



Industry in Focus

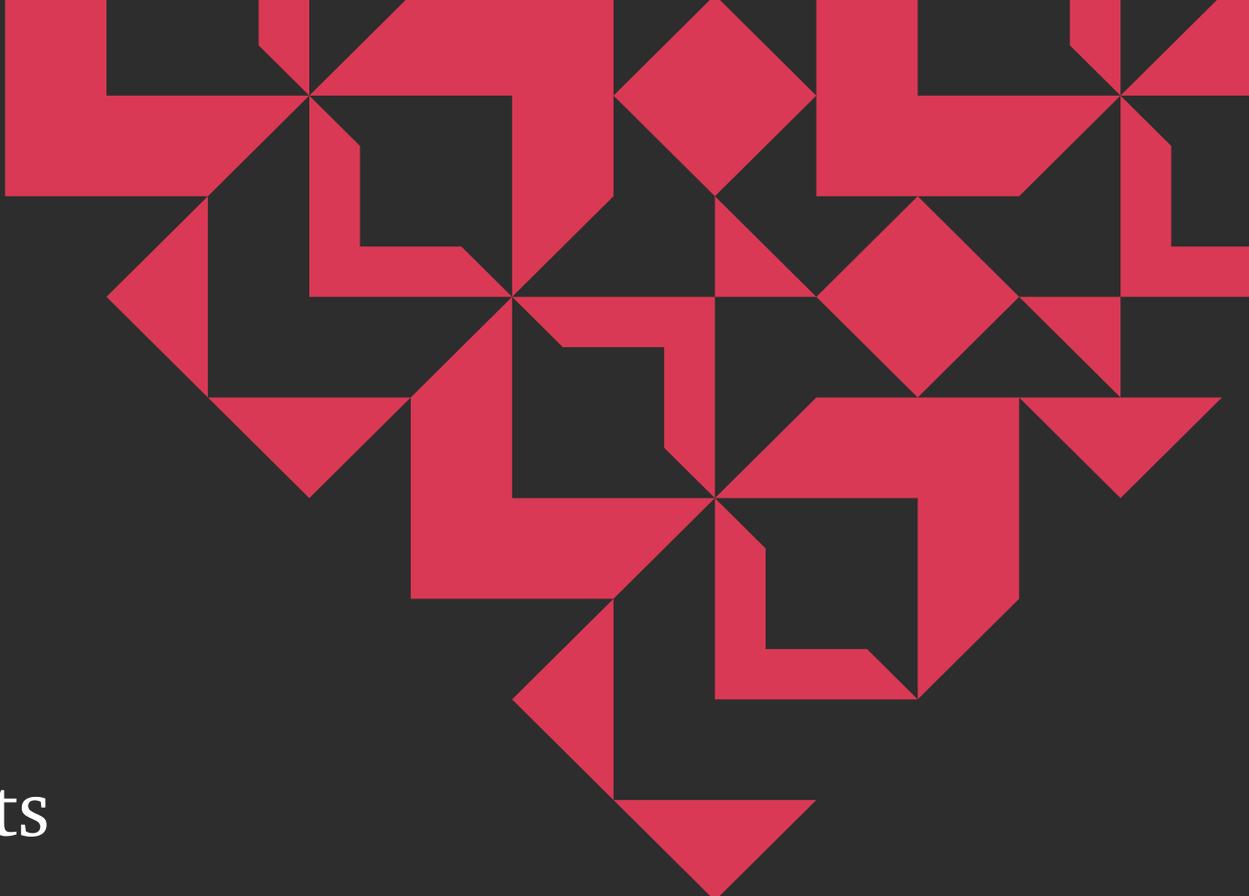
Fleets ahead!

Emerging pathways to decarbonise UK fleets

 **Field**
Dynamics

nationalgrid


pwc



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Foreword

In less than a decade all sales of new petrol and diesel cars in the UK will be banned. Over that same period, we will see the number of electric vehicles (EVs) rise from some 300,000 today to an estimated 13 million.¹ Decarbonising transport is a critical component of our journey to Net Zero and it will happen at pace over the next decade.

But this transition does not just depend upon consumers. Around six million vehicles on the roads today are part of a vehicle fleet: delivery vans, buses, heavy goods vehicles (HGVs) and other specialist transport, operated by organisations of all sizes across the public and private sectors. If we are to achieve our ambition of being Net Zero by 2050, if not sooner, then these organisations will need to replace their internal combustion engine (ICE) vehicles with low carbon alternatives.

Many fleet operators are weighing up the right time to begin this process. Move sooner and the organisation may have to deal with challenges including a more restricted choice of vehicles and the need for a more bespoke charging solution. Move too late and the organisation will risk brand damage relative to their competitors. In our view, the date to bear in mind is 2024: the year during which, according to our estimates, electric vehicles will cost the same as their ICE equivalents. At this point, choosing an electric vehicle will become the default option for consumers. Any organisations which are not operating low carbon fleets by that time risk being seen as dragging their feet. This gives a window of opportunity of 2-3 years for fleet operators to transition substantially their operations to low carbon.

While some have yet to start, others are already ahead of the curve. In compiling this report, we have spoken to 40 players from across the fleet industry in order to share best practice and lessons learned, in the hope that it can help fleet operators just starting out to accelerate and de-risk their journey.

We hope you find the report engaging and helpful.

Matthew Alabaster, Partner, PwC Strategy&

Ben Allan, CEO, Field Dynamics

Lorna McAtear, Fleet Manager, National Grid

¹ National Grid Future Energy Scenarios, 2021 – Leading the Way scenario



Executive summary

In a previous paper, **Leading the charge!**, we highlighted the transformative impact fleet electrification would have on electric vehicle adoption and the evolution of charging infrastructure. This time we wanted to delve deeper into the operational challenges associated with decarbonising fleets. So we spoke to 40 players, ranging from fleet managers and charge point operators to local councils and investors. We asked them some fundamental questions: What are they doing to decarbonise fleets? What are the operational challenges they face? And how are they overcoming these challenges? The output of these conversations are summarised in this report.

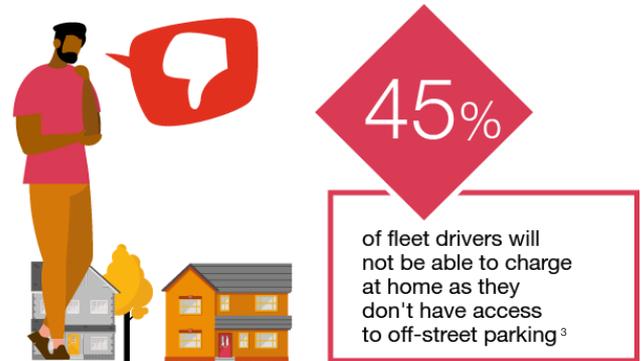
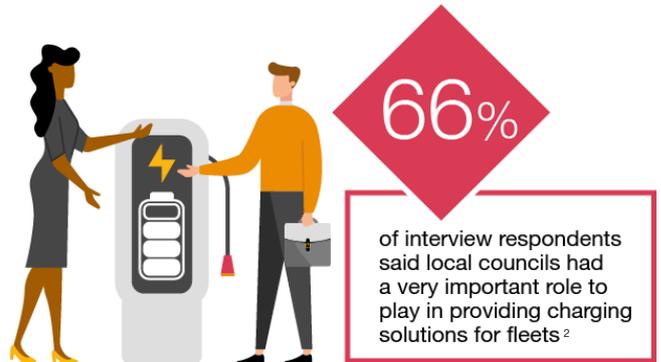
The transport sector is the largest source of emissions in the UK, representing some 30% of the national total. Of that transport share, 90% of emissions are generated by cars, taxis, heavy goods vehicles and vans. So as corporates look to meet their Net Zero pledges at the right scale and pace, it's no surprise they are turning their focus to decarbonising the some six million vehicles that comprise their fleets.

Behind that goal lies a complex pathway that will require a collaborative approach from local councils, corporates and investors. Our interviews have highlighted some key themes that will define the way forward.

1. The essential role of local councils and public charging solutions

Local councils will be a key point of connection as corporates hone their fleet charging solutions. Local authorities are owners of potential charging estate, such as city centre car parks, and they are able to influence on-street charging solutions. Workplace and depot charging will be a start, but with many employees unable to charge at home, access to public charging will be essential.

As local authorities look to electrify their own fleets, there is an opportunity for corporates to collaborate and support the creation of local solutions, from kerb-side charging to charging hubs, that will support broader private sector fleets. But first, councils will need to overcome challenges including stretched budgets post-pandemic, a lack of technical expertise in EV charging infrastructure, complex procurement processes and ineffective coordination in approach across local authorities. There is currently a broad spectrum of progress, with some pioneering councils already implementing a range of solutions while others have yet to start.



² PwC Strategy & research

³ **Mitie response to CMA electric vehicle charging market study**

⁴ Field Dynamics report – **'On-Street Households: The Next EV Challenge and Opportunity'**

2. Lack of commercial vehicle choice in comparison to ICE equivalents

There are over four million vans on the roads in the UK, driving an average of 17,500 miles a year for business, so this represents a critical market segment for fleet decarbonisation. However, vans have been given less attention from automotive original equipment manufacturers (OEMs) than passenger cars. We estimate that the range and choice of vans is 2-3 years behind passenger cars. The electric vans that are available simply can't cater for the full range of performance parameters that operators require. Many fleet operators that have reviewed the available vehicles have concluded that the current options do not allow them to operate without unduly impacting service levels.

We have also heard that the design of charging ports makes public and on-street charging problematic for larger vans in an infrastructure currently designed for cars. There is also anecdotal evidence of van drivers being ushered away from charging points at destination sites like supermarkets by security personnel.

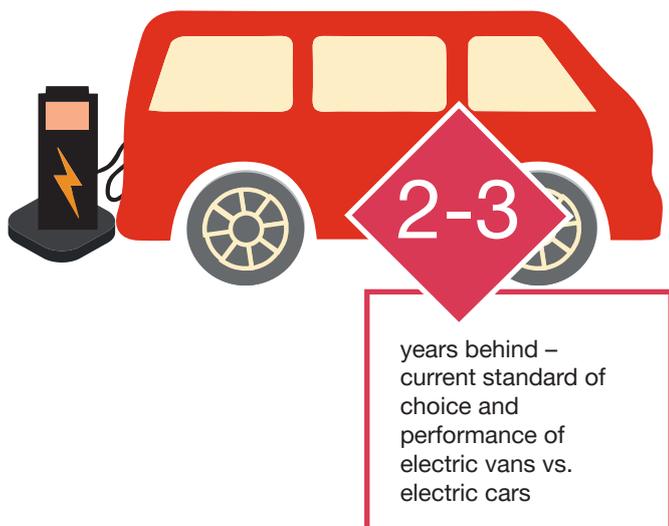
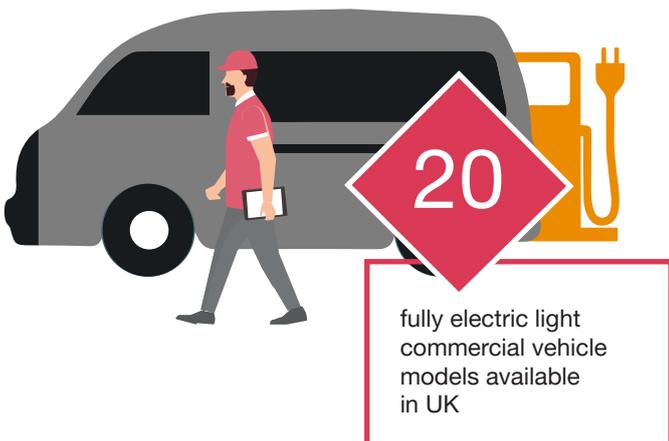
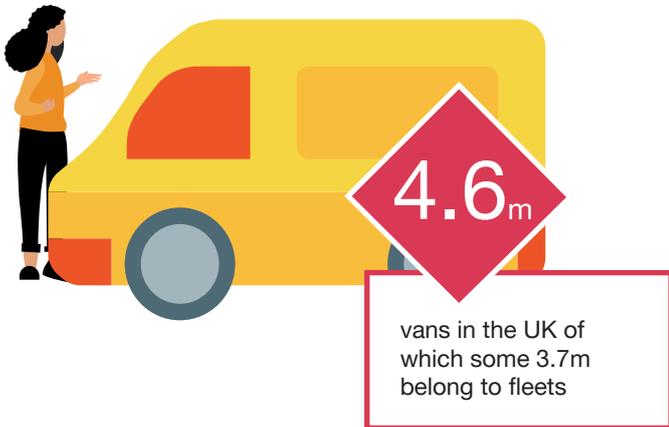
The options available for decarbonising heavy vehicles are even less developed. Some specialist vehicles can be electrified, for example some waste disposal vehicles, which have relatively short and pre-defined journeys. But there is no commonly agreed pathway for heavy goods vehicles. While hydrogen is generally held out to be the end-game, this is by no means a universally-held view. In any case, the time needed for the development of a hydrogen infrastructure will require other solutions, such as biofuels to scale up significantly in the interim.

3. The fundamental changes fleet charging will create for operating models

Any fleet looking to decarbonise will need to understand how this process impacts the way they do business. Electric vehicles come with different capabilities, different infrastructure requirements and different operating metrics to the vehicles they replace. Operators can't assume that the wider business will carry on as normal, just electrified.

Yet many of the companies we spoke to admitted they had not fully assessed the impact of fleet charging on their overall operating model. There was a growing realisation among respondents that they would have to evolve the way they operated as fleets electrified.

Consider fleet servicing. Operators of large fleets may have an in-house function to service their ICE vehicles. As these fleets electrify, companies will need to review whether they wish to develop their own in-house capabilities, or whether it now makes more sense to outsource servicing to the OEMs or other third parties. While electric vehicles have significantly fewer moving parts than an ICE counterpart, the technology is new and complex. If they wish to keep servicing in-house, service teams will need to be re-skilled and service sites will need to be repurposed.



4. Faced with complexity and a need for collaboration, fleet managers can benefit from an existing roadmap to decarbonisation

Fleet managers now have to negotiate a myriad of issues, the complexity of which makes collaboration essential. Fleet managers will need to work internally with different functions to build momentum and partner externally with charge point operators (CPOs) for example, to explore electrification pathways and share best practice with other corporates to learn and adapt.

Our conversations with fleet managers and charge point operators highlighted there is a road map to fleet decarbonisation with critical milestones. However, some organisations are not following this pathway. This is slowing down the decarbonisation process and sometimes creating unnecessary complications.

Critical next steps for key market participants

Our interviews uncovered a number of specific challenges – and opportunities to collaborate in order to find an effective way forward for each stakeholder group. We've highlighted the key steps below, but explore the examples in more detail in the section 'The challenges and highlights by stakeholder cluster'.

Government	Fleet Managers	Investors
<p>Central government should consider mandating local authorities to encourage the deployment of public charging solutions for fleets ensuring there is greater harmony in approach.</p> <p>Local councils should benchmark their activities in fleet charging and communicate these efforts to one another. Greater transparency in best practice will serve to accelerate their impact in public charging.</p>	<p>Companies setting Net Zero targets will need to review their fleets and figure out optimal pathways for decarbonisation.</p> <p>And there is a limited window of opportunity for fleet decarbonisation. Over the next two to three years, early adopters will derive significant benefits for their brand, CSR credentials and talent recruitment and retention.</p> <p>Fleet managers will need to identify the right partners (both formal and informal) to deliver fleet decarbonisation.</p> <p>Companies must not underestimate the complexity of fleet decarbonisation. Designing a strategy, having access to data (such as driving patterns) and understanding the impact on the operating model, will be essential to delivering a successful fleet transformation.</p>	<p>The fleet charging market is hot. Some £50bn will flow into this market over the next few years.</p> <p>Investors need to balance opportunities with risk to invest in the fleet charging value chain and provide capital to scale up rapidly the sector.</p>

Factors accelerating decarbonisation in the UK fleet market

The UK government and regulatory change are accelerating fleet decarbonisation

The UK government unveiled its 10 Point Plan for a Green Industrial Revolution in 2020, bringing the ICE ban for new sales of petrol and diesel cars forward to 2030. At COP26 the UK government also announced it will ban the sales of all new diesel and petrol heavy goods vehicles by 2040. The transport decarbonisation plan unveiled in 2021 committed to electrifying the central government's fleet by 2027.

Separately in September 2021, Ofgem announced it would bring down the costs of connecting to local grids for 'large electricity users', such as charge point operators. The costs of these connections has been a stumbling block for widespread electrification. The UK government also said it would introduce legislation that will require all newly built homes and offices to feature smart EV chargers in England.

And the private sector is expanding investment and charging solutions

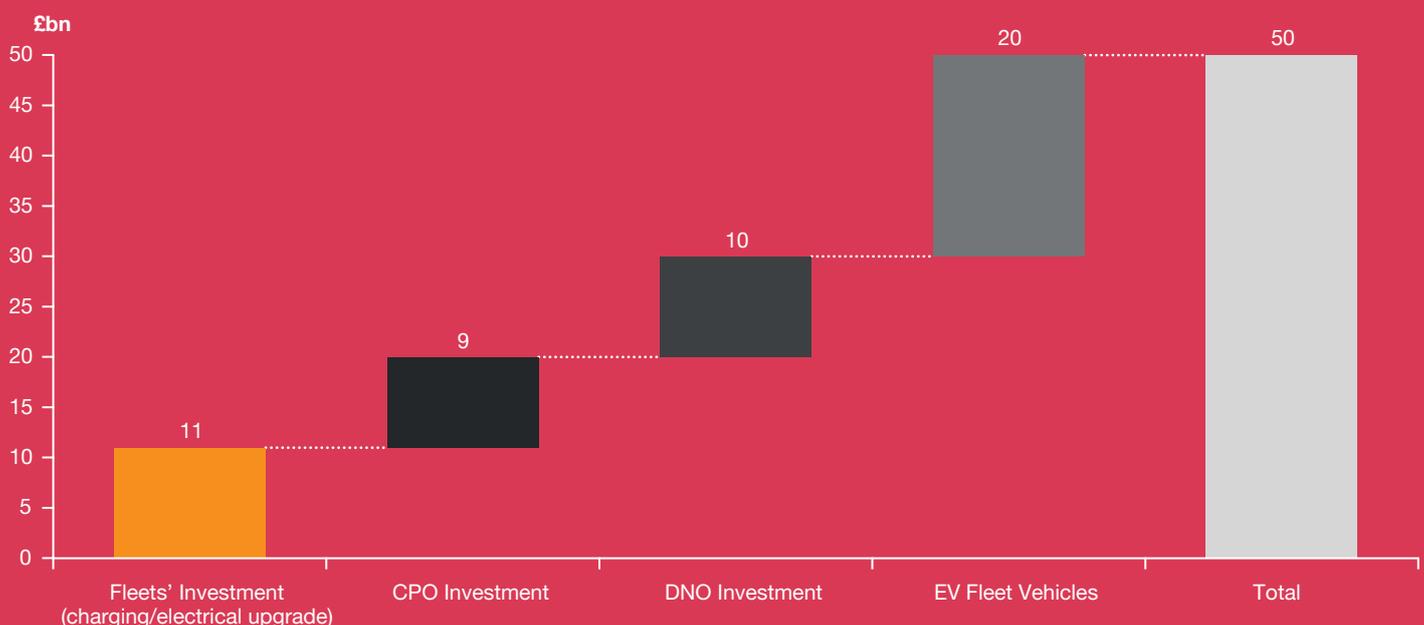
As for the private sector, investment levels continue to grow. bp pulse inaugurated its first rapid charging hub for fleet vehicles on Park Lane in London. The company intends to open hundreds of similar hubs across London and other UK and European cities by 2030, supporting the transition of fleets to electric vehicles.

JustPark, which offers community charging (using technology to reserve and electrify parking spaces at residential homes and church car parks for example), is blending this innovation to provide fleet charging. As part of this offering, JustPark announced a partnership with Addison Lee to help charge their fleet.

GRIDSERVE launched the first electric forecourt, as well as acquiring Ecotricity's Electric Highway network. New start-up Paua launched an electric fuel card app for fleets, allowing drivers to access multiple public charging networks and providing centralised billing for fleet managers.

And this increased market activity is translating into investment spend. As highlighted in Exhibit 1, capital spend in the UK fleet charging market is expected to reach £50 billion in the next few years.

Exhibit 1: UK Fleet Investment Outlook 2021 – 2026



Source: EV Fleet Accelerator – Findings & Recommendations, July 2021

The challenges and highlights by stakeholder cluster



Local authorities are important. They have a role to play as a safety net to ensure charging networks are established, especially in rural areas. Moreover, you need a blending of local authorities and the private sector, a hybrid model, to ensure charging infrastructure is effective.

Fraser Crichton, Corporate Fleet Manager, Dundee City Council

The Local Councils

We uncovered a broad spectrum of capabilities in our discussions with local councils. On one end, there are councils that are pioneers and leading the way in terms of EV charging and supporting fleets. Examples would include Dundee Council (see case study) which is deploying a range of innovative charging concepts and Oxford County Council which has converted a car park by installing chargers so residents without driveways can leave their vehicles overnight to charge.

On the other end of the spectrum are councils doing very little on EV charging – they do not have dedicated teams or a strategy. And of course there are councils that sit in the middle of the spectrum. Bristol City Council, for example, has created a centre of excellence to encourage local businesses to test drive EVs before they procure them.

Many of those stakeholders we interviewed that were not councils, highlighted the local authorities as key players in fleet charging. In fact, according to the players we interviewed, 66% of respondents said local councils had a very important role to play in providing charging solutions for fleets. In essence they own the estate which can host chargers. Moreover, that estate is often located in key parts of the country. For example, they own car parks in town centres. So while EV charging networks are growing at motorway service areas (MSAs) and across supermarket chains (such as Pod Point partnering with Tesco), town centres are potentially key areas of growth for EV charging that are yet to be fully exploited.

Local authorities are ideally placed to promote public charging solutions for fleets. This is beginning to happen. Uber, for example, is working with a number of North London boroughs to ensure on-street chargers are installed in areas where many of their fleet drivers live.

However, our interviews uncovered a number of challenges facing councils:

- The impact of COVID-19 really stretched local authorities in terms of having enough people to deliver services and with councils struggling on limited budgets.
- Many councils simply lack the technical expertise to deal with EV charging topics.
- And the procurement process to engage providers of charging solutions is perceived by charge point operators as unnecessarily complex and protracted.



COP26 is going to be really crucial and the right commitment needs to come from that and the government needs to think about how to support and act faster on fleet decarbonisation. We can't delay any further. There is a need for the government to be agile.

Melanie Parr, Climate Emergency and Sustainability Programme Lead, Darcorum Borough Council



Anecdotally other issues emerged from our discussions with councils that complicate the challenges they already face, including:

- Many local authorities tend to operate in isolation of their counterpart councils and do not have an effective mechanism to share best practice in EV charging related activities.
- The lack of technical expertise in charging can sometimes hinder progress. In one example, a council set its budget to procure a number of EVs but failed to factor in the associated costs of charging infrastructure.
- On some occasions new policy developments can adversely impact EV charging. In one example, bicycle lanes were introduced by a council to encourage healthier lifestyles. However, the lanes were painted on EV charging bays making access to charging difficult for drivers.

- There is also a lack of clear communication channels. If a council wants to talk to fleets or vice versa, it is sometimes challenging to find the relevant contact.

So if councils have an important role to play in developing charging solutions for fleets, what needs to happen next?

Based on our interviews, among the councils and other stakeholders there was a feeling that:



Central government should consider mandating local authorities to encourage the deployment of public charging solutions (from kerb-side charging to fleet-centric charging hubs).



Local councils should benchmark their activities in fleet charging and communicate these efforts to one another. Greater transparency in best practice will serve to accelerate their impact in public charging.

Case Study: Dundee Council



Dundee Council is very much a leader in EV charging.

The council already has the UK's largest public sector fleet of EVs and is committing to going 100% electric with all 600 of its cars and vans by 2025.

Recently it introduced a new street sweeper, run entirely on electricity. The battery-operated vehicles, which can be charged at a number of the council's hubs, have a 63 kWh power pack capable of lasting eight hours. This means the sweeper driver can complete a whole shift on just one charge. The sweepers have been joined by six fully electric refuse collection vehicles that have reduced the council's annual fuel usage by 6%.

In terms of innovation, the council has led the way across several dimensions, including:

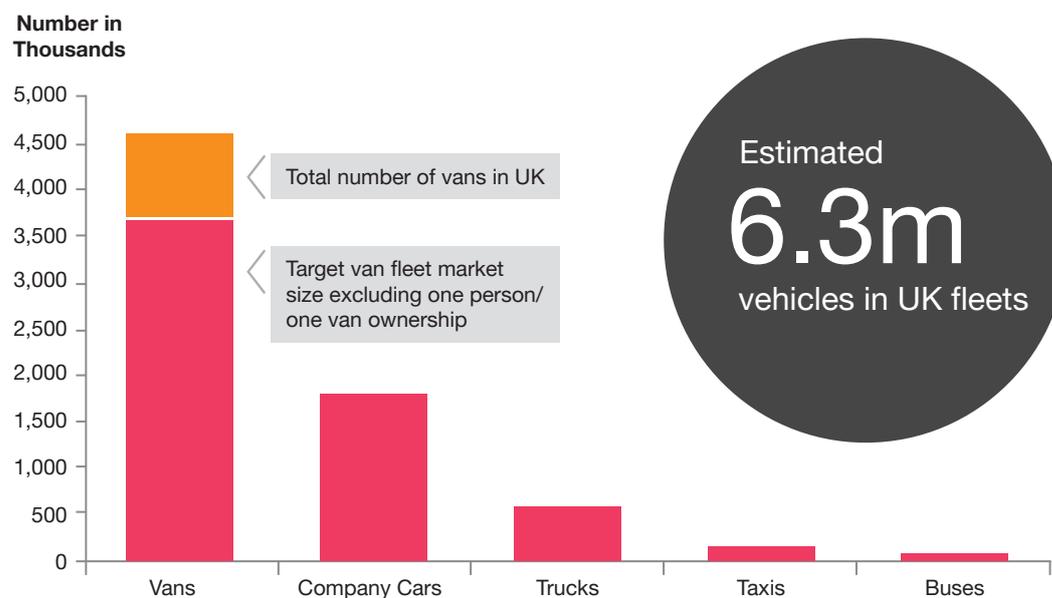
- Installing pop-up chargers to reduce the impact of street furniture. To date the £3.8m project is made up of 26 chargers.
- Using solar PV panels linked to chargers in multi-story car parks.
- Introducing 'Charles the charging robot' – a series of mobile units to be installed in car parks or multi-storey buildings and capable of charging cars via an order through a mobile application.



Fleet Managers

Of the sizeable and diverse segments that comprise UK fleets (see Exhibit 2), vans represent the largest constituency at 4.6 million vehicles⁵, of which an estimated 3.7 million are in fleets. The next largest is company cars which the BVRLA estimates is some 1.8 million vehicles.⁶

Exhibit 2: Overview of UK Fleet Numbers by Vehicle



Note: Total number of taxis quoted in 25 largest cities in the UK in 2020. Company car fleet is 2019 data.

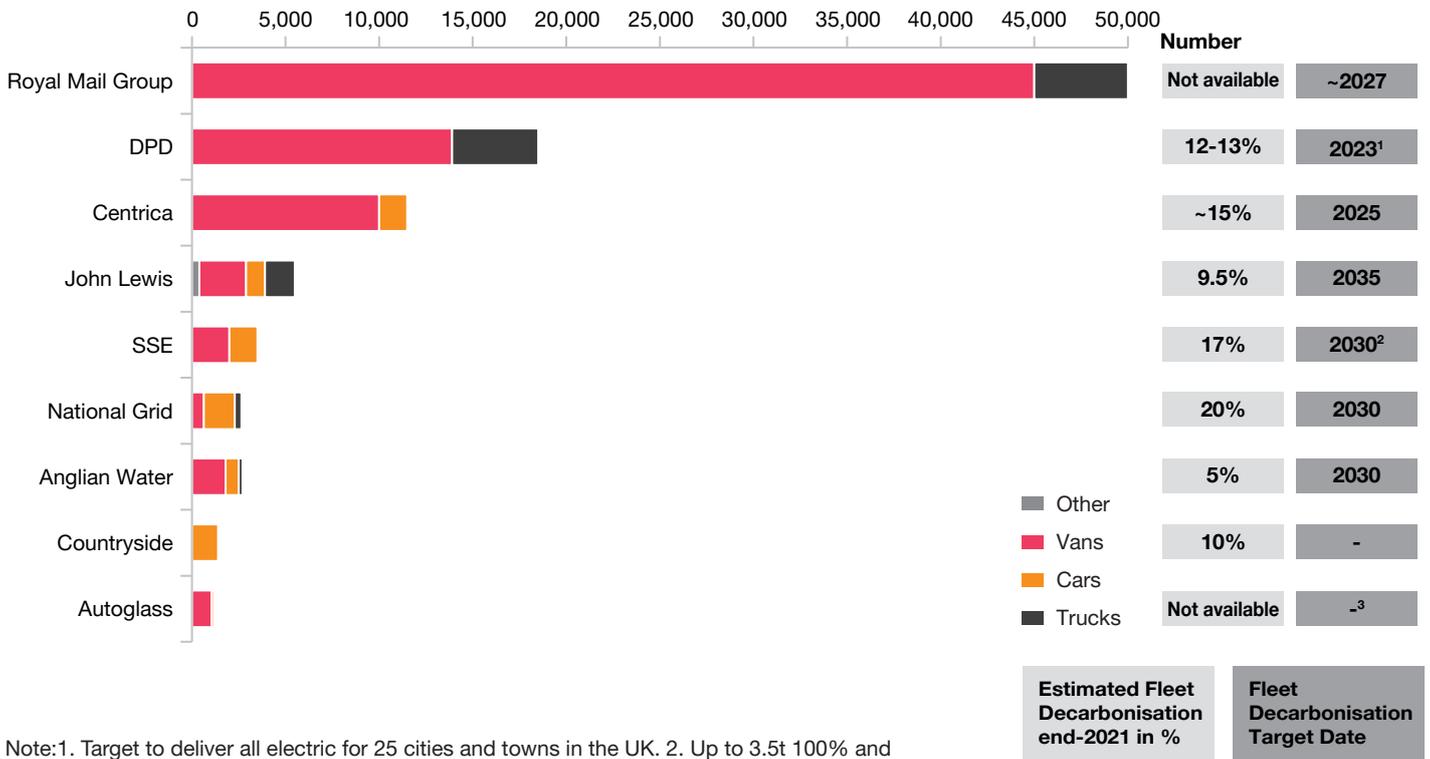
Source: SMMT, BVRLA, Lease Fetcher, Department for Transport, PwC Strategy& research

⁵ The total number of vans in the UK is 4.6m. However, if we exclude one person/one van, actual van fleets total some 3.7m.

⁶ For the purposes of this report only 'pure' company cars are quoted. The 'grey fleet' – private cars used for company business is much larger.

In response to increasing government and regulatory pressure to accelerate decarbonisation, fleet managers are on a steep learning curve. Yet while all are on the same journey, only a handful of the companies we interviewed expect to make material progress by the end of 2021 (See Exhibit 3).

Exhibit 3: Major Fleets in the UK, Selected Examples Based on Interviews 2021



Note:1. Target to deliver all electric for 25 cities and towns in the UK. 2. Up to 3.5t 100% and above 3.5t –7.5k 50%. 3. Targeting 50% emissions reduction in Europe across fleet by 2025

John Lewis 'Trucks' made up of tractors and trailers. And 'Other' represents 'Rigids'.
Source: PwC Strategy& research

Our interviews unearthed a number of key pain points which fleets are seeking to address. We've grouped these into the phases of the transition, matching some of the challenges to solutions being adopted.







Many of the operational challenges in fleet electrification are solved by the driver mindset and therefore it is key to get the right drivers in EVs as part of the early phases. If you push the wrong driver into an EV too soon it could negatively impact the fleet performance.

Chris Jackson, Head of Fleet Partnerships, Centrica



This is very complex and it is changing very fast. What we think is our direction this week might change next week, so much of the learning changes over time.

James Baker, Chief Engineer & Fleet Director at Royal Mail

People

Theme	Challenge	Solution
<p>Starting the Decarbonisation Journey</p>	<p><i>Taking the first steps to decarbonise fleets can be daunting and corporates need to start now.</i></p>	<p>The clock is ticking. The window of opportunity for those yet to start decarbonising their fleets will be the next 2-3 years. If they succeed, there is the opportunity to differentiate themselves in the market by brandishing zero/low emission fleets. After this point, they run the risk of being left behind and demonised. Fleet managers are keen to share their experiences and have urged the industry to stay close to the automotive OEMs, the UK government and other fleets in general to share best practice and understand the direction of travel.</p> <p>Selecting a partner was also highlighted as a key element of success. This could be a charge point operator for example, or someone who has already started on the decarbonisation journey.</p>
<p>Winning Hearts and Minds to Encourage EV Adoption</p>	<p><i>When fleets receive their EVs, how do they ensure employees adopt the new technology?</i></p>	<p>Fleet managers have emphasised the need to identify champions in the business. Centrica described three categories of employees: the EV equivalent of 'petrol heads' who are enthusiastic for EVs; those who are sitting on the fence and are not too bothered about which way the fleet goes; and the third category, those drivers wedded to their diesel vehicles and hostile to EVs. Companies need to engage the first group to drive change across the organisation.</p> <p>Anglian Water went one step further and arranged induction days for new drivers. On receipt of their EV, employees were trained on all the basics to ensure the smooth adoption of the technology. Anglian Water specifically identified drivers who lived far away to pick up their EVs so returning home with their new vehicle would allay concerns about range anxiety.</p> <p>Many firms created EV fora to encourage employees to share experiences and learnings about best practice when driving EVs.</p>





I believe that charging infrastructure is the primary challenge. The next most important component is the creation of an ecosystem that is easy to use (i.e. multiple ways to charge, chargers are reliable, convenient and ubiquitous).

Mike Strahlman, Director of EV, JustPark

Charging

Theme	Challenge	Solution
Charging: Home vs. Depot vs. Public	<i>Some 45% of fleet drivers will not be able to charge at home because they do not have access to off-street parking.</i>	Access to reliable public charging is important. Depot-based charging is also an option during the day but needs to complement public charging. Public charging needs a software platform that allows fleet drivers to charge at multiple providers, as well as offering centralised billing.
	<i>How do fleets identify the right charging model?</i>	Use data to understand the driving patterns of the current fleet and operational tasks data to shape the charging solutions.
Charging: Social Stigma	<i>Fleet managers will need to be sensitive to avoid any sense of social discrimination against those drivers unable to charge at home.</i>	Avoid mandatory home charging as a policy. Provide EVs only to employees who live in areas with high density of public chargers.
Public Charging of Electric Vans	<i>Charging vans will prove challenging for a public charging system primarily designed for cars. Current charging bays in streets are not designed for the larger size of vans. This may hinder ease of charging.</i> <i>On-street charging for vans will be problematic where in cities narrow streets mean parallel parking will be tricky even for the most gifted drivers.</i> <i>For those vans charging en route for example, in multi storey car parks, low ceilings may preclude entry into the building</i> <i>The van charging socket is often at the front of the van, meaning vans drivers may need to reverse out of charging bays raising safety issues.</i> <i>Anecdotally, several of our interviewed companies commented that vans were simply not welcomed at destination charging sites, such as supermarkets, often being ushered away by security personnel.</i>	Charge Point Operators, providers of fleet charging services and local councils will need to collaborate to design and agree new charging solutions tailored for vans. This will range from designing larger bays and improving ease of access for fleet vans for example.





We have reached an inflection point – it is a supply problem now with regard to securing EVs, it is not a demand issue. Corporates want EVs.

Charlie Jardine, CEO, EO Charging

Procurement

Theme	Challenge	Solution
Procurement of EVs	<p><i>Procurement of electric vehicles is challenging.</i></p> <p><i>In the short term, the semi-conductor shortage is impacting deliveries of product.</i></p> <p><i>In the medium term, strong demand from fleets and limited supply from OEMs, may pose a more fundamental challenge.</i></p>	<p>Given EVs are an emerging market, it is important fleets are wary of over-dependency on single suppliers.</p> <p>Moreover, fleets will need to explore a combination of strategies. Some fleets may decide to stagger the purchase of EVs. Using smaller orders, fleet managers are able to test and trial deployment.</p> <p>Other fleets may decide to place large orders to secure OEM supply.</p> <p>A forward view of the lease cycles of the current fleet should be considered to understand deployment squeezes.</p>
Procurement of eVans	<p><i>eVans have received less attention from OEMs so far resulting in limited choice.</i></p> <p><i>There is currently a restricted choice of electric vans in the UK. At the time of writing there are 20 electric light commercial vehicles (eLCVs) on sale in the UK. This is compared to some 90 electric vehicles on sale.</i></p> <p><i>The performance of these eLCVs is also limited (many have low range).</i></p> <p><i>See Exhibit 4 for more detail.</i></p>	<p>It is important corporates work through emerging alliances (such as EV100) and with the OEMs to better inform them of industry requirements and co-develop new vehicles.⁷</p> <p>Tactically, fleets may also need to weigh up the trade-off between payload and range. If range is more important for the fleet then payloads will need to be reduced.</p>

⁷ EV100 is a global initiative bringing together companies committed to switching their fleets to electric vehicles and installing charging infrastructure for employees and customers by 2030.

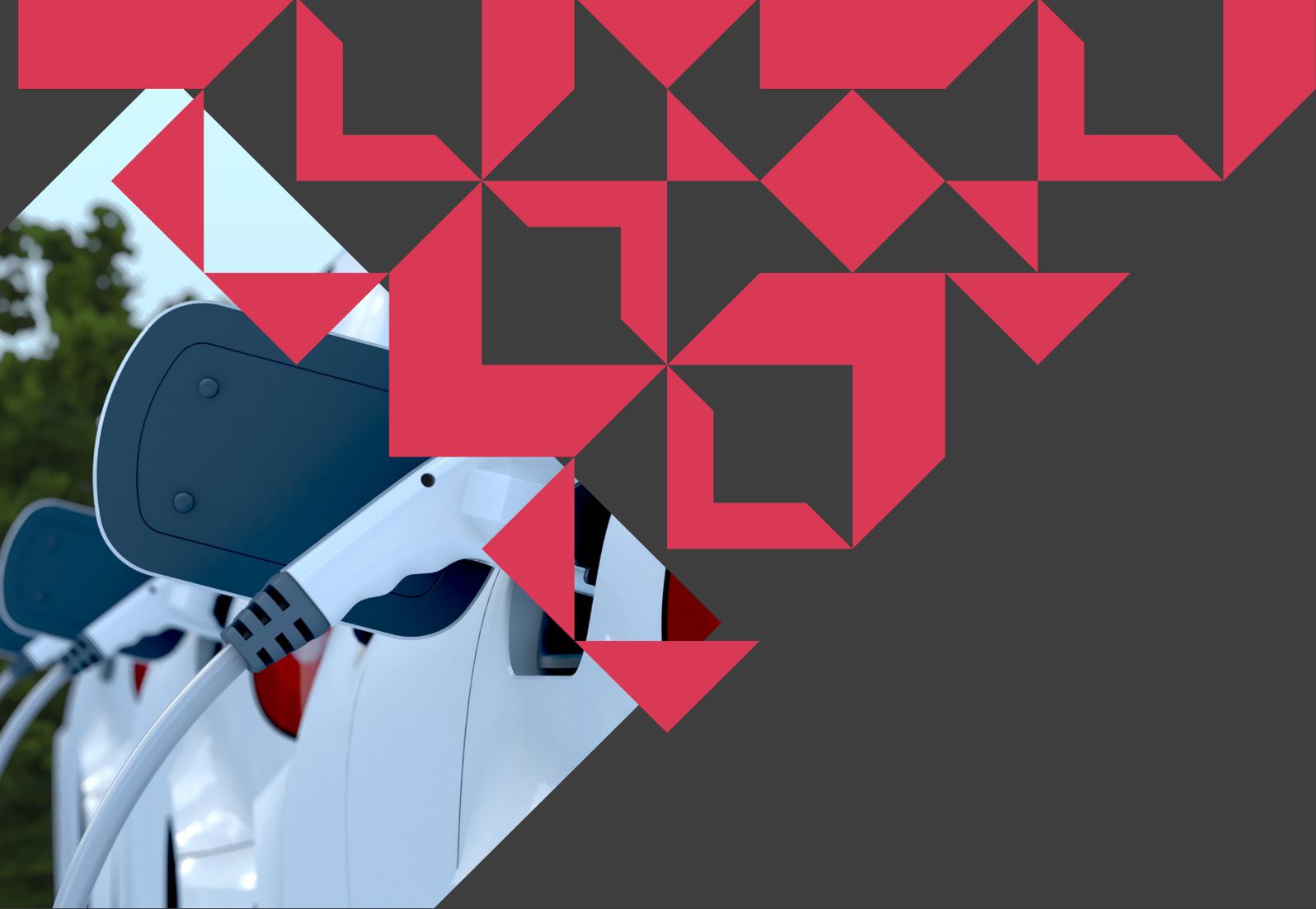


Exhibit 4: Electric Light Commercial Vehicles (eLCVs) currently available in the UK

Small eLCVs

Stellantis Small Van – Combo/Berlingo/ Partner/Proace City

50kWh/174 miles
Charge – up to 11kW AC and 100kW DC
Payload 800kg

Zoe Van

50kWh/245 miles
Charge – up to 22kW
and 50kW
Payload 387kg

There are 20 fully electric LCVs currently available in the UK. At the beginning of 2020 there were only 4-5 models

Medium eLCVs

Mercedes eVito

37kWh/93 miles
Charge – 7kW AC only
Payload 923kg

Maxus Deliver 3

52.5kWh/151 miles
Charge – 7kW and 50kW
Payload 893 – 1000kg

Vivaro/Dispatch/ Expert/Proace

Up to 75kWh/205 miles
Charge – up to 22kW+
100kW
Payload up to 1206kg

VW Transporter ABT-e

37kWh/82 miles
Charge – 3.6/7kW
and 50kW
Payload up to 1001kg

Large eLCVs

Maxus eDeliver 9

Up to 88kWh/Up to
188 miles
Charge – 11kW
and 60kW
Payload up to
1700kg*

Renault Master Z.E.

33kWh/75 miles
Charge – 7kW AC only
Payload 950 – 1100kg

Mercedes eSprinter

55kWh/93 miles
Charge – 7kW and 80kW
Payload 731kg

eDucato/Relay/ Boxer/Movano

Up to 78kWh/Up to
148 miles
Charge – up to 22kW
and 50kW
Payload up to 1885kg*

Man eTGE

Up to 72 miles
up to 7.2kW and 40kW
Payload not disclosed

Note: Actual charging rates and ranges may differ due to factors like outside temperature, state of the battery and driving style. *Allows for derogation to 4.25t being utilised. Source: Paul Kirby Ltd.



We shall need a blended fleet of EVs, hybrids and ICE vehicles where there are parts of the country, such as in rural areas, where EVs are not feasible. We shall need the right fleet in the right places.

Simon Blake, Operations Director, Autoglass



Research and plan. Get advice from people who understand this and have done it before. And make sure you plan these things. If you get it wrong, it could be really expensive.

Tim Bailey, UK&I Fleet Director, Redde Northgate Plc

Procurement

Theme	Challenge	Solution
<p>The Decarbonisation of Heavy Vehicles</p>	<p><i>In contrast to lighter vehicles, there is not a clear decarbonisation pathway for heavy-duty vehicles.</i></p> <p><i>Electrification is challenging for heavy vehicles given payload requirements and for fleets driving long distances on varied routes.</i></p>	<p>Corporates will need to take incremental measures in the mid-term (such as using CNG, biomethane), while waiting for technologies to mature around hydrogen for example, allowing the full decarbonisation pathway to become clearer in the longer term.</p> <p>Electrification is feasible for some heavy vehicles with short and predictable routes, limited payload requirements and access to charging hubs. Such is the case with electric refuse collection vehicles being adopted by several councils in the UK.</p> <p>At the time of reporting this report, there is currently no HGV recharging network. So a brand new network will need to be designed, planned, financed and built before electric HGVs become viable.</p> <p>Some fleets are adopting gas in various guises (such as CNG and biomethane) as an interim transition fuel for heavy vehicles to lower carbon dioxide emissions.</p> <p>John Lewis Partnerships has pledged to convert its fleet of 600 diesel delivery trucks to be powered by bio-methane by 2028. The company is also building a biomethane refueling plant at its Bracknell headquarters to support fleet expansion.</p> <p>Separately, Glenfiddich has begun converting its delivery trucks to run on biogas made from waste products from its own whisky distilling process.</p> <p>Many fleet managers have high expectations that hydrogen will provide a solution in the future. However, the limited UK refueling infrastructure for hydrogen is a barrier to future deployment of hydrogen trucks. According to UK H2 Mobility, there are currently 11 hydrogen stations in the UK. Some interviewees also flagged their concerns that with so much effort focused on electrification infrastructure, operators will struggle to focus on building hydrogen infrastructure. Others flagged their concern that in a future hydrogen economy, demand from other end sectors might result in not enough green hydrogen being supplied to the fleet refuelling market.</p> <p>Fleet managers are unable to find sustainable fuel solutions for heavy transport (such as 4x4 vehicles) and have opted to use range extender options (such as hybrids). Or they have deferred heavy-duty vehicles, focusing on decarbonising lighter vehicles using electrification, until a new technology solution becomes viable for heavy transport.</p>

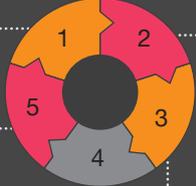




The critical success factor is getting your stakeholders on board and finding out who they are. It is not just the fleet responsibility to put chargers in – real estate, finance, energy procurement and other functions will all have a say.

Lorna McAtear, Fleet Manager, National Grid

Business Processes

Theme	Challenge	Solution
<p>Road Map to Success</p>	<p><i>As referenced several times, decarbonising fleets will be a complex and daunting journey.</i></p> <p>Exhibit 5: Key Stages in Fleet Decarbonisation</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Collaborate Internally: cross-functional teams Externally: work with other corporates to decarbonise fleets. Partner with a charge point operator</p> </div> <div style="width: 45%;"> <p>Analyse Importance of data to understand driving patterns, range requirements, charging options</p> </div> </div>  <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Adapt Apply learnings and scale up operations</p> </div> <div style="width: 45%;"> <p>Assess Work out the charging infrastructure required. Consider charging models to adopt: home, depot-based, public. Procure EVs: consider staggered acquisitions vs. mass orders</p> </div> </div> <div style="width: 45%;"> <p>Deploy Roll out charging models. Educate drivers on EVs</p> </div>	

Business Processes

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<p>Impact on Operating Model</p>	<p><i>Many corporates do not realise that as they decarbonise their fleets, the way they run their businesses will change.</i></p>	<p>As fleets decarbonise, the operating model will need to flex. Examples from our interviews include:</p> <p>The future of vehicle servicing: currently corporates may have an in-house function to service ICE vehicles. As fleets convert to EVs, companies will need to decide whether to retain the in-house function or outsource to the automotive OEM.</p> <p>EVs have fewer moving parts (therefore less maintenance is required). Engineers will need to be upskilled to deal with the new requirements of EV maintenance.</p> <p>Service sites will need to be repurposed internally. For example, larger surface areas are needed to allow two engineers (for safety reasons) to service the EV, as well as space for safe battery storage. Operating practices need to be adapted, such as storing electronic ignition keys in lead boxes to avoid accidental ignition of EVs while being serviced.</p> <p>Transportation and storage practices of essential equipment need to be re-evaluated: to ensure the range and reliability of EVs are not adversely impacted, companies are looking at different ways to reduce payloads. These range from using tools made of lighter materials to storing essential equipment at depots.</p> <p>Maintaining customer service standards: for companies with customers in an urban and rural context, a blended fleet of ICE and electric vehicles may be necessary. Technicians with access to public chargers in cities can more easily recharge their EVs than their counterparts in the countryside. The latter may need to use ICE vehicles or range extenders (hybrids) to ensure response times are not adversely impacted.</p> <p>Additional impacts on the operating model may also include:</p> <ul style="list-style-type: none"> • Rotas, routes and journey times will need to change. • Changes to maintenance regimes for capital infrastructure located in more remote geographies. • Updates to work management systems may be required based on above. • Alignment of employees' terms and conditions, ranging from standing time and breaks (while charging) and working hours. <p>In all these examples, organisations will need to bring the relevant departments together to figure out the implications before charging infrastructure is deployed. A new operating model will need to be designed and embedded to accommodate these changes.</p>

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Fleet transition is happening at an accelerating rate. It is an iterative process, not a revolution, but something companies must prepare for now.

Tanya Sinclair, Policy Director UK & Ireland, ChargePoint

The Investors

When we refer to ‘investors’ we are talking in the broadest sense and included are infrastructure funds and private equity; the charge point operators; the charge point manufacturers; and the distribution network operators (DNOs).

The **infrastructure funds** see fleet decarbonisation as a nascent opportunity. There are positive factors underpinning this evolving market. Internationally, governments are aligning around EVs and promoting policies to enable charging. The UK was highlighted as being very progressive in this area. Buses and taxi fleets were also seen as a clear area of growth.

However, challenges remain and critical elements are still required to enable fleet decarbonisation:



Deployment of EV charging infrastructure takes time with multiple chargers deployed in different locations. This prolongs the payback period.



Patchy data on utilisation makes developing the business case for chargers difficult.



Despite the UK government being described as progressive, there was more to be done. A ‘clearer guiding hand of government’ was requested by some, highlighting for example the need for more state intervention in rural areas to deploy charging infrastructure.



Councils were identified as critical given their access to real estate but there was some difference in views on how active their intervention should be. Some investors suggested councils should not shape the charging market for example. Instead they should simply tender for services and let market competition drive efficiencies and innovation.

The **CPOs** were unanimous in seeing fleet decarbonisation as a significant and growing market. The scale of change was noted as multiple corporates have accelerated efforts in the last year or so to decarbonise their fleets. The CPOs also acknowledged a ramp up in the number of fleet accounts and demand from fleets to electrify. In one case, an operator was looking to design fleet specification charging bays and fleet charging reservation models.

Again local councils were often highlighted as important players in this journey and given the complexity of decarbonisation this also underlined the important role CPOs play as a partner. bp pulse for example is working alongside local authorities to upgrade legacy public charging points with faster and more reliable units. More broadly, other operators like Ubitricity, are ramping up the deployment of chargers in lamp posts and bollards. Ubitricity’s owner, Shell, has announced an ambition to have 50,000 on-street EV charge posts installed across the UK by the end of 2025.

Looking ahead the operators advocated:

- Councils have an important role to play in helping fleets charge and the focus needs to be on public charging solutions.
- Councils will need to decarbonise their own fleets as an example to local residents.
- The procurement process for tenders to establish charging services needs to be simplified.

The **charge point manufacturers** were sanguine about the outlook for fleet charging. They emphasised there was a ‘hearts and minds’ case for fleets, with an ongoing need to educate businesses on the challenges and opportunities in decarbonisation.

Local councils were identified as a major catalyst given their access to land. However, the manufacturers recognised councils are cash strapped, resource poor, lack the technical specialism in charging and ultimately do not have statutory obligations to deploy charging solutions.

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It is important for local councils to decarbonise their own fleets. Their fleets are significant and the optics will also be important. As refuse trucks become zero emissions this will be a big sign to consumers and will encourage private drivers to go electric.

Tom Callow, Head of Insight and External Affairs, bp pulse

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The defining moment was the announcement of the 2030 ICE ban. This was a major change where the UK consumer mindset shifted and the general public accepted the decarbonisation of transport, that they would be driving an EV in the future.

Ian Johnston, CEO of Osprey

Methodology and acknowledgments

The findings in this report are based on interviews we undertook with a variety of stakeholders across the fleet decarbonisation value chain. These ranged from fleet managers, investors, Distribution Network Operators to charge point operators and local councils.

As for the types of company, we spoke to large and small, including publicly-listed and privately-held entities.

We would like to thank everyone who contributed to this report and thank those interviewed for their thoughts and insights. Some companies we spoke to preferred to remain anonymous and are not listed below.

Anglian Water	InstaVolt
Autoglass	JustPark
Aviva Investors	John Lewis Partnership
bp pulse	London Borough of Redbridge
Bristol City Council	National Grid
Centrica	Northern Power Grid
ChargePoint	Octopus Electric Vehicles
CNG Fuels	Osprey Charging Network
Countryside	Oxfordshire County Council
Dacorum Borough Council	Paua
DG Cities	Paul Kirby
DPD	Pod Point
Dundee City Council	Redde Northgate plc
EO Charging	Royal Mail Group
EVBox	Scania
Heliox	SSE
Hitachi Europe Ltd.	Transport for London
InfraRed Capital Partners	Zouk Capital

Appendix

The emerging complexity of fleet charging

As illustrated below, fleet managers now have to negotiate a myriad of issues including:

- Building the business case for change with multiple internal stakeholders.
- Deciding which charging model is the most relevant to their business: depot-based charging, home charging, public charging and/or a hybrid combination of the aforementioned.
- Assessing the energy consumption implications of fleet charging for the business.
- Navigating the complexity of procuring the right type of electric vehicles.
- Making sure there is a software platform to enable fleet drivers to charge publicly or at home while automating the expensing process.
- Addressing regulatory changes, such as changes in VAT for charging.

People

- Business case requires multiple parties to be aligned internally
- Fleet Management, Finance, Real Estate, Power Procurement, Dispatch, Rostering and HR are just some of the functions to align
- Use of external partners
- Ambassadors to promote EVs

Procurement

- EV availability may become an issue, as demand from fleet customers is starting to exceed OEMs' manufacturing output
- Evolving procurement strategies based on suppliers

Charging models/ energy optimisation

- Different charging models to consider including depot-based chargers, reliance on public charge points, or home changers

Business processes

- Fleet employees charging at home or on-street will require software platforms to ensure billing is easy and automated
- Impact on operating model and process



Source: PwC Strategy& research

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