

PHEVs: The future of your fleet?

WHITE PAPER

#GETFUTUREREADY



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#GetFutureReady

“ We’re on the cusp of great change in our industry.

It’s an exciting time. Witnessing the stuff of science fiction turn into a reality is a fascinating experience. From the emergence of autonomous vehicles and sustainable fuels, to the availability of ‘on-demand’ travel at the touch of your smartphone.

But it’s also a daunting time. New legislation, changing taxation and unfamiliar technology will all play a role in shaping the future of your fleet.

Working out exactly what that future looks like, while juggling the daily demands of a successful fleet, will be your greatest challenge.

That’s why, through our in-house expertise and industry knowledge, we’re empowering you to #GetFutureReady. We’ll put the spotlight on mobility innovations and translate them into practical tools and advice that you can apply to your own business.

Our vision is to play an active role in ‘Creating the future of mobility’ for our customers by working together to encourage new ideas and develop brilliance in our sector.

This white paper is the first in a series of tools that support this vision. ”

Martin Reeves



Martin Reeves
Head of Sales

Foreword.

“ I was lucky enough to visit the Lombard Vehicle Solution’s team at their partner, ALD Automotive’s, head office in Bristol last summer when I was filming a video about ultra-low emission vehicles with the Energy Saving Trust. I was amazed to see how they’d embraced Electric Vehicles (EVs) within their business. But I was particularly impressed with how they were then using that expertise to help their customers switch to electric too.

I’ve long been an advocate of EVs for personal use. I, myself, have driven over 150,000 miles in them! That’s why I’m thrilled that company car drivers are now also realising the benefits. And companies, like Lombard Vehicle Solutions, are helping them along the way.

The problem is, there’s still rather a lot of scepticism around these types of vehicles. I encounter it often. Do they have enough range? Are they more expensive than diesel or petrol? Are there enough public charge points available to power them?

What drivers and fleet decision makers need is clear guidance and hard facts so they can make informed decisions. That’s why the results of this Plug-In Hybrid (PHEV) trial are so important. This white paper is a useful tool for any company intrigued by what PHEVs have to offer but need assurance that they are making the right decision.

”
Robert Llewellyn



Robert Llewellyn

Best known for his role in *Red Dwarf* and as presenter of *Scrapheap Challenge* and *Carpool*, Robert is an electric vehicle enthusiast and founder of the *Fully Charged Show* which aims to demystify electric vehicles and renewable energy.

www.fullychargedshow.co.uk

Executive Summary.

With the Government's growing emphasis on improving UK air quality, signified by the changes to diesel taxation in April 2018, plans for the introduction of Clean Air Zones and the 2040 deadline, there is little doubt that we'll be seeing increasing numbers of electric vehicles on our roads over the next 5 to 10 years.

What that future looks like for fleets, however, is not quite so clear. Is the technology and infrastructure ready to cope with the amount of mileage covered by business drivers?

To sharpen this image, we replaced 20 traditional company cars with one particular type of electric vehicle: the Plug-In Hybrid (PHEV).

Here's what we learned:

- PHEV technology is viable for a variety of different driver profiles covering a range of mileages and journey types *now*, possibly more than fleets realise.
- Suitability is key when applying PHEVs to fleet drivers. Beyond 20,000 miles per annum, the associated benefits begin to diminish.
- In the trial, driver attitude was a key determinant of PHEV success. Regular charging and an economical driving style appeared to be conducive to a better vehicle performance and enabled some high mileage drivers to achieve an impressive MPG.
- Substantial cost savings can be made from both the fleet and driver's perspective.
- The benefits go beyond the monetary savings however, including the ability to reduce fleet CO₂ emissions and encourage positive changes to driving style that can help to improve the safety of drivers.

As the range of PHEVs continues to increase and the UK charging network gathers pace, fleets will find that these vehicles are suitable for even more of their drivers with higher annual mileages.

In the meantime, for the proportion of the fleet where these vehicles aren't yet a practical alternative to diesel or petrol, businesses have the opportunity to build PHEVs into a more holistic mobility strategy. For example, drivers that have a higher annual mileage could benefit from a more flexible approach to travel which comprises a mixture of transportation types and fuels.

What are Plug-In Hybrid Vehicles (PHEVs)?

PHEVs are powered by an Internal Combustion Engine (ICE) and a battery electric motor. The range of the battery is typically between 15 – 40 miles, with most PHEVs running on pure electric up to 70 mph. To fully charge the battery the vehicle must be plugged in via a vehicle charge point or 3 pin plug. Like pure electric vehicles, regenerative braking helps to top up the battery while the vehicle is in use.



Matt Dale
Consultancy
Services Manager

Matt leads Lombard Vehicle Solutions' Consultancy Services Team and has over 30 years' experience in the motor industry. Crowned 'Unsung Fleet Hero' by the Energy Saving Trust in 2017, Matt uses his extensive knowledge of alternative fuels and financial analysis to support businesses to develop sustainable and cost effective mobility policies.

| Chapter 1.

PHEV Trial. Background.

Background

The popularity of electric vehicles (EVs) has increased dramatically in the last 5 years. Improving technology has extended range capabilities and manufacturers have been able to bring a variety of appealing models to market. This, combined with low to zero CO₂ emissions and desirable tax benefits, means the playing field is slowly beginning to level out between the EV and the traditional combustion engine.

While there are still some barriers preventing wide scale EV adoption (e.g. a perceived lack of charging infrastructure), perhaps a more significant stumbling block is the lack of clear information currently available about the different types of EV and their various benefits.

In a recent survey, we found that 32% of company car drivers would consider an Alternatively Fuelled Vehicle (AFV) for their next model but would need more information about them in order to make a decision*.

EV technology is still a fairly new concept for many and the information available for those wanting to learn more can be far from straightforward and, at times, conflicting.

A good example of this is the Plug-In Hybrid (PHEV). PHEVs appear to be a sensible

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”

choice of car for those curious about EVs but wanting the comfort of a petrol or diesel back-up engine. For many businesses these vehicles provide a stepping stone towards a fully electric fleet. In fact, in December 2017, Plug-In registrations YTD increased by over 25% when compared with the previous year**.

But recent noise in the press has actually threatened to undermine their low emission status, questioning the testing mechanisms employed to measure their CO₂ emissions and economy ratings.

So where does this leave fleet managers and their drivers?

Confused, possibly misinformed and certainly no clearer as to whether PHEVs are a viable choice of vehicle.

Dissatisfied with the lack of reliable information available about PHEVs, we set out to improve the situation for fleets by carrying out our own in-house trials.

Our goal was to uncover the reality of this type of electric vehicle across a range of driving styles, mileages and journey types, reflective of typical fleet conditions. We set out to answer the question, "Can fleets viably replace diesel and petrol vehicles with PHEVs?"

Our approach.

Whatever the result, we planned to share the outcome with fleets and their drivers so that they could make a well-informed decision about this type of electric vehicle, without the need to undertake costly and time consuming research themselves. 20 Lombard Vehicle Solutions UK company car drivers were allocated a Mercedes C350e PHEV, each with a ProFleet telematics device installed that would monitor the performance of the vehicle over the 6 months of the trial.

Each driver had a unique daily journey, driving style and weekly mileage which allowed us to assess the capability of the vehicles across a range of driving conditions.

“

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*The Pulse Survey 2016-17 was conducted on over 500 drivers from different fleet sizes and across the UK, between April 2016 and June 2017

**SMMT – December 2017 – EV Registrations

| Chapter 2.

The trial. How did we do it?

When we first set out on the trial, one thing we did know was that we had to make it as customer centric as possible. We needed to put ourselves in the shoes of a typical company fleet and experience the same hurdles they faced. It's the only way we were going to be able to truly understand the barriers to implementation and, in turn, provide useful tips and advice to fleets looking to integrate PHEVs.

“ We needed to put ourselves in the shoes of a typical company fleet and experience the same hurdles they faced. ”

The drivers.

In practice that meant making the trial as realistic as possible.

We began by selecting a cross section of drivers that reflected the habits of a typical company fleet. They had a range of different commutes, mileage and driving styles which we knew would give us a rich supply of data.

We selected drivers that could meet three main criteria:

- **Dedicated off street parking.**
- **Access to either a home charger or a 3 pin plug.**
- **Agree to have their journey data recorded through a ProFleet telematics device installed in their vehicle.**

We didn't ask them to change their driving style – that is a personal choice. We also identified that the trial would need to run for a period of time that would not only allow the participants to get used to the cars, but also for the novelty of the PHEVs to wear off.

We were determined to find out what everyday factors would influence the performance and effectiveness of the PHEVs across the duration of the trial. After initial training and guidance, six months in on a wet, cold and windy afternoon – would our drivers still stop to plug-in their vehicle at the office or simply park up and rely on the petrol engine for the commute home?

The cars.

We chose the Mercedes C350e as it was a car that matched our vehicle fleet policy and had been on the market for a while, so we didn't anticipate any “new vehicle” teething problems. Most of the participants had previously driven Mercedes company cars and the manufacturer were also keen on being involved in the trial.

Driver training.

Before setting out on the trial we knew that there would be an initial training requirement to get each driver up to speed on how to operate their new PHEV. We recognised that the feeling of regenerative braking, for instance, might feel alien to someone who had not previously driven an electric vehicle. During the handover process, drivers were given an overview of the vehicle and its controls, but also driving tips on how to get the best performance out of it. These conversations led to our

drivers sharing their experiences with each other and learning the quirks of the new technology. The handover took about 30 minutes in total and included addressing questions from, “Why do I have 2 cables in the boot?”, to, “How do I plug it in?”.

Getting driver buy-in.

Changing to a PHEV is a new driving experience and this element of learning can be the difference between using it efficiently or not. It is possible to improve MPG by managing the use of the battery charge and saving it for the most relevant parts of a journey and this is especially true if drivers have a regular route or location that they visit.

Interestingly, within a week of the initial handover, drivers were comparing fuel economy and the trial soon became very

“ The handover took about 30 minutes in total and included addressing questions from, “Why do I have 2 cables in the boot?”, to, “How do I plug it in?”. ”

competitive. We began to see drivers adapting their journey routes and driving style in order to get the best MPG – we even saw photos of dashboard displays beginning to circulate amongst the participants supporting their achievements!

This behaviour was entirely unprompted but it became apparent that the competitive element of the trial had a positive impact on the performance of the vehicles.

We formalised this into a leaderboard system, encouraging drivers to beat their own MPG and that of their peers.

Charging up at the office.

Shortly before the trial we moved our head office to brand new premises in Bristol. In the early planning stages of the office move, a major requirement was to make charging facilities available at the new site to anticipate future EV adoption within the company.

We began the process of finding chargers that could cope with multiple daily charging but that would also be secure when not in use. We also wanted to be able to monitor charger use via back office reports and measure the amount of electricity used.

But how many chargers would we need? What power output should they be? How much power did we have available?

All of these elements needed to be factored in. Eventually we decided to install 3 double chargers (7kWh) giving us an initial 6 points in total. We also took the decision to lay cabling conduit around the rest of the carpark so that we could add more chargers in the future without causing any further disruption to the immediate environment.

After the vehicles had been delivered and the chargers were up and running, our next challenge was to find a way to share out the charge points amongst our drivers and establish a charging ‘etiquette’. Our drivers

very quickly learned how long it took to charge their cars and soon got into the habit of politely moving their vehicles out of the charging spaces between meetings and at lunch times. This meant that everybody had time to fully recharge their car before

“ Drivers who opted for a home charger were eligible for a grant that would help them cover part of the cost. ”

they left for the day and it also opened up the spaces for visitors with Plug-In vehicles.

The addition of a vehicle app allowed our drivers to check the state of charge without the need to go outside. What we hadn't prepared for was the lack

of awareness of non-Plug-In vehicle drivers! Even though the charge points were 130cm high with illuminated LED's, we witnessed daily occurrences of them being blocked by other vehicle drivers.

Charging up at home.

In order to explore and assess different driver profiles and experiences, we didn't mandate that our drivers must have a home charger facility. Where they did request one, however we helped facilitate installation through our charger partner, Chargemaster. Drivers who opted for a home charger were eligible for a grant that would help them cover part

of the cost. This is available through the Government's Electric Vehicle Homecharge Scheme*. The grant is actually claimed by the charge point provider (in this case Chargemaster), however the driver must complete the necessary paperwork for their vehicle. As the PHEVs are company cars and the V5s are in the company name, as the employer we were also required to ensure that we made the necessary vehicle documentation available.

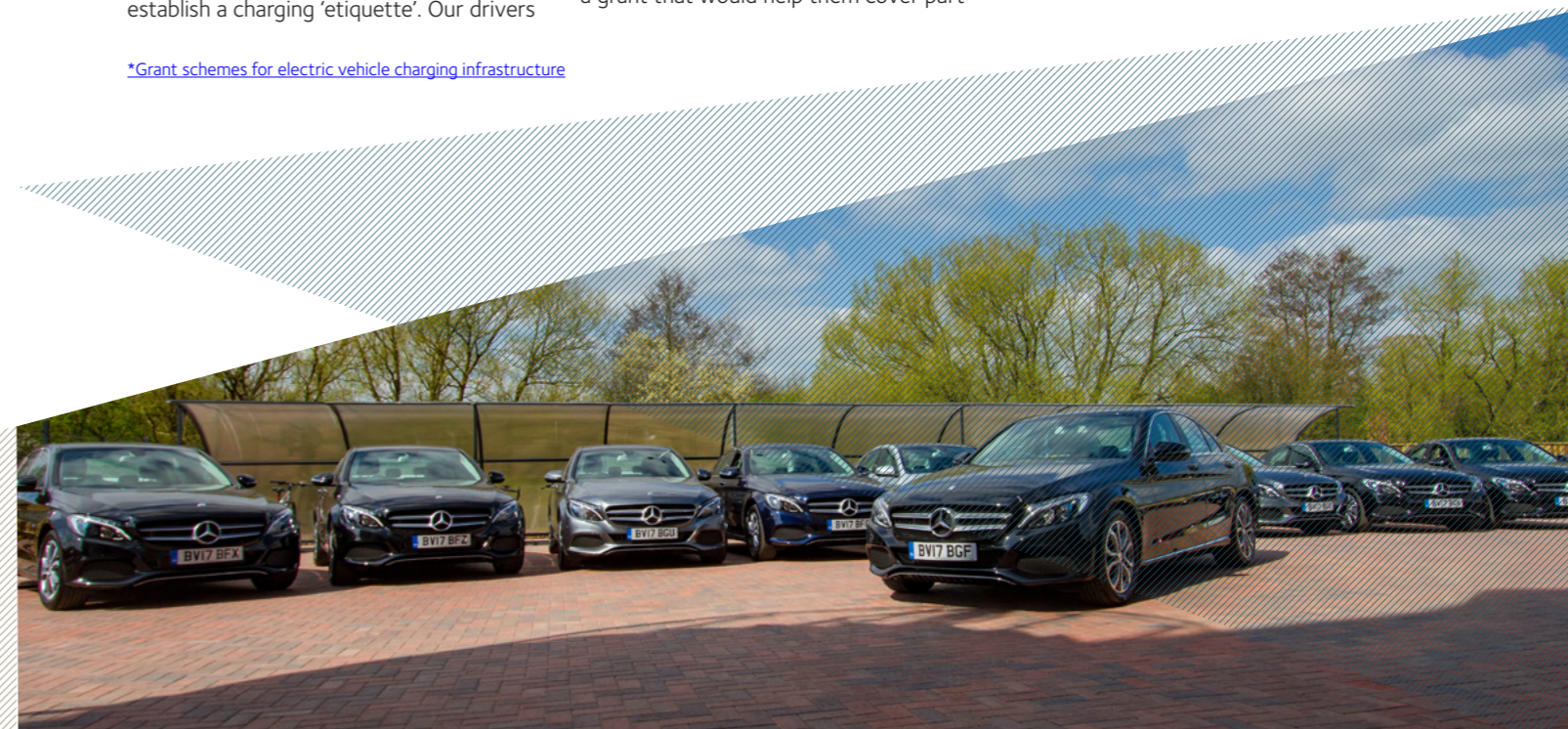
Minor points like this meant that the experience of applying for the grant seemed to be geared more towards that of a retail customer with a private car, rather than a company vehicle.

“ Our trials reveal that, as expected, regular charging is conducive to better overall vehicle performance. ”

These initial teething issues presented a great opportunity for us to work alongside Chargemaster to identify how we could improve the process for our customers and other companies in the same position.

Our trials revealed that, as expected, regular charging is conducive to better overall vehicle performance. Understanding if your drivers have the facility to install a charger at home will therefore form a major part of your initial suitability assessment.

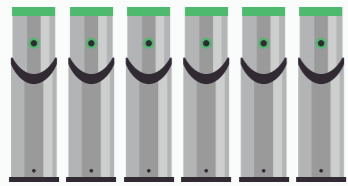
[*Grant schemes for electric vehicle charging infrastructure](#)



PHEV trial. The results.

What does an ideal PHEV driver look like?

1. Charges vehicle at home and work



6

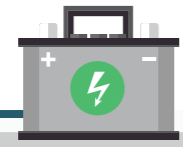
business chargepoints installed



Over 2000 hours of business charge consumed in total across the trial

20 company car drivers took part in the trial

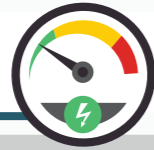
2. Employs regenerative braking and other techniques to top up charge on route



50%

of journeys in final 68,000 miles of the trial made in "engine-off" mode

3. Drives economically



94.4 MPG

achieved on one journey with the help of economical driving techniques i.e. no harsh braking or acceleration

4. Optimum mileage = below 20,000 per annum



145k

miles travelled in total during the trial



BEST MPG
110.54 MPG @7,000mpa
£200 fuel saving per year*



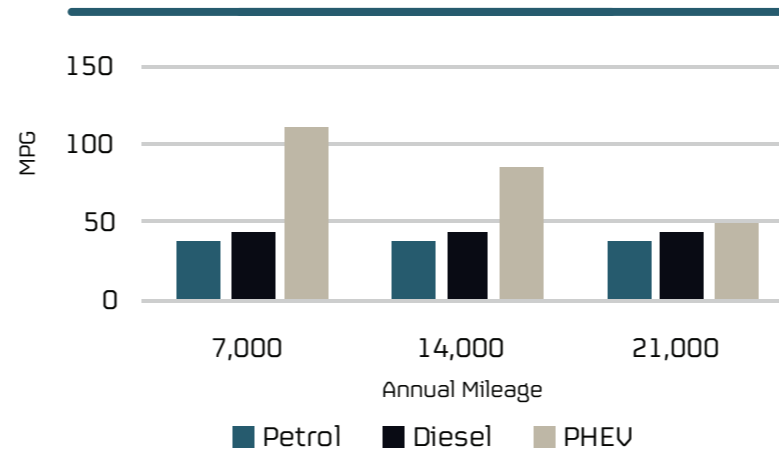
BEST MPG ABOVE 10,000
84.67 MPG @ 14,000 MPA
£500 fuel saving per year*



LOWEST MPG
33.37MPG @19,000 mpa

Performance is highly dependent on driver engagement

Miles Per Gallon vs Annual Mileage



£6000 in Benefit in Kind tax savings per driver**
£2000 per vehicle in TCO savings***

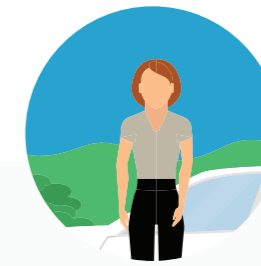
5. Lives 15-20 miles from the office, 3 days a week in the office, 2 days out and about and minimal private mileage at weekends



Mercedes C350e

16 miles = electric range

Drivers living within the distance covered by the electric range of their vehicle were able to do their daily commute on full electric, provided they charged up when they got to work

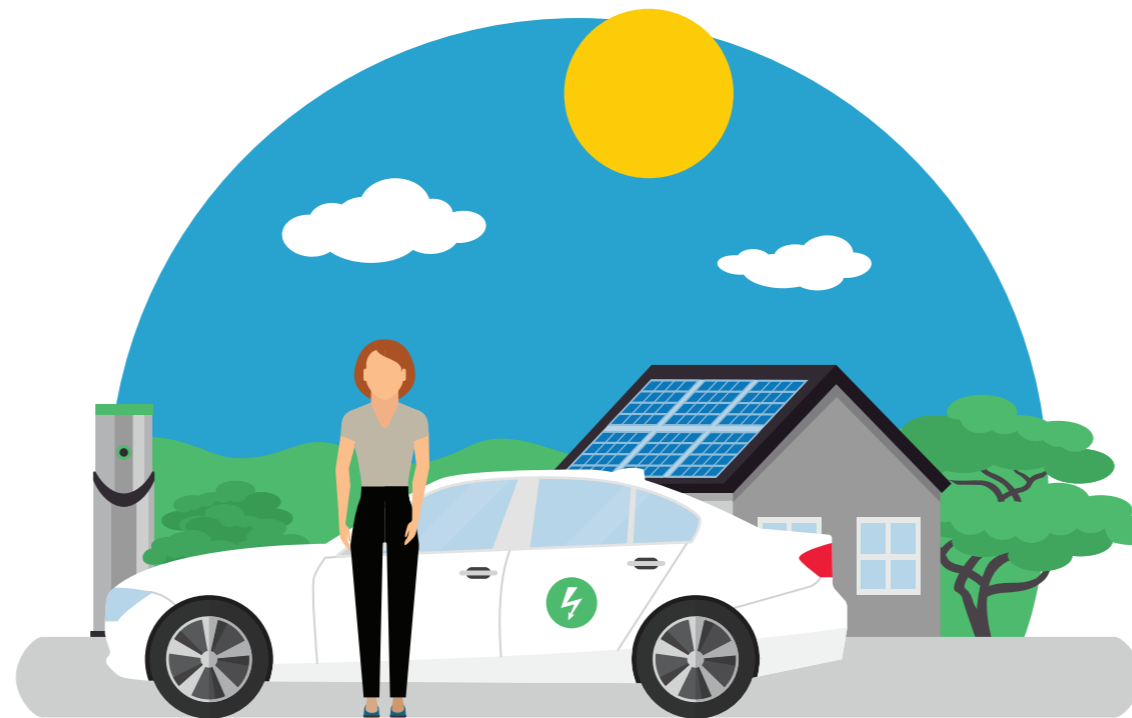


6. Highly engaged

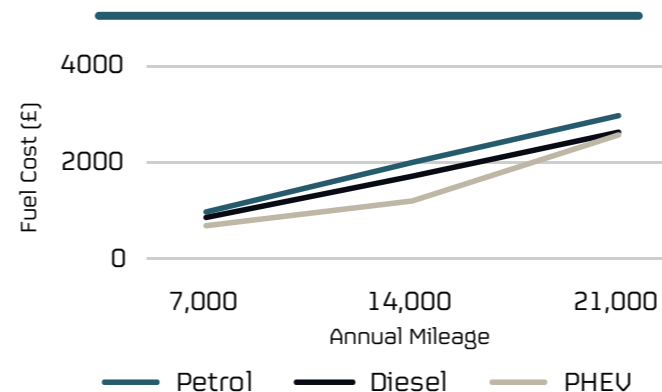
Leader boards and self-competition encouraged a better vehicle performance during the trial



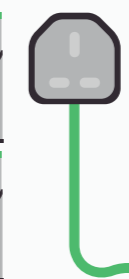
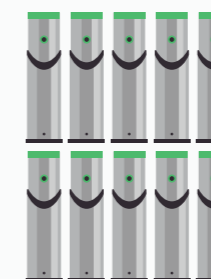
Average MPG increased by 4% in 1 month across the trial



Fuel Cost vs Annual Mileage



7. Has a home charger installed



10

drivers installed a homecharger, and 10 drivers used a 3 pin plug

Available through Government's Electric Vehicle Homecharge Scheme: £500

*MPG figures from equindex.com, fuel figures from gov.uk. **Based on employee BIK @40% over 48 months. ***Based on 15,000 miles a year for either 3 - 4 years. TCO calculated using Deloitte software.

| Chapter 4.

PHEV Trial. Conclusions.

- The trial proved that PHEVs can work across a large range of mileages and journey types, typical of a modern company car fleet.
- Drivers can make considerable cost savings from both a Benefit in Kind tax (BIK) and fuel perspective.
- The installation of home charging points and work place chargers are likely to be conducive to a better overall performance of the vehicle.
- Using real life fuel economy figures, instead of New European Driving Cycle (NEDC) ratings, when assessing PHEV Total Cost of Ownership (TCO) was found to show more achievable cost savings.
- The TCO of a PHEV is likely to be lower than that of a petrol or diesel equivalent, reducing overall fleet costs.
- Leader boards and other methods of creating competition within a PHEV fleet is likely to also encourage a greater performance.
- PHEVs aren't simply a future concept; the technology is ready now meaning that these vehicles are likely to be suitable for a large number of company car drivers today.
- PHEVs can work incredibly well up to a mileage of 20,000 miles per annum, after which the MPG achieved, and therefore cost savings made, begin to diminish.
- Businesses should examine their fleets to understand what percentage could viably drive a PHEV now, while at the same time taking advantage of current government grants that assist with the cost of the vehicles and charging infrastructure both at home and work.
- If the vehicles are not charged sufficiently their performance suffers dramatically meaning that drivers and fleet managers do not experience their full benefits.
- This shows that suitability is key; fleets must ensure they offer PHEVs to the right driver profiles.
- Equally, driver input is highly important to obtain maximum performance. PHEVs can be more efficient than diesel or petrol vehicles but this is dependent on driver behaviour, including regular charging and efficient driving techniques.

“ **Having PHEVs on a company car policy requires the policy to drive the right behaviours. Getting the best out of this type of vehicle is a learning process and drivers will find that the more experience they gain, the easier it will become to drive the car in the most efficient way possible. The New European Driving Cycle (NEDC) economy rating is not particularly reliable or realistic, but we've proved that a good MPG can be achieved with the right kind of driving behaviour.** ”

Through the trial we've proved that fleets can viably replace diesel or petrol vehicles with PHEVs now, if used in the right way. As with any vehicle type, suitability will always come down to the unique habits and requirements of the fleet. However, we hope that the results of our trial provide businesses with more accurate and 'real world' information that they can use to help make up their own

minds about whether this type of electric vehicle is the right choice for them. Following the trials, we've witnessed a cultural shift within our own company car fleet with regards to PHEVs. These vehicles are now considered by many of our employees to be a practical vehicle choice alongside diesel and petrol.

“ Following the trials, we've witnessed a cultural shift within our own company car fleet with regards to PHEVs. These vehicles are now considered by many of our employees to be a practical vehicle choice alongside diesel and petrol. ”



Matt Dale,
Consultancy Services Manager

We've also seen an increased interest in PHEVs within our customers' fleets. While the total number of UK PHEV registrations in Q1 – Q3 increased by 9.19% in 2017 when compared with the previous year*, PHEV deliveries among our customers far outstrips this, increasing by 60.92% in the same period.

*Table VEH0253 – Cars registered for the first time by propulsion or fuel type.

| PARTNER PROFILE

Transitioning to Ultra-Low Emission Vehicles.

energy saving trust

The Energy Saving Trust are a leading and trusted organisation helping people save energy every day. Their experts speak with millions of householders every year, deliver first class programmes for governments and provide consultancy to UK businesses and international companies.
www.energysavingtrust.org.uk

Plug-in hybrids (PHEVs) are proving a popular choice for company car drivers, providing a high vehicle specification alongside a significant reduction in benefit in kind liability compared to conventional cars. They offer the potential to reduce vehicle emissions, particularly when charged regularly and driven in EV mode. They also familiarise drivers with plug-in technology and charging which will help the future shift to 100% battery electric vehicles.

Implementing PHEVs will bring about the best results when carefully planned for however. It's important to consider where PHEVs best fit into a fleet and what needs to be considered before they're included in a fleet's policy.

Energy Saving Trust has been working with fleets to encourage the adoption of ultra-low emission vehicles for more than six years and advises that the following should be considered before procurement:

- Vehicle and driver suitability; daily driving cycle and charging.
- Company support and policies is key to changing behaviours.

We have also summarised the important considerations for drivers and fleet decision makers before choosing a vehicle technology in a [handy animation](#).

Vehicle and driver suitability; daily driving cycle and charging.

PHEVs can be very efficient but only if they are driven a significant proportion of their mileage in electric drive mode. For example, the BMW330e SE has a tested fuel consumption of 148.7 mpg, but achieving this is dependent on frequently recharging its battery which has a tested range of 23 miles. If this car is regularly used for long motorway journeys and fast main roads with a minimum of charging opportunities then the real world fuel consumption, CO₂ emissions, and cost will be similar to that achieved by a petrol car and a diesel would almost certainly be the best option for this driving routine.

Drivers who choose these cars and have these sorts of driving patterns may become frustrated as many models have smaller fuel tanks than their petrol and diesel equivalents increasing the number of refuelling stops necessary.

The importance of considering how you will charge these vehicles cannot be overstated. Consider whether charging will take place overnight at driver's homes, at work or en-route, and who will pay for charging sessions and subscriptions to providers. If drivers are open to charging at home it is recommended that a dedicated charging point is installed which may require specific permissions from a landlord and will generally require off-street parking. Other charging considerations include the public charging network in your area.

“ PHEVs are eligible for 100% discount on the London Congestion Charge, assuming they emit no more than 75g/km of CO₂. ”



Company support and policies is key to changing behaviours.

A well-considered vehicle policy will specify those drivers eligible to choose certain vehicles, for PHEVs this is generally those with daily journeys shorter in duration, commuting to the

office for example. If Advisory Fuel Rates (AFR) rates are used for company mileage reimbursement you may wish to reduce the rate by a couple of pence per mile, as this will encourage drivers to plug in and keep the vehicle charged, providing your business with a saving as well.

Requiring that drivers need to be able to charge at home and are willing to do so is a suggested addition to a vehicle policy. Installation of a well-considered workplace chargepoint system can support the uptake of PHEVs while also being a positive for company image. Charging infrastructure can be made more effective through intelligent charging systems and more sustainable through integrating solar panels and even battery storage. Installation of chargepoints in the workplace can also be supported by grants from OLEV. It should also be noted that drivers charging at work are not subject to Benefit-in-Kind liability on the cost of the electricity provided.

Other relevant considerations for managers is how PHEVs can bring other commercial advantages such as their eligibility for 100% discount of the London Congestion Charge assuming they emit no more than 75g/km of CO₂. Further incentives such as enhanced capital allowances, vehicle purchase grants and reduced Vehicle Excise Duty (VED) rates are also available. Consider also that company car tax rates will change over coming years with even the cleanest vehicles increasing year-on-year to 16% before recalibrating in 2020/21 based on their zero emission driving range.

Applying sensible allocation and fuel reimbursement policies at the outset will ensure that plug-in technology is adopted by your business in an appropriate and cost effective way. Working on company car and van policies and getting them right and in place now will allow your organisation to take full advantage of vehicle and charging technology developments as they happen, and you won't notice any change in 2040 as you will have been a zero emission fleet for years already!

www.gov.uk/government/uploads/system/uploads/attachment_data/file/670515/ultra-low-emission-vehicles-tax-benefits.pdf



What our drivers had to say.

Two of our company car drivers compared their experiences and shared their top tips for successful eco-driving in a PHEV.

David Jackson

Finance

David has a typical commute to the office and covers around 14,000 miles a year.

Before the trial:

He had always driven diesels before the trial and knew very little about how PHEVs work in practice.

He went into the experience with a positive outlook and the hope that his commuting fuel expenditure would fall considerably.

During the trial:

As with each of the drivers in the trial, David received initial training and he says he very quickly changed his driving style.

"Simply by adjusting my driving habits with a more economical approach and being able to charge at both home and work meant there were occasions where I completed over 800 miles on a full tank of fuel."

David's verdict:



I would opt for a PHEV for my next company car due to the lower BIK charges, fuel efficiency and because of the positive changes it made to my driving style. When the electric range increases beyond 30 miles, I would certainly recommend PHEVs to drivers with similar journey requirements to myself. It's also great to know you are doing your bit for the environment.



Rob Rossiter

Operations

Before trying a PHEV, Rob had driven diesels for over 15 years which had suited his high annual mileage.

Before the trial:

When he joined the trial, Rob conducted some initial research online to find out more about using a PHEV and to allay some of his concerns.

"I also maintained a constant dialogue with my fellow company car drivers which allowed us to share tips and advice."

During the trial:

By employing efficient driving techniques and charging the vehicle as regularly as possible, he was able to get an impressive performance out of his PHEV.

"I was particularly proud to achieve 94.4MPG on my 30 mile commute to work, and even more impressed with a total of 46 miles in engine-off mode on a 420 mile journey."

Rob's verdict:



I would opt for a PHEV again in future but would advise having a home charger installed. The tax savings are significant and I like the way it makes you think more about your driving style, which in turn makes you a safer driver. My advice to a new PHEV driver would be ensure they have plenty of opportunities to plug in; the more frequent the charge, the better the performance.



Driver Profiles



Driver: David Jackson

Annual mileage: 14,000 miles

Distance between office & home: 15 miles



Driver: Rob Rossiter

Annual mileage: 30,000 miles

Distance between office & home: 23 miles

| PARTNER PROFILE

Getting the best performance from a Plug-in Hybrid.



For many businesses, both pure electric vehicles and plug-in hybrids (PHEVs) can be desirable choices for company cars and fleets. Plug-in

hybrids offer a more limited electric range than pure electric vehicles, but still offer very attractive cost savings. www.chargemasterplc.com

One of the most significant savings offered by plug-in hybrids is much lower company car benefit-in-kind (BIK) taxation compared to standard diesel and petrol cars. For example, while the BMW 320d M Sport falls into the 25% BIK tax band, the BMW 330e M Sport plug-in hybrid attracts BIK tax of just 9% for the employee.

The fuel savings can also be significant, with the BMW 330e offering up to 148.7mpg on the NEDC compared to 67.3mpg for the BMW 320d. However, these savings will only be realised if the car is charged appropriately and frequently, and given the right application.

■ Plug-in hybrids perform best for lower mileage drivers.

Most plug-in hybrids offer an electric range of between 20 and 40 miles, which makes them very good at reducing fuel costs and emissions for lower mileage drivers, considering the average daily mileage in the UK is around 25 miles. While PHEVs can technically be driven longer distances using petrol once they have used their electric range, they are less efficient on such journeys, for which a pure electric car that can rapid charge may be better suited.

■ Electric range will vary depending on battery size.

The achievable electric range of a plug-in hybrid will depend on its battery size and efficiency of its drivetrain. The Audi Q7 e-tron has a 17.6 kWh battery, offering up to 35 miles of range on the NEDC, so it delivers around 2 miles per kWh. The Mercedes-Benz E 350 e has a 6.2kWh battery, offering up to 21 miles of range on the NEDC, which works out at 3.4 miles per kWh.

■ Charging time depends on the onboard charger.

The speed at which any electric car can charge is primarily governed by the onboard charger fitted to the vehicle. The Mitsubishi Outlander PHEV has an NEDC range of up to 33 miles from its 9.8kWh battery, and a 3.3kW onboard charger means that it takes around 3 hours to fully charge from any AC charging point. The MINI Countryman PHEV has a 7.6kWh battery, offering up to 25 miles of range on the NEDC, and has a 6.6kW onboard charger, so it can be fully charged in just over an hour.

■ You will (probably) not be able to rapid charge.

Unlike all new pure electric cars on sale in the UK, most plug-in hybrids cannot rapid charge using DC power. The Mitsubishi Outlander PHEV is the only plug-in hybrid capable of rapid charging, meaning that its battery can be charged to 80% from a DC charging point in about 30 minutes. The BMW i3 Range Extender can also be rapid charged, but is not considered to be a plug-in hybrid.

■ Charging at work is free from fuel benefit tax.

In the Autumn Budget in 2017, the Chancellor of the Exchequer confirmed that employees who charge their electric car at work will not face any benefit-in-kind taxation, even if the car is used for personal mileage. Workplace charging is particularly important for employees who do not have off-street parking, but in either case will help reduce a company's fuel costs and reduce the emissions footprint of its company cars and fleet vehicles.



In the Autumn Budget the Chancellor of the Exchequer confirmed that employees who charge their electric car at work will not face any benefit-in-kind taxation, even if the car is used for personal mileage.



HYBRID

E-MODE

E-SAVE

CHARGE

5. PHEVs – Are they for you?

Through the trial we were able to demonstrate that PHEVs can perform better than their diesel and petrol alternatives at varying mileages.

PHEV technology will only improve in future and this will open them up to drivers with even higher annual mileages.

Although driver suitability remains absolutely key, our research shows that you may well find that a higher proportion of your drivers are suitably placed for a PHEV now than perhaps you realise.

So how should you go about assessing what percentage of your driver profiles are suitably matched to PHEVs today? And what are the necessary steps to implement a switch?

The following guide will give you an idea of the main areas you need to consider...

Quick reference step-by-step guide:



Step 1. Establish your objectives.



Step 2. Understand financial implications.



Step 3. Implement the infrastructure.



Step 4. Identify driver training needs.



Step 5. Optimise performance.



Step 1. Write down your objectives.

Determining what's motivating you to consider the adoption of PHEVs is the very first step in the process.

Prioritise what's most important to you and list how PHEVs will help you achieve your goal.

What's important to me?	How can PHEVs help me?
Fleet costs	<ul style="list-style-type: none"> Often lower TCO per vehicle compared with diesel/petrol alternatives Less fuel spend due to use of electric
Employee benefits	<ul style="list-style-type: none"> Low BIK tax means PHEVs can be a cheaper company car to run compared with diesel/petrol alternatives
Impact on the environment	<ul style="list-style-type: none"> Lower emissions compared with diesel/petrol alternatives Higher percentage of journeys can be conducted using electric Encourage a more efficient and economical driving style
Duty of care responsibilities	<ul style="list-style-type: none"> Encourage a more efficient and economical driving style that can lead to safer driving

Being clear on your goals will help you to plan implementation and measure performance more effectively.

Assess the suitability of PHEVs for your fleet – can they actually work in practice?

Things to consider include:

- What percentage of my drivers' journey profiles could be replaced with a PHEV? Consider aspects of the driver profile, including miles per annum, average journey length, distance from the office.
- Will PHEVs replace existing petrol/diesel vehicles or complement them?
- How will PHEVs fit into the wider mobility mix?
- You may find that PHEVs still aren't suitable for some of your drivers' profiles because their annual mileage is too high, or they do a lot of motorway driving, for example. In these instances, think about how PHEVs could be used as part of a holistic mobility solution.

For instance, how many of your drivers could take the train for their furthest journeys and supplement this with a PHEV to get to and from the station? Or how many could use a PHEV for 90% of their journeys and daily rental or car share for the longer trips which make up only 10% of their yearly travel?

Smart mobility solutions like this often come with added benefits that make them more attractive than a traditional company car. In the former example, your driver gets more hours of their day back by being able to work on the train, while at the same time making considerable BIK savings because they no longer have a diesel.

At the same time, you as the employer are likely to make savings from a TCO perspective, while being able to reduce the overall CO₂ emissions of your fleet.

- What does our existing infrastructure look like? Can we facilitate the installation of work place chargers?
- How easy is it for my drivers to charge their PHEVs at home? What percentage will need administrative or financial support/help applying for the Government's Electric Vehicle Homecharge Scheme?



Step 2. Do the numbers.

What are the cost implications for your business?

Understanding the financial implications of running a PHEV fleet should start with a Total Cost of Ownership (TCO) analysis.

- With TCO, rental, fuel, insurance, corporation tax, NI and VAT are all factored in to reveal the true cost of the vehicle over its entire lifetime, rather than focusing on the initial outlay. In our trial, we found that fleets could save up to £2,000 per vehicle when compared with a diesel alternative. Understanding the difference in pounds and pence will help you to calculate whether it's worth the switch.
- Using real life fuel economy figures, instead of New European Driving Cycle (NEDC) ratings, when assessing PHEV TCO is more likely to show more achievable cost savings where this vehicle type is deemed as a practical alternative to Petrol or Diesel.

What do the costs look like for your drivers?

- PHEVs can be an attractive choice of car for your drivers because they typically attract lower BIK status due to lower CO₂ emissions. As a result, they present a great opportunity for you to improve your benefits and remuneration package.

Think back to your objectives; if keeping your employees happy is a motivating factor then communicating the cost benefits to your drivers will be key.

Determine how you will get buy-in from the wider business and your drivers.

- Determining where each area of your business is going to get value from the implementation of PHEVs is an important way of ensuring their success.

What objectives can you help them to reach by switching your vehicles to PHEV alternatives? For example, HR are going to be very focused on keeping employees happy through benefits and remuneration, how will PHEVs help achieve this? e.g. BIK savings, lower fuel costs, doing their bit for the environment etc. Finance on the other hand are likely to be more interested in the numbers. e.g. lower TCO costs, reduced total fuel spend.

- How will you get buy-in from your drivers?

Think about how you will communicate the benefits of PHEVs to your employees. Consider how you will identify and manage any driver training needs.





Step 3. Think infrastructure.

A consideration of PHEVs is that you will need to be able to support the implementation of a charging infrastructure.

At the office:

- How much power is available?
- What sort of chargers will you require?
- How many chargers will you need? Can you build in the capability to add more if EV uptake increases?
- Will you charge non-company car drivers and guests with electric vehicles to utilise the chargepoints?

At home:

- What proportion of your drivers have the facility to install a homecharge point?
- Will you contribute to the cost of a home charger not covered by the grant and what does this mean from a BIK perspective?
- Consider looking for a reputable supplier with experience dealing with the Government's Home Charge Scheme who can assist with grant applications. It's advisable to use the same supplier for both workplace and business chargers for ease of use.
- Can you install chargers that can cope with a range of electric vehicles so that you can future proof your infrastructure? e.g. a 7kWh will cope with a Battery Electric Vehicle (BEV) as well as a PHEV.
- How will your employees pay for the electricity consumption? Electric corporate fuel cards provide access to multiple charges and can be used to manage home, business and public chargers.
- The final step is to think about the procurement of the vehicles and selecting the desired models. The basics still apply with PHEVs; you should choose vehicles that are fit for purpose.
- If it's feasible to give your drivers a demonstration of the vehicle for at least a week or two then do so – any opportunity ensure it's the right fit for them is worthwhile.



Step 4. Work out what your drivers need.

You've done the leg work, your PHEVs are on order and you're ready to go electric. What's next?

The results of our trial show just how important driver input and attitude is in getting PHEVs to perform to the best of their ability. The next step is about ensuring your drivers are prepared for their new vehicle and putting strategies in place to support them on an ongoing basis.

- It's important to create a clear policy for the use of PHEVs and to share this with your drivers before they receive their vehicle. The policy should give clear guidance on what you expect from your PHEV drivers, such as how regularly you expect them to charge the car, fitting home chargers and even a target fuel economy.

- A very important part of this stage is ensuring drivers know how to get the best performance out of their vehicle.

This should include:

- Ensuring the driver makes time for a full handover when their vehicle is delivered so that they are comfortable with the electric driving experience.
- Guidance around how to drive the vehicle in an efficient manner, such as engaging the regenerative braking function to give the battery a boost while driving etc.
- Building a driver community that encourages drivers to share their experiences, tips and best practice.

- Encouraging drivers to share their MPG through a leaderboard system. We found that introducing an element of competition and gamification encouraged our drivers to get the best performance out of their vehicle. This meant that they were able to experience the vehicles' full benefits.

- The drivers in our trial who charged their PHEV frequently and sufficiently saw a better overall performance. Part of the initial handover process should not only provide guidance on how to charge the vehicle, but also should place emphasis on the importance of regularly charging the vehicle.

This will include:

- Encouraging the installation of home chargers as they are quicker and easier to use than plugging into a 3 pin plug.
- Providing information about the Government's Vehicle Homecharge Scheme and any necessary support you can provide with their application.
- Encouraging a polite charging 'etiquette', especially on work place chargers.
- Encouraging drivers to plan their journeys effectively around public charge points – many offer free charging with a membership card.



Step 5. Optimise performance.

The final stage of implementation is possibly the most important one. It's where you will measure, refine and improve your PHEV fleet's performance.

A key part of this stage is to monitor the performance of your fleet and to compare this against the objectives that you set at the start of the process.

- If you find that you're falling short of your objectives, ask yourself why? Are there areas that you could tweak and refine that will help you get closer to your goals?
- Installing a telematics device in each vehicle will enable you to measure performance and identify opportunities for driver training. For example, harsh braking and acceleration can be replaced with more economical driving to achieve a better MPG.
- Reviewing data from work place chargers and reviewing public charger use through electric charge cards will indicate when drivers are topping up their vehicles. Combining this information with telematics data will give you a well-rounded view of overall performance.
- Trends identified from this analysis should be used to tweak and refine your PHEV policy and create opportunities to improve the operation of PHEV's on the fleet. This could be through improved driver training, hand over tips or information on different vehicle's performance.

- Sharing this information with all company car drivers may encourage or allow other drivers to take a PHEV in the future, but also help existing PHEV drivers get the best out of their cars. Producing this type of analysis in a proactive way will be of benefit to both the drivers and the company.
- Share the results with your wider stakeholder group against their individual objectives so that you can demonstrate where they are getting value from the PHEVs. Today, mobility is a company-wide concern; making it easy for your stakeholders to see how new mobility innovations are helping them meet their goals means you're likely to get greater support in future.

For example, can you show the Finance Director that you've cut fuel spend by 10%? Or the CSR Manager that you've reduced CO₂ emissions by 20%?



| PARTNER PROFILE

Plug-in to cost savings with Go Ultra Low online tools.



Go Ultra Low is a ground-breaking joint government and industry campaign which aims to increase purchase consideration of electric vehicles by helping motorists and fleets understand the benefits, cost savings and capabilities of the wide range of electric vehicles on the market. www.goultralow.com

Electric vehicles (EVs) have never been more popular in the UK, with registrations in 2017 smashing all previous records according to data from the Society of Motor Manufacturers and Traders (SMMT). With approximately two thirds of new EVs going to public and private sector organisations, fleets are driving the popularity of plug-in vehicles.

One of the reasons for fleets embracing EVs is the cost saving potential. EVs can offer company car drivers significant savings when annual fuel consumption and taxation of petrol and diesel vehicles is taken into consideration. Cost management is usually a primary concern for fleet operators, and despite higher P11D values, electric cars and vans can often be cheaper to operate than their petrol or diesel equivalents.

In order to demonstrate how EVs can save businesses money, Go Ultra Low has developed a suite of online comparison tools on its website (www.goultralow.com). These calculators allow new and used petrol and diesel engine cars to be compared side-by-side with every 100% electric vehicle and plug-in hybrid from Go Ultra Low's manufacturer partners: Audi, BMW, Hyundai, Kia, Nissan, Renault, Toyota and Volkswagen.

Figures from the calculators show that company car drivers could save as much as £7,376 on tax and running costs by switching to a 100% electric car. This figure, calculated by comparing an average electric and diesel model, includes a Benefit in Kind (BIK) rate saving of £3,974, in addition to an average £3,402 fuel saving over a typical three-year cycle of company car ownership.

Big savings are also available to employers. Go Ultra Low's whole-life cost data shows that both the 100% electric Hyundai IONIQ (IONIQ Electric Premium 5dr Auto) and plug-in hybrid (IONIQ 1.6 GDi PHEV Premium 5dr) models benefit from a £120 monthly cost saving compared to the Hyundai i40 (i40 1.7 CRDi Blue Drive Premium 4dr). This adds up to a yearly saving of £1,440. On a fleet of 10 vehicles that's an annual saving of £14,400, and £57,600 over a 48 month contract and 20,000 miles per annum.

Government grants provide up to £4,500 off the price of pure electric cars, £2,500 off the price of eligible plug-in hybrid cars, and up to £8,000 off the price of a new electric van. Consumers can also benefit from up to £500 off the cost of installing an electric chargepoint at their home. To make commuting in a plug-in car even more viable, businesses can also take advantage of the Workplace Charging Scheme, which provides grants of up to £300 per charging socket, with a maximum of 20 charging stations per organisation.

These numbers show the extent of the savings offered by an electric vehicle on a whole life cost basis. While many questions exist regarding EVs and their viability for businesses, Go Ultra Low's online tools offer fleet operators and drivers the information they need to choose a car that's fit for purpose and can save them money.



“ Government grants provide up to £4,500 off the price of pure electric cars, £2,500 off the price of eligible plug-in hybrid cars, and up to £8,000 off the price of a new electric van. ”

Online tools available on www.goultralow.com include:

- Journey cost savings calculator
- Journey range calculator
- Car tax calculator
- EV selector
- Chargepoint map
- Home charging tool

Speak to the experts.

About Lombard Vehicle Solutions.

We combine the trusted brand values of Lombard with the innovative products and award winning services of ALD Automotive.

We enable you to reach your fleet goals by developing how you approach mobility.

What makes us different?

- ✓ Bespoke mobility solutions built around your business.
- ✓ A leading telematics tool that offers you tangible business savings.
- ✓ Transparency around Total Cost of Ownership to help you plan for now and the future.
- ✓ A dedicated Account Manager offering proactive support.
- ✓ Get future ready with our consultant-led insights as we guide you through the changing fleet environment.
- ✓ Our specialist in-house Light Commercial Vehicles team will give you control and help reduce costs, no matter the size of your fleet.

Introducing the award winning Mobility Experience.

For a slightly more immersive approach, we invite you to take part in the Mobility Experience. This unique and dynamic space, based at our head office in Bristol, is where you will bring together key stakeholders from your organisation for an interactive session that will disrupt and challenge the way you currently approach business travel. This visionary conversation will involve decision makers in HR, Finance, Fleet Management, Legal and any other areas that directly or indirectly influence your current business mobility arrangements.

You will collectively review and contest traditional thinking and consider new ways of approaching how you and your employees move around for business. Interactive audio-visual gaming technology and our expert Consultancy Services team will facilitate the conversation and nurture your discussions.

Together you will design a comprehensive mobility policy that is entirely in step with your business objectives, both now and in the future.

Get in touch to reserve your place.

“ Asking our executives to commit to time out of their busy schedules was a big commitment and we needed to ensure it would be a worthwhile investment of their time. Fortunately the Mobility Experience delivered an incredibly valuable day for all. After the session we received a detailed and actionable report so we could immediately implement the strategies we discussed. It’s an experience we’d recommend to any business looking to build a mobility policy for the future.

Fleet Manager, Manufacturing Company ”



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