, with the latest being the ZEBRA 2 fund in addition to the Bus Service Operators Grant (BSOG) enhanced rate for zero-emission vehicles. In Scotland, there has been the ScotZEB funding stream. All of these have contributed positively to enabling operators to transition to zero-emission vehicles, however, these are short-term funding opportunities and the industry would welcome more long-term strategic direction and support.



SHARED MOBILITY



Can Shared Mobility Solve Scope 3 Emission Reduction for Organizations?

John Slingsby, Managing Director - Zeelo



SHARED MOBILITY

Can Shared Mobility Solve Scope 3 Emission Reduction for Organizations?

In an era characterized by heightened concern for climate change and sustainability, organizations worldwide are increasingly prioritizing the reduction of greenhouse gas emissions, especially the elusive Scope 3 emissions. Among the multifaceted challenges that companies face, staff transportation stands out as a significant contributor to carbon emissions. This predicament has spurred interest in innovative solutions, such as shared mobility and electric bus and shuttle programs, to mitigate Scope 3 emissions linked to staff commuting.

The daily commute is a routine that millions of people endure, often accompanied by stress, traffic jams, and a significant carbon footprint. However, shared mobility solutions offer a ray of hope in this challenging landscape. By pooling resources and sharing rides, individuals can reduce the burden of the daily commute, making it more efficient, cost-effective, and less stressful. Carpooling, ride-sharing, and public transit services not only alleviate the frustrations of navigating congested roadways but also play a pivotal role in lowering emissions. Fewer single-occupancy vehicles on the road translate to reduced traffic congestion and, ultimately, a decrease in greenhouse gas emissions. Shared mobility, therefore, not only eases the daily grind but also contributes to a more sustainable and eco-friendly future for all commuters.

Zeelo, in particular, has made substantial strides in this realm, pioneering fully carbon-neutral staff transportation programs for organizations, with consistent strides to go one step further and embrace electric and net-zero mobility solutions.

By doing so, we have effectively removed the equivalent of 30 cars from the road for every Zeelo service operated. This not only aligns with our commitment to environmental sustainability but also has numerous benefits for our partner organizations. Firstly, it serves as a powerful recruitment and retention tool, as employees are increasingly drawn to employers who prioritize their environmental values and offer sustainable commuting options. Furthermore, the reduction in daily commuting stress positively impacts the mental health of employees. Finally, these programs often prove to be more cost-effective for organizations and employees alike, reducing the expenses associated with parking, maintenance, and rising fuel costs. In essence, Zeelo's carbon-neutral and electric transportation initiatives go beyond reducing emissions; they empower organizations to attract, retain, and nurture a happier, healthier, and more cost-conscious workforce.

Beyond a fully carbon neutral service we are also introducing electric vehicles to existing clients; we have set a bold target of achieving a fully net-zero

fleet by 2030. We are accomplishing this by actively supporting our operator partners in their transition towards sustainable and low-emission vehicle solutions.

Before delving into the transformative potential of an electric commuter shuttle program, it's crucial to understand the concept of Scope 3 emissions. The Greenhouse Gas Protocol classifies emissions into three scopes:

Scope 1 encompasses direct emissions from an organization's activities,

Scope 2 includes indirect emissions from purchased energy,

Scope 3 covers all other indirect emissions within the organization's value chain, notably staff transportation.

Tackling Scope 3 emissions proves daunting since they often lie outside a company's direct control. Staff transportation, due to the prevalence of single-occupancy vehicles, is a substantial contributor to an organization's Scope 3 emissions. This is chiefly due to the inefficiency of single-occupancy travel and the significant volume of carbon dioxide emitted. To address Scope 3 emissions effectively,





Every time Zeelo provides a transportation alternative to 100 riders, 403 kg of Carbon dioxide in the atmosphere is reduced each day, amounting to 91 tonnes per year – the equivalent of planting 600 trees!

One Zeelo removes 30 cars from the road on average

companies must rethink and revolutionize their employees' commuting habits, fostering the adoption of more sustainable transportation alternatives.

Electric shuttle and bus programs have risen as sustainable alternatives to conventional staff transportation, with a particular focus on mitigating Scope 3 emissions. These electric vehicles are designed to be environmentally friendly, relying on electricity rather than fossil fuels for power, thereby significantly reducing their carbon footprint.

One of the most compelling advantages of electric shuttles lies in their reduced emissions profile. They produce zero tailpipe emissions, and their energy efficiency surpasses that of internal combustion engine vehicles. In an era marked by the growing accessibility of renewable energy sources, electric shuttles can further minimize their carbon footprint. This makes electric shuttles a highly attractive option for organizations committed to lowering the carbon footprint of staff transportation.

Zeelo's innovative approach to staff transportation hinges on its asset-lite model, a business strategy commonly associated with the technology and mobility industry. This model is characterized by the company's minimal ownership of physical assets, such as vehicles, and a heavy reliance on partner-

ships and technology to deliver services. In the context of Zeelo's transition to electric vehicles, the asset-lite model plays a pivotal role, necessitating collaboration with operator partners to expedite the adoption of electric shuttles and realize sustainable, low-emission transportation solutions.

So, how are we achieving this transition? Zeelo is taking proactive steps to bolster the viability of electric vehicles through a demonstrator trial in collaboration with Pelican and Zenobe. This groundbreaking initiative offers existing operator partners a unique opportunity to trial the Yutong Tce12 electric coach on existing client contracts, with the goal of addressing critical concerns related to charging infrastructure, mileage, and operational performance. This trial not only fosters hands-on learning but also positions Zeelo favorably to negotiate advantageous terms for vehicle acquisitions and create new financial arrangements to support ambitious sustainable transportation objectives.

Our commitment to sustainability is not just a goal; it's a journey, and one that we are actively driving forward.



ELECTRIC TRUCK



Is The Future Of Freight Haulage Electric?

Stuart Cottrell, Head of Energy Services and Government Partnerships - Tevva

TEVVA



ELECTRIC TRUCK

Is The Future Of Freight Haulage Electric?

We need to be bolder on zero emission truck (ZET) adoption

Trucks equipped with batteries or powered by hydrogen fuel cells must constitute the overwhelming majority of new truck sales by 2040, in line with regulatory initiatives aimed at curbing CO2 emissions from medium- and heavy-duty vehicles.

However, even these ambitions don't go far enough. The imperative of transitioning to zero-emission road freight cannot be overstated, given its crucial role in addressing climate change and enhancing public health. Notably, road transport stands as one of the most significant sources of air pollution, resulting in approximately 350,000 premature deaths annually within the European Union alone.

For this reason, we are members of the Transport Decarbonisation Alliance, advocating for a transformative shift, urging that all new freight trucks achieve zero-emissions status by 2035. This would align the commercial freight sector with the effective phasing out of fossil-fuel passenger cars by the same deadline. While we acknowledge that progress takes time, we emphasize that swift action is needed and expect to develop a workable and attainable roadmap for faster adoption.

Encouragingly, the technology required to achieve zero-emission road freight is either already available or poised to become viable for nearly all applications. At our advanced manufacturing facility in London, we are producing the Tevva 7.5-t battery-electric truck, with a capacity to manufacture up to 3,000 trucks annually. Additionally, Tevva has developed 7.5t and 19t hydrogen-electric trucks for global markets, with the former successfully completing a 620 mile (1,000 km) demonstration run from Tevva HQ to the Scottish border and back earlier this year.

Fleet operators are increasingly eager to embrace electric trucks, recognizing that reducing emissions aligns with long-term business goals and can deliver immediate reductions in total cost of ownership (TCO). Nevertheless, the economic viability of zero-emission long-haul trucking poses certain challenges. Constraints on charging and refueling infrastructure, as well as the need for clarity on how TCO savings are demonstrated, loom large. Tevva is actively collaborating with its partners and customers to address these critical factors. We are confident that our electric trucks will not only save organizations money over the vehicle's lifetime but also enhance fleet and driver performance.

Meeting the proposed reduction targets will undoubtedly be a formidable task unless these issues



are effectively addressed. Accelerating deployment necessitates more robust policy support from governments. A blueprint can be found in the generous tax credits and grants outlined in the Inflation Reduction Act and the Bipartisan Infrastructure Law in the United States. These policies are already attracting investments in the clean-vehicle supply chain, in contrast to the relatively less comprehensive policies in Europe.

This presents an opportunity for legislators in other regions, particularly in Europe, to exhibit bold leadership. The prospects of widespread zero-emission truck adoption and our journey toward a climate-neutral future depend on it.





ELECTRIC BIKES



Is The Electric Bike Revolution Pedaling Towards A Greener Future?



ELECTRIC BIKES

Is The Electric Bike Revolution Pedaling Towards A Greener Future?

As the world grapples with the challenges of climate change and urban congestion, the electrification of the mobility sector has emerged as a promising solution. Electric vehicles (EVs), from cars to buses, are often hailed as the future of clean transportation. However, within this broader landscape, electric bikes (e-bikes) have rapidly gained momentum, offering a sustainable and eco-friendly mode of personal transportation. This section delves into the electric bike revolution, exploring its potential to drive us towards a greener future.

Electric bikes are not a new concept; they have been around for decades. However, recent advancements in battery technology, motor efficiency, and a growing environmental consciousness have propelled e-bikes into the spotlight. In many ways, e-bikes represent the quiet yet determined contender in the electrified mobility revolution, offering several key advantages over traditional bicycles and electric cars.

One of the primary arguments in favor of e-bikes is their remarkable efficiency. E-bikes typically use small, lightweight batteries, and their electric motors are designed to provide assistance to the rider rather than replacing human effort entirely. This human-electric hybrid approach leads to a substantial reduction in energy consumption and greenhouse

gas emissions when compared to electric cars, which require much larger and more resource-intensive batteries.

Moreover, e-bikes are inherently more energy-efficient than traditional cars. Commuting with an e-bike can be up to 10 times more efficient in terms of energy consumption per mile traveled compared to an average car. This increased energy efficiency translates to lower carbon emissions and less strain on our power grids, especially when the electricity comes from renewable sources.

Electric bikes also offer a solution to urban congestion. Cities worldwide grapple with traffic jams, limited parking space, and deteriorating air quality. E-bikes provide an eco-friendly alternative to cars, allowing people to navigate crowded streets more swiftly and with significantly reduced environmental impact. E-bikes can help in reducing the overall number of vehicles on the road, easing congestion, and contributing to cleaner and quieter urban environments.

Beyond their environmental advantages, e-bikes promote active commuting. While traditional bicycles encourage physical activity, they might not always be practical for long or hilly commutes. E-bikes bridge this gap by providing assistance when needed, encouraging more people to take up cycling as a

mode of transportation. This can lead to improved public health through increased physical activity, as well as reduced healthcare costs related to sedentary lifestyles and air pollution-related illnesses.

Various global studies, research endeavors, and surveys have consistently revealed common motivations behind the purchase and use of e-bikes across different nations. The foremost advantage offered by e-bikes is the ability to facilitate quicker and less strenuous commuting, a feature that extends the appeal of cycling well into one's senior years.

For instance, Halfords, a prominent retailer, reported that a substantial 65% of its electric bike sales are attributed to individuals aged 55 and older, emphasizing that e-bikes are increasingly embraced as a means to accommodate the needs of older riders. This trend underscores the significance of e-bikes in catering to the elderly population.

Another significant study found that nearly 65% of respondents cited the substitution of car trips as a primary motivation for their e-bike purchase. E-bikes emerge as a sustainable alternative to traditional vehicles, especially for short-distance travel needs, reducing environmental impact and traffic congestion.

Moreover, a North American study conducted among

e-bike owners revealed that 60% of respondents expressed feeling safer when riding an electric bike compared to a conventional bicycle. Additionally, 42% of participants acknowledged that e-bikes had contributed to accident avoidance, making them an attractive choice for safety-conscious riders.

Similarly, an Australian study, based on an online survey, corroborated the prevalence of common motives. Approximately 60% of respondents in this study emphasized their desire to replace some car trips as the leading reason for investing in an e-bike. This was closely followed by 49% of participants who highlighted the allure of riding with reduced physical exertion, signifying the e-bike's role in promoting a more accessible and effortless cycling experience. These findings underscore the global resonance of e-bikes as a sustainable and user-friendly mode of transportation.

While electric bikes have the potential to steer us toward a greener future, they are not without their challenges. Concerns regarding the sustainability of battery production, e-waste management, and urban infrastructure adaptation must be addressed. Additionally, regulations and safety standards for e-bikes should be carefully crafted to ensure they integrate safely with existing transportation systems.

The electric bike revolution offers a compelling vision of a greener and more sustainable future for urban and suburban transportation. With their exceptional efficiency, reduced environmental footprint, and potential to alleviate congestion and promote physical activity, e-bikes have earned their place in the electrified mobility sector. To fully unlock their potential, society must continue to invest in research, infrastructure, and regulations that support the growth and responsible use of electric bikes. As we navigate the path to a cleaner, more sustainable future, e-bikes are indeed pedaling us in the right direction.



ELECTRIC COACH



Are Electric Coaches The Sustainable Solution For Long-Distance Travel?

Simon Collins, UK & Ireland Coach Sales Manager - Pelican Bus & Coach



Pelican 
Bus + Coach



ELECTRIC COACH

Are Electric Coaches The Sustainable Solution For Long-Distance Travel?

There are approximately 25,000 coaches currently in service in the UK. The coach industry was severely impacted by the pandemic for two years but has subsequently recovered well and interest in electric coaches has increased.

The coach industry plays a vital role in providing affordable solutions across a diverse array of sectors such as education, tourism, and commuting. Coach fleets vary in size, from an owner-operator with just one vehicle to larger operators with over 150 vehicles. The coach industry predominantly consists of family-run businesses, often with multiple generations working together and most operators have their own workshop facilities.

The Coach sector needs an array of different vehicle sizes to meet the different demands of customers, and many operators employ a mixed fleet. Most of the operators we speak with say that high-spec touring coaches are now a standard requirement for their discerning customer base: the expectation of USBs at each seat are a prime example of this.

The UK market is a mature but highly competitive one; operators are directly in competition with one another for pricing and availability. This leads to any fleet purchases requiring affordable pricing with high specifications and short lead times. It is a very differ-

ent market to the bus industry with its own unique set of challenges in the transition to electric.

The second-hand coach market is currently experiencing low supply and high prices: both of these factors are helping speed up the drive towards new available electric vehicles. The increasing need for compliance with clean air zones and regulations in the EU, plus sustainability requirements from customers is also an additional driver.

Pelican Bus and Coach are the only supplier to offer a right-hand drive zero-emission coach product. We introduced the fully-electric Yutong TCe12 to the market in 2019 and have seen a steady increase in electric coach adoption. The 281kWh battery gives operators a range of over 200 miles on a full charge, while an optional 350kWh battery increases its range to around 250 miles.

Since January 2023, Zeelo has, in partnership with Pelican, been operating a Yutong TCe12 zero-emission coach within their customer base, enabling operators to trial an electric coach to discover if it meets their operational requirements.

The best advice we can give coach operators is to be realistic when choosing an electric vehicle and invest in a vehicle that will suit their operational needs.

Electric coaches are ideal for operators running local services, city-centric and fixed contracts with pre-determined mileage requirements. See the graphic below highlighting the type of coach usage ideally suited to an electric coach.

The Type Of Coach Usage Ideally Suited To An Electric Coach



Annual vehicle mileage for a coach depends on the type of service a vehicle is placed on; it can be as little as 10,000 km per year for local schoolwork to over 200,000 km a year for touring coaches. As technology, range and battery density increase, this will open electric vehicles up to more markets.

With careful planning around the vehicle's route requirements, an electric coach can cover a wider mileage range per day. One of our customers oper-



ates multiple TCe12s on a fixed daily route and is a perfect example of how this can work in practise. They have built their timetable around the vehicle's range and charging requirements, and by utilising their own charging infrastructure, each vehicle regularly exceeds 800 km per day.

Pelican Bus & Coach and Yutong have worked with one of our TCe12 coach customers to develop the new 3-axle zero-emission coach. Their valuable feedback has partly driven the development of the new addition of the 3-axle GTe14 to the UK model portfolio. The GTe14 offers more capacity and more luggage space, whilst still retaining full PSVAR and improved details such as aerodynamics, turning circles, and passenger conveniences. The larger GTe14 coach will have a range of approximately 280 miles, depending on the battery pack option. Therefore, this higher-capacity electric coach will allow operators to add longer-distance routes compared with the TCe12 such as high-value private and intercity work.

The recent availability of mobile chargers that can be plugged into any widely available 3-phase supply has removed the obstacle of new infrastructure requirements for onsite charging. This has led to an increase in smaller operators investing in an electric coach. For example, Pelican can supply a small 20kWh 3-phase charger and a larger 42kWh charger which requires a



more powerful 3-phase supply.

Pelican keeps in close touch with our customers and encourages their feedback. These are some of the most common benefits our customers have told us about their experience with operating a zero-emission electric coach.

A positive change in driver behaviour

Operators have told us that their drivers actively try to save battery power by driving more efficiently. Rather than trying to go as fast as possible, they compete with each other to see who can achieve the best range from their vehicle. Consequently, the business has gained other positive benefits on the cost of ownership such as less wear and tear on the vehicle and serviceable items, fewer incidents, and a better customer experience resulting in improved customer feedback.

Reduced repair and maintenance costs

Repair and maintenance costs can decrease by up to 40%

Increased Reliability

The reliability of the product is increased compared to diesel, as fewer moving parts are required to drive the vehicle



Early adopters of electric coaches have found that the ability to advertise zero-emission availability in their fleet has led to more lucrative contracts. Even though the Government has revised its plan backward to 2035 for the ban on the sale of new internal combustion engine cars and vans, this has had no impact on reducing the interest in the transition to zero-emission in the coaching sector. Enquiries and orders are still increasing at a constant rate, even though there is still no clear guidance from government regarding a timeframe for the full implementation of zero-emission coach vehicles. The CPT have taken the lead on guiding the coach industry to achieve net zero, by establishing the Zero Emission Coach Taskforce in December 2021. We would really welcome more guidance and financial help from all UK governments to help the coach industry transition to zero emissions.

Large parts of the UK & Ireland do not have access to funding for ZE coaches or the related infrastructure. We were delighted to see that coaches were included for the first time in the ScotZEB phase 2 funding and would very much like to see a similar roll-out throughout the whole of the UK & Ireland. There is still a need for a reliable zero-emission recharging network. We want to see a quicker rollout of rapid fast chargers at on-route locations such as motorway service stations and tourism hotspots.

EV CHARGING



Is Charging Infrastructure Really Ready For The EV Revolution?

Matt Curwood, Director, Bus Operations - Voltera Power



voltera



EV CHARGING

Is Charging Infrastructure Really Ready For The EV Revolution?

Almost a third of all greenhouse gas emissions come from transportation; there's no question that our collective future depends on zero-emissions transport. Fleet operators, automakers, and consumers alike are adopting electric vehicles at a rapidly accelerating pace. Lagging far behind, though, is the infrastructure to support EVs at scale. We have to bridge that gap if we're going to make zero-emissions transportation a reality.

EVs are being produced at scale; the need for charging infrastructure is now urgent

In previous years, one could have fairly attributed the relatively slow pace of fleet EV deployment to OEM production delays. But vehicles are rolling off the assembly lines now. And while most fleets are still operating a fraction of the EVs that they plan to, deployments are increasing rapidly. In turn, the need for charging infrastructure at scale has become urgent. The lack of infrastructure is now the biggest barrier to wide scale EV adoption.

Fleets need to move fast – And they need scale, probably off-premises

Already taking delivery of EVs, fleets are under tremendous pressure to bring charging infrastructure capacity online very quickly. At FedEx Express, for

example, "We have a just-in-time model for vehicle procurement. So, we need charging infrastructure to be installed when the vehicle is delivered. Not meeting vehicle rollout timing is a cardinal sin of fleet electrification," explained Bill Cawein, FedEx Manager of Technology and Integration, in a presentation at the 2023 MOVE America conference.

Many fleets began their electrification journeys on their own, deploying pilot-scale charging infrastructure at existing depots, or using public charging. For most of those fleets, space and power constraints at existing facilities and a need for reliability-guaranteed fast charging will necessitate dedicated off-site charging. PepsiCo, as just one example, built an internal team to deploy charging infrastructure in pilot projects at several of its distribution centers. Now that the company is ready to deploy charging infrastructure across its portfolio, they're looking to engage third-party partners for off-site charging as well.

Deploying EV charging infrastructure at scale is very challenging

Fleets need to move fast to bring EV charging capacity online at scale, but that's easier said than done. The scale of infrastructure necessary to support deployments requires the trifecta of land availability, power

capacity, and the talent to deploy. Reliable, dedicated charging infrastructure at scale doesn't exist today, and building it can be incredibly challenging.

Reliable, dedicated charging infrastructure at scale doesn't exist today

Currently in the U.S., there are not nearly enough chargers (of any kind) to support any of the EV use cases. According to 2022 analysis by McKinsey, cumulative demand for chargers at fleet depots would rise from 13,000 in 2021 to 541,000 in 2030. (Cumulative annual energy demand from light commercial vehicles, trucks, and buses would rise from 0.4 TWh in 2021 to 64 TWh in 2030.) That's assuming half of all vehicles sold by 2030 are zero-emission; many fleets' electrification plans are even more aggressive.

Public charging is sometimes offered as an option for fleets as they scale up dedicated infrastructure. But reliability/availability are significant challenges with public fast chargers today. A 2022 study by researchers at University of California, Berkeley examined 657 individual connectors between 181 public fast-charging stations in the San Francisco Bay area and found that about 23% were nonfunctional (essentially, the uptime equivalent for those chargers was 77 percent). Most fleets expect a least 97% uptime.





Beyond reliability, the scale of available infrastructure is a challenge for fleets. Using an existing site for a behind-the-fence deployment can work well (especially for pilot scale projects) and is likely the cheapest and quickest option. But the scale of infrastructure necessary to support deployments may require a new site(s) with enough space and access to power. A fleet EV charging facility could easily require more than five megawatts of power (equivalent to about 30 large office buildings) which is hard to come by in most urban environments.

Infrastructure projects take time

Building charging infrastructure at the scale fleets require is not quick. Acquiring a site and developing the infrastructure is a complex process that could take 24 months. The two biggest time components are site acquisition and power procurement.

The toughest site acquisition related challenges include:

To ensure successful acquisition of one site, a developer typically has to evaluate multiple sites in a market – extending timelines and cost

Working with authorities holding jurisdiction (AHJs) can be complicated, and the permitting process can

be much longer than fleets' deployment timelines

Real estate acquisition is often the largest single capital cost associated with deploying EV charging infrastructure at scale, and few fleets are able or willing to commit significant upfront capital

The toughest power procurement related challenges include:

Many fleets' duty cycles necessitate charging in specific locations, often where power capacity is constrained

Utility timelines for distribution system upgrades and interconnection don't match fleets' vehicle deployment timelines

Differences across markets preclude a single portfolio-wide development approach

E-mobility is only one piece of the energy transition utilities are facing, and many utilities are under-resourced

Overcoming the challenges requires all hands on deck

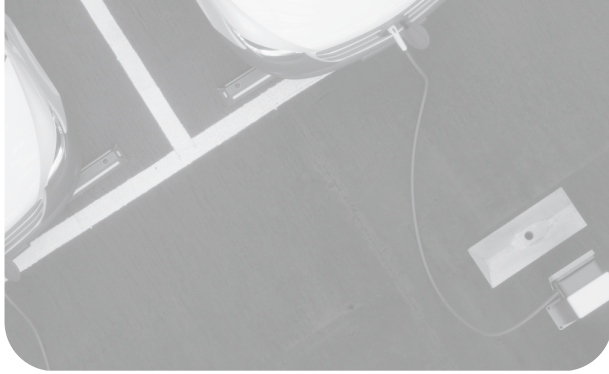
These challenges are not any one stakeholder's alone to solve. Fleets need to be transparent about when

and where they're planning to electrify. Utilities need to operate in a way they have never done before by investing ahead of time. The government must streamline permitting processes. Capital markets must be willing to fund these complex yet valuable assets and developers must be willing to build ahead of demand. For example, about half of Voltera's projects are for a particular customer in a specific location. The other half are sites we're developing on a thesis basis, where we see future demand and an opportunity to start the development process early to have the capacity ready when customers need it.

At Voltera we develop, own, and operate the infrastructure that enables our customers to succeed at scale with zero-emission vehicles. Our Charging Infrastructure as a Service is a comprehensive solution that includes on-site amenities (e.g., data centers and maintenance bays) and a commitment to ongoing operations management for maximum uptime. This level of integration and expertise ensures that fleet operators can rely on a single partner to accelerate their transition to ZEVs

Our playbook for solving site acquisition related challenges includes:

Proactive identification and screening of potential sites against specific requirements, including beginning the evaluation process well before an actual project is



launched and running multiple site evaluations in tandem

Our well-established practice for quickly buying or leasing sites in even the most challenging real estate markets combines a strategic partnership with leading brokers globally and a tactical local approach to each market

Alignment with AHJ and utility processes, requirements, and goals; we invest heavily in developing and nurturing relationships with these essential stakeholders

Early initiation of zoning approval process run in parallel with design to significantly cut down the end-to-end site acquisition timeline

Access to upfront capital and business model flexibility, which allow us to take risks that many fleets are unable or unwilling to take, including proactively acquiring sites in high-demand markets

Our playbook for solving power procurement related challenges includes:

Proactive investment to procure power in high-demand markets, in part to capture available distribution capacity before it's gone

Established relationships and experience working with utilities

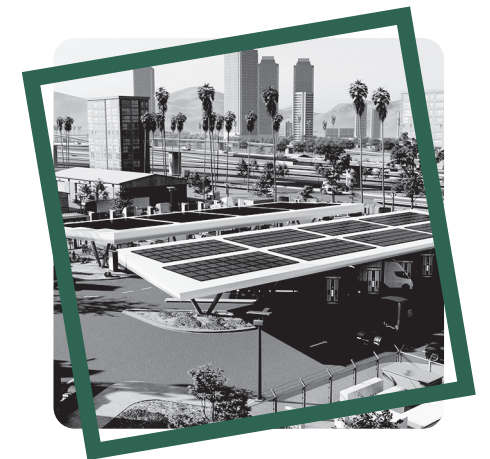
Load management is the least expensive, simplest, and quickest way to bridge a potential shortfall between the amount of power the utility can deliver and the amount of power required to charge the vehicles on the site

On-site storage and/or generation; for example, if a site hasn't yet reached its full power ramp, leveraging batteries to store and then later release energy could amplify utility power capacity in the interim

Other essential elements of the solution include transparency around capacity (from utilities to developers/fleets and from developers/fleets to utilities), increased utility readiness, and rule changes to ensure utilities can make anticipatory investment.

We are increasingly reminded of what's at stake when our climate goals are not met. However, as we embark on this exciting opportunity to innovate, we will be left with an outcome that is better, not just for the planet, but for entire economies.

While the challenges are daunting, we're positioned for success.



MAKE THE SWITCH

As **Charging Ahead** has illuminated, the future of transportation lies in the electrification of vehicles. The urgency of addressing climate change, reducing our carbon footprint, and building a sustainable future has never been more evident. Now, we invite you to take a pivotal step toward this brighter, cleaner future. It's time to **Make The Switch**

The evidence is clear: the transportation sector plays a significant role in global carbon emissions. We cannot afford to wait any longer to make a change. The technology, infrastructure, and support systems are growing, and the momentum is building. Now, it's up to each of us to contribute to this transformative journey.

Support from our contributors, industry experts, and government initiatives is here to help you on this journey. Seize the opportunity, and together, let's drive change that will echo through the 21st century and beyond. Make the switch to electric vehicles today, and become a part of the sustainable, electrified future of transportation. Your actions matter, and they have the power to shape a cleaner, greener world.

When considering the transition to Electric Vehicles (EVs) and fleet electrification, it's crucial for to ask yourself these ten key questions:

What are my sustainability goals?

What is my current fleet's energy efficiency?

What is the total cost of ownership (TCO) for EVs?

How will I charge my EVs?

What is the range and charging time of the EVs I need?

How can I optimize route planning and vehicle deployment?

What incentives and grants are available?

What is the availability of EV models that suit my needs?

What are the risks associated with EV adoption?

How will this transition impact my workforce and employees?

By addressing these questions, you will gain valuable insights into the considerations, challenges, and opportunities related to EV and fleet electrification, helping you make informed decisions for a sustainable future. Our contributors stand ready to help in answering these questions.

TEVVA

YUTONG

Pelican
Bus + Coach

voltera

BROADSCALE

Electric Vehicles
OUTLOOK

zeelo



CONCLUSION

As we conclude our exploration of the future of electric vehicles and fleet electrification within the mobility sector, we extend our heartfelt gratitude to our invaluable contributors. Their dedication, expertise, and commitment have been instrumental in shaping this report.

Our contributors, hailing from a diverse range of backgrounds – from pioneering electric vehicle manufacturers and sustainability advocates to forward-thinking fleet operators – have shared their insights, knowledge, and experiences. Their unwavering support has enriched this document, providing readers with a comprehensive and insightful view of the electrified future of transportation.

As we embark on this journey toward a cleaner, greener, and more sustainable transportation ecosystem, we look forward to continuing our collaboration with all our contributors and stakeholders. Together, we will **charge ahead** into a future where electric vehicles play a pivotal role in reducing carbon emissions, fostering innovation, and reshaping the way we move.

Our analysis has revealed that EV adoption is evolving rapidly, driven by technological advancements, increasing consumer demand, and supportive government policies. As we stand on the cusp of a major transportation revolution, it is clear that the transition to electric mobility is not only inevitable but also desirable, given its potential to reduce greenhouse gas emissions and combat climate change.

The whitepaper has highlighted the key challenges and opportunities that stakeholders in the mobility industry will face as they strive to create a more sustainable, efficient, and accessible transportation infrastructure. It is evident that collaboration among governments, businesses, and communities will be pivotal in overcoming these challenges and creating a cleaner, greener future of transportation.

Take the leap, Charge Ahead

