ELECTRIC FLEET

ELECTRIC, HYBRID AND OTHER ALTERNATIVES

A FleetNews publication

Summer 2017

PLUG-IN CAR RUNNING COSTS

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WELCOME

We've spoken to numerous fleet managers that have electric vehicles (EVs) or hybrids on their fleets over the years and in the main their views and experiences are positive. Does the business case stake up? Yes, provided the Government's plug-in car or van grant is included. Do the drivers like them? Yes, they love them – once the initial scepticism is overcome. Are they reliable? Yes, there are very few issues. Is the range sufficient? Generally, yes.

Things can come unstuck when the vehicle doesn't suit the application – when a high mileage driver has chosen a plug-in hybrid electric vehicle (PHEV) purely for the tax benefit and spends most of their time using petrol or diesel, for instance, or when there isn't a convenient (and working) rapid charging point or when a larger vehicle with a bigger payload is needed (although fleet managers acknowledge this is may be solved with forthcoming launches).

So spend time finding the right fuel type for each driver, whether EV, hybrid, diesel or petrol. It will be time well spent because whichever party assumes power (we went to press ahead of the General Election), you can be certain air quality will be on their agenda.

Sarah Tooze,
deputy editor, *Fleet News*

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WEIGHING UP THE PROS AND CONS OF ADOPTING EVs

Plug-ins have many plusses but there are many considerations for fleets, such as depreciation, battery life and SMR options

By Simon Harris

Minimising vehicle running costs is crucial for fleet efficiency. But, while the lure of electric propulsion could mean savings over petrol and diesel fuel costs, fleets must take into consideration depreciation, battery life and limitations over afersales options for service, maintenance and repair (SMR) work during the lifecycle of the car.

Depreciation is usually the highest lifecycle cost – especially for plug-ins (although leasing companies are taking a more pragmatic view than the pricing guides – see page 20). But this consideration could become less significant as electric vehicles (EVs) are adopted in increasing numbers.

Familiarity with the technology among secondhand car customers helps protect residual values. History shows hybrid cars have long since recovered from the poor residuals of their earliest used car days.

But the extra expense of electric cars can make pence per mile (ppm) costs less competitive, even taking into account the impact of the Government's £4,500 grant for zero-emission cars.

In the *Fleet News* running cost tool, the depreciation for a Nissan Leaf 30kWh Tekna is shown as 68.15ppm over four years/40,000 miles, compared with 34.41ppm for a Nissan Pulsar 1.2 Tekna. The Leaf's depreciation cost reduces to 56.9ppm after the grant is taken into account, still substantially higher than for the conventionally-fuelled car.

Recent changes to vehicle excise duty (VED), where only zero-emission cars are now free from annual road tax, could prompt a change of buying habits by used car customers and a greater level of interest in cars with no annual VED payments.

However, customers should also pay attention to the depletion of battery capacity over prolonged use, especially with repeated use of rapid charging.

The lithium-ion batteries on electric vehicles should be able to withstand occasional rapid charges without any worsening of typical battery capacity. It's estimated that in day-to-day use, EV battery capacity should be no worse than 80% of its original level after four years/40,000 miles. Therefore, a car that could travel 125 miles on a full charge when new should still be capable of 100 miles at four years old.

Typically, for EVs the SMR figures are among the smallest components of the running cost equation – lower than depreciation and fuel sums, and significantly lower than petrol and diesel.

For example, according to the *Fleet News* running cost database, a Nissan Leaf has an SMR cost over four years/40,000 miles of 2.84ppm, compared with 4.32ppm for a similarly specified petrol engine Nissan Pulsar. Choosing the Pulsar diesel results in a SMR cost of 4.67ppm.

With fewer moving parts than internal combustion engines, it makes sense that electric motors ought to have lower costs.

Even looking at significantly more expensive vehicles, such as the high-performance Tesla Model S, the SMR still favours the electric car. The 328PS Model S 75D has SMR costs of 8.7ppm, compared with 9.34ppm for a Mercedes-Benz AMG E43 saloon.

Hybrids are put at more of a disadvantage when it comes to SMR costs because there is most of the maintenance associated with a petrol or diesel engine, along with the less arduous routine maintenance of an electric-powered vehicle.

However, given the extra complexity built into diesel engines in recent years to ensure they comply with the latest emissions regulations, the gap when comparing plug-in petrol hybrids with conventional diesels might be closer than you imagine.

For example, the most popular plug-in in the UK in recent years has been the Mitsubishi Outlander PHEV. According to the *Fleet News* running costs database, it has SMR costs of 5.28ppm over four years/40,000 miles, while the diesel equivalent is at 4.93ppm.

Comparing the Mercedes-Benz E-Class saloon, the E 350e plug-in hybrid is 7.9ppm for the AMG Line variant, compared with 7.24ppm for the diesel E 350d AMG Line.

In similar cars where there is a choice of a hybrid or plug-in hybrid, the SMR costs could be identical. The Toyota Prius Business Edition Plus hybrid has SMR costs of 3ppm for SMR, the same as the Prius Plug-in for the same equipment grade.

Fleets concerned about SMR costs could be tempted to seek lower prices outside the main dealer network. But with plug-in vehicles having only been on the market for six years, expertise in the independent garage sector could be limited.

56.9
pence per mile depreciation on a Leaf after grant is included

80%
the level batteries should remain at after four years

"All repairs of EVs require highly knowledgeable, specialised and trained professionals who are able to carry out repairs safely and correctly"

Sue Robinson, National Franchised Dealers Association

Greener vehicles can mean money in the bank in terms of wholelife costs

It isn't surprising that the organisation representing franchised dealers would recommend the main dealer network when plug-in vehicles need maintenance, but it certainly would appear to make valid points.

Sue Robinson, director of the National Franchised Dealers Association (NFDA), says: "All repairs of EVs require highly knowledgeable, specialised and trained professionals who are able to carry out repairs safely and correctly.

"These repairs also include locking, lighting, any electric equipment issue, which is linked to the high voltage batteries, as well as power connections to the main power motor drive.

"While demand for EVs has been increasing dramatically, they still represent a low proportion of all vehicles on the road.

"At this stage of the market cycle, repairs are primarily carried out at franchised dealerships, because, while manufacturers require franchised dealerships to have professionally trained technicians, EV training does not usually represent a viable option for the independent sector, especially due to its cost."

Some plug-in cars are even more specialised and would need to remain in the main dealer network for body shop repairs.

BMW's i3 and i8 models use carbon fibre extensively in the car's crash structure because of its combination of lightweight construction and strength. The material is not widely used in car production and is expensive.

Only selected BMW dealers are qualified to carry out crash repairs, and there is the additional factor that premium-badge cars often benefit from a main dealer stamp in the service book to maximise residual values.

The availability of fixed-price servicing packages for vehicles and special nationwide rates for fleets not using servicing packages equally apply to plug-in hybrid and electric cars.

We have seen all-inclusive maintenance (and fuel) packages offered in the latest hydrogen fuel cell vehicles, such as with the Toyota Mirai, to help make them more attractive and spread costs evenly over their lifecycles.

And hydrogen fuel cell cars should require less intensive maintenance than battery EVs.

A Toyota spokesman says: "Unlike any other vehicle (including pure battery electric, where the battery degrades, particularly with rapid charging) there is no material consumption or wear in the fuel cell, hybrid battery, hydrogen tanks or electric drivetrain.

"The Mirai requires occasional cooling fluid top-ups and the only specific part for replacement over its life is the ion filter that keeps the water deionised at about 50,000-mile intervals which comes to approximately £300."

The spokesman claims the normal view of total cost of ownership is fundamentally changed with the Mirai.

"The Mirai main drivetrain does not wear out and the only periodic replacement parts are the standard wear items – tyres, brakes and mechanical suspension, which are easy to replace and not unique to Mirai, so commonly available," he says.

"The only consideration is that the hydrogen tanks and high pressure pipe from the filler to the tanks need to be replaced at 20 years due to legal requirements for high pressure vessels, but this is generally considered beyond the normal vehicle operation life."

Guidance on fuel reimbursement for ULEVs

In the absense of AFR or AMAP rates, TMC has produced guide for EV fleets

HMRC doesn't currently recognise electric charging and its associated costs as a 'fuel'. However it does recognise that employees should be reimbursed for costs incurred on business travel.

When it comes to combustion engine vehicles, employers can either reimburse employees based on actual cost or the advisory fuel rate (AFR) or based on approved mileage allowance payment (AMAP). This is also true for any form of electric vehicle – either pure EV or PHEV. Although, unlike their petrol and diesel counterparts, there are no official AFR or AMAP rates for electric vehicles.

In the absence of HMRC guidelines, TMC has produced a guide which sets out the options available to businesses when it comes to reimbursing company car, cash allowance and grey fleet drivers of electric vehicles. To download it, visit www.themilesconsultancy.co.uk/whitepapers/ev-reimbursement-guide/

TMC's award-winning mileage capture and audit system automatically calculates how much each driver needs to be reimbursed once a company has chosen the reimbursement route it wants to take. TMC produces a payroll-ready file each month.

In addition, TMC analyses fuel and mileage data and produces a suite of reports to enable fleets to monitor the ongoing performance of their ULEVS alongside the rest of the fleet. This gives fleets the visibility to identify the effectiveness of their ULEVs, highlight any driver training needs and help steer their wider fleet strategy.

To find out more visit www.themilesconsultancy.co.uk, or speak to them on 01270 525 218 or drop an email to reply@themilesconsultancy.com

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IS IN-HOUSE SMR WAY FORWARD ON ELECTRIC VEHICLES?

By Luke Redfern, project manager, Cenex

£9,000
for initial training and equipment investment say manufacturers

£99
a year is typical servicing figure on a Nissan Leaf

Electric vehicles (EVs) can have significantly lower service, maintenance and repair (SMR) costs, with estimated savings of 25%-to-40% compared to petrol or diesel cars.

An electric vehicle has a simple drivetrain and tends not to require the usual changes and replacements that increase the cost of servicing petrol and diesel vehicles.

So, should fleet operators manage the SMR of electric vehicles in-house?

Cenex, the UK's centre of excellence for low carbon and fuel cell technologies, has spoken to manufacturers and training providers to understand the key considerations.

Training in-house teams

While in-house SMR is relatively simple for fleets operating conventional petrol and diesel vehicles, low-emission technologies require investment in additional training to deliver safe and effective in-maintenance for low carbon vehicles.

Industry standards such as BS 10125, require bodyshops working on high voltage vehicles to train technicians in EV hazard management and awareness. Manufacturers also require external technicians to have training on their vehicles, to the same level as their dealer network.

Colleges like Emtec Central offer four (IMIL) levels of training relevant to EVs:

- **L1 Awareness** an online course for employees working around, but not on, high voltage systems (e.g. workshop office staff).
- **L2 Hazard Management** for valeters, fleet drivers, breakdown personnel, or any other staff interacting with a high voltage vehicle.
- **L3 Electrically Propelled Vehicle and Replacements Training** a course for qualified motor technicians, with modules in safety around high voltage systems, awareness, hazard management, service repair and replacement.
- **L4 Live Working** specifically training qualified technicians to undertake live working on batteries and high voltage systems.

Equipment requirements

There is additional workshop guidance for EV servicing that typically includes a dedicated bay with appropriate markings for EV maintenance, two trained technicians to be on-site during EV maintenance work and hazard signage.

Vehicle warranties are generally protected if genuine manufacturer parts are used.

Quantity is key

Evidence suggests in-house SMR for EVs works best for high-volume fleets.

For example, a basic estimate is £12,000 to train two workshop technicians and buy equipment required to service and maintain the Nissan Leaf and e-NV200.

Other manufacturers estimate costs from £9,000 for initial training and equipment investment.

Today, most manufacturers manage SMR of their EVs in-house, as the training and equipment costs make it uneconomic to self-service a fleet of less than 50 EVs, considering that the routine service for a Nissan Leaf is typically £99 per annum.

Manufacturers will develop bespoke self-servicing training agreements, but only to meet the demands of high-volume customers (typically those buying 20 or more vehicles at a time).

Pool resources to realise savings

Upfront investment in technical training and equipment means smaller fleets might not be able to realise the savings from bringing EV SMR in-house.

However, there is potential for larger operators to partner with smaller fleets, allowing nearby fleets to pool their SMR services.

As operators prepare for UK clean air zones in 2020, those with a large or growing fleet of low carbon vehicles should start planning now to realise the benefits of effectively managing the SMR of their EV fleet.

"PRACTICALITY AND CHOICE OF ELECTRIC LCVs IS GROWING"

Matthew Trevaskis, head of electric vehicles, Renewable Energy Association

70
miles in a morning is the distance covered by Peugeot Partner van

£4,000
saving in diesel by van used to deliver parts

Light commercial vehicles with an electric drivetrain make up just a small fraction of around 100,000 ultra-low emission vehicles (ULEVs) that have been registered since the introduction of grants from the Office for Low Emission Vehicles (OLEV) in 2012.

The market has remained largely dominated by cars but LCVs could provide an easy win, given that many have very predictable, regular daily duty cycles on a return-to-base model.

With longer-range vehicles the practicality and choice of electric LCVs is growing as seen by the revision to Renault's Kangoo ZE which extended its range by 50% (from 106 miles to 168 miles) and the announcement of the Master ZE for urban and municipal roles.

Ford's trial with a fleet of Transits with range extenders (confusingly labelled PHEVs contra to the terminology used with cars) will also be closely watched in London later this year.

An electric LCV now costs around £15,000, excluding VAT but including the plug-in van grant and discounts, with the battery (warranted for eight years) also in the price.

Although there is still a premium over a diesel, total cost of ownership modelling reveals how much it will recoup longer-term when considering reduced service parts, energy costs and, where applicable, absence of congestion charging.

Conversations with fleet operators reveal they are concerned about restrictions that may be applied to vehicles travelling into urban areas, not just in London, but any major city with a clean air zone (CAZ) proposal.

However, the talk is less about additional levies, more about being confident of being allowed to drive into the zone at all.

A car dealer I know runs a parts delivery hub. One of its Peugeot Partner vans has been able to cover 70 miles in the morning and 50 in the afternoon. Having had success with EVs, the dealer invested in a semi-rapid DC charger (20 kW) to turn customers' vehicles around in less than an hour. It also allowed switching to an EV delivery van by using the charger over the lunch hour, while loading it for the afternoon round.

The van covers around 28,000 miles per annum, costing £900 in electricity but saving more than £4,000 in diesel.

OLEV grants are available for domestic and workplace charging. It's often overlooked that the home grant can be claimed even for an electric LCV for a single domestic address, enabling that vehicle to be charged safely and providing a low-BIK vehicle to an employee.

Evidence suggests that the uptake of proper charging points lags behind the number of vehicles being registered, in part due to many vehicles being supplied with a so-called 'granny' cable (because it's slow) with a familiar 'three-pin' plug for domestic sockets.

There can be issues with these, such as properly earthing the vehicle and the potential to overload sub-standard wiring.

Subsidy offered

OLEV's workplace charging scheme offers a subsidy of £300 towards each charging connection, up to a maximum of 20.

Workplaces often experience a snowball effect in the uptake of EVs and PHEVs as colleagues share their experience of the cars and the financial savings.

It's worth planning expansion of the charging provision early to ensure there are enough connections, power and spaces to meet demand.

Where companies are encouraging the use of EVs or PHEVs they should examine the opportunity to install their own renewable generation, such as a solar array on their roof, which can be scaled to meet the demand of charging their fleet – especially commuter vehicles that will generally be present throughout the peak output.

Intelligently networked charging can also allow many more vehicles to be charged without straining the supply to the building.

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CHARGING WHILE YOU WORK NEEDS A BOOST

As more and more companies add electric vehicles to fleets the establishment of charge points is struggling to keep pace

Demand for workplace charge points looks like being unrelenting

By Christopher Smith

The anticipated growth in the number of electric vehicles operated by fleets is set to present a challenge: charging them.

While the public charging network is expanding (see page 14), it is still neither comprehensive or convenient enough to meet the expected increase in demand from company vehicles.

Pod Point has calculated that the average electric vehicle driver requires the use of 1.5-2 charge points in their daily driving life.

This means charging facilities at workplaces will need to become more commonplace.

"Each driver needs one charge point at home, which is normally exclusively for their use, a share of a charge point at work, and a smaller share of public charging – perhaps one charger for every 10 vehicles," says Erik Fairbairn, chief executive of Pod Point.

The increased demand for company charge points was recognised by the Office for Low Emission Vehicles (OLEV) in November 2016 when it introduced the Workplace Charging Scheme grant, available in England, Scotland, Wales and Northern Ireland.

This is the first national scheme to incentivise the installation of electric vehicle charging at offices and centres of employment, and provides vouchers discounting the cost by £300 per socket.

There are limitations – the grant only covers the installation of up to 20 units across the whole company nationwide. Businesses which operate as part of a franchise can apply, but only 20 franchisees of that firm in the UK can take advantage. The sockets can only be installed at dedicated off-street parking spaces for staff or pool fleet use only.

£300
per socket grant available to incentivise workplace charging

20
maximum number of units per company for grants

The vouchers must be applied for before installation and presented to one of a number of authorised installers as part-payment.

Chargemaster chief executive David Martell says the grant has been well received. "So far, we haven't seen the limit as a constraint – it's definitely a useful aid," he adds.

The total cost of an installation varies dependent on the location and the circumstances, with Chargemaster performing a location check over the phone and via Google Maps.

"A lot of companies have their own in-house facilities managers who can set up the bulk of the installation, like getting the power to the right place, which obviously saves a bit of money," adds Martell.

"To install and connect them, which our people do, is relatively straightforward."

Chargemaster has found that a typical installation is for two or three charging points, which require four or six parking bays. "From that viewpoint, it's quite easy to add to them," says Martell.

He estimates that for a double unit, after the £600 combined grant, the remaining installation and hardware cost is usually no more than another £1,000.

Data is a key tool in the roll-out of workplace electric vehicle charging. "We give fleet and facilities managers in the business a login to the Chargemaster portal that shows who is using the points, and when – and how much is it is costing", adds Martell.

Pod Point uses public data to estimate how many

points a workplace should install. "In a perfect world, a business will tell us they want some charge points, we'll look at the EV market in their area and the size of the company, and offer a steer on how many points may be a good idea," says Fairbairn.

Pod Point's data and management system is built on an 'array', that allows larger scale roll-outs without major electricity work.

It means that the power output can be notched down when several vehicles are charging, and it recognises usage patterns to manage this output.

If you're a big organisation that would eventually require 100 or 200 charge points, then you might be in a situation where you can't charge all of those vehicles on full power at the same time, says Fairbairn.

"It means you don't end up having to reinforce grid connections, and other expensive stuff," he says. "It's a really efficient way of putting a large amount of infrastructure in.

"If you install 10 now, it's possible you would want 50 in three years or so. We'd provide a plan for growth to ensure the number of points can be easily scaled if needed."

At the moment, most companies offer the use of a workplace charge point for free.

Guidance from HMRC last year stated that providing free workplace charging for company car drivers was not a taxable benefit, irrespective of private mileage. However, providing free charging for a privately-owned electric vehicle was a taxable benefit.

"Most employers are offering this as a service at the moment, but we are experiencing some wanting to make a fair charge for recovery of the cost of the electricity," adds Fairbairn.

"As volumes increase, it's likely most employers will opt for the cost-recovery basis."

The majority of systems designed for workplace use are capable of managing a system like this, with employees setting up their own account on the charging manufacturer's system.

Humber NHS Foundation Trust installed six electric charging posts from Pod Point, which can charge 12 vehicles at a time. Staff are charged 15p per kWh for usage, which is sacrificed from their salary.

Martell adds: "By 2020, when we expect somewhere between 5% and 10% of new cars to be electric, charge points will be used more and more by staff for their own vehicles.

"If they can't charge at home, for example if they live in a block of apartments, charging at work where you're occupied seven or eight hours a day is a feasible alternative."

> "While that (the installation of home charging points) sounds expensive, we build that into the wholelife costs of the vehicle"
>
> **Will Smith, Britvic**

This sentiment is echoed by National Grid staff after the installation of six charging stations from eVolt at its Warwick HQ, which allow 12 vehicles to charge at once. Growing demand has come both from the company fleet, and their employees' own vehicles.

Darren Watson, environmental operations advisor for National Grid's sustainability and climate change team, says: "Since the charging infrastructure was installed, the number of company car PHEVs has risen from 177 to 375, and we have seen an increase in the number of fully electric vehicles.

"The chargers' take-up has been rapid and exponential. We are forecasting further rises as the business continues to support the adoption of EVs, and our employees continue to select them as a credible alternative to petrol or diesel engines."

Where there is insufficient space or electricity resource at a workplace, there are other options.

Staff taking a plug-in hybrid as their company car at drinks company Britvic are provided with a free home-charge unit as part of the package.

Will Smith, director of compensation and benefits at Britvic, says: "We just can't provide 100 charging points at our sites, so where we do have a limited number of charging points – we've got 10 at our head office – we are seeing less conflict over them.

"We provide 7kW charging points, fully installed at an individual's house. While that sounds expensive, we build that into the wholelife costs of the vehicle.

"If you take the reported costs of £300-£500 of a fully-installed point and spread that over the four years of the contracted period of the vehicle, the difference to an employee is significantly less than what they would pay for parking sensors.

"It does feel like a hefty benefit, but at the same time it's providing benefit to the company.

"Helping provide the infrastructure to an employee to manage that vehicle in an appropriate way means they are more likely to utilise the full effectiveness of that vehicle."

Soon to be a more common sight in workplace car parks

WHERE IS THE POINT?

Finding a public EV charge point has long formed a block to progress, but the networks are developing

By Christopher Smith

The ability – make that inability – to charge an electric vehicle on the public network has long been seen as one of the stumbling blocks for the growth of EVs in the UK.

The gradual, piecemeal rolling out of infrastructure in pockets of the UK had meant it was not inconceivable that drivers travelling longer distances or on the boundaries of a few areas needed to carry a handful of RFID (radio-frequency identification) cards to stand any chance of charging their car.

However, investment and developing technologies now mean that, in many locations, all a driver may need is a smartphone, giving access to a smaller number of networks but with larger coverage.

Smaller players do still exist, but these are most likely to be of use to drivers in specific areas.

In total, more than 4,000 public charging points have been installed since 2010 through a series of 'Plugged in Places' match-funded schemes.

Eight regions were successful in achieving a share of £30 million – but there wasn't full interoperability between the regions.

In the intervening years, as the Plugged in Places funding ended, many schemes were incorporated into other networks. For example, the Manchester and Scotland schemes joined the North East's Charge Your Car (CYC) network, which also expanded to manage other charging points elsewhere in the country – including mini networks established in the South East and South West.

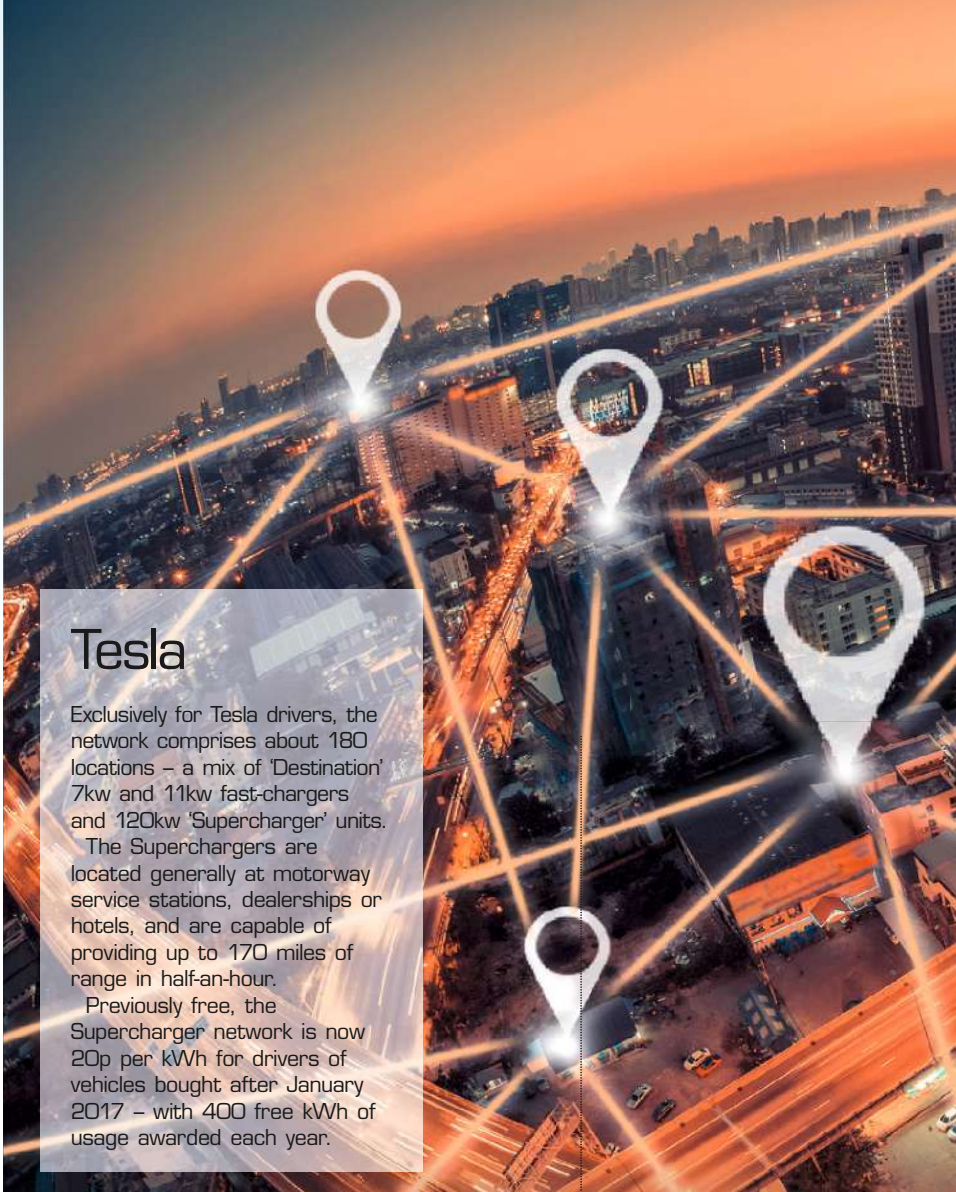
This meant, over time, CYC built up a substantial network of around 2,000 primarily public sector charging points.

In early 2017, its parent company Elektromotive was bought by Chargemaster, with the new owners set to invest in renovating charging points and expanding the newly combined network.

It's the largest of all the networks, and is likely to offer good coverage for many drivers.

However, agreements with local councils and legacy schemes mean that for fleets, it may be worth opening an account with one or two of the smaller operators to provide blanket coverage.

Here, we look at the major charging networks and how they can be used by company car and van drivers.



Tesla

Exclusively for Tesla drivers, the network comprises about 180 locations – a mix of 'Destination' 7kw and 11kw fast-chargers and 120kw 'Supercharger' units.

The Superchargers are located generally at motorway service stations, dealerships or hotels, and are capable of providing up to 170 miles of range in half-an-hour.

Previously free, the Supercharger network is now 20p per kWh for drivers of vehicles bought after January 2017 – with 400 free kWh of usage awarded each year.

Polar

The Polar network is operated by Chargemaster and works on a pay-as-you-go or monthly subscription basis.

The largest network in the UK, it has more than 5,000 charging points, including the 2,000 on the CYC network.

The majority of points on Polar are free to charge, but the network levies either a £1 per session fee for pay-as-you-go (instant) users, or a £7.85 monthly subscription for 'Plus' users.

The points are a variety of speeds, with standard charging units most likely to be free and with most rapid chargers levying a per kWh fee.

Businesses can open a corporate Polar account, which allows central accounting, and gives access to a control panel where fleet managers can track usage of public facilities.

Points can be accessed either by RFID card or through a smartphone app.

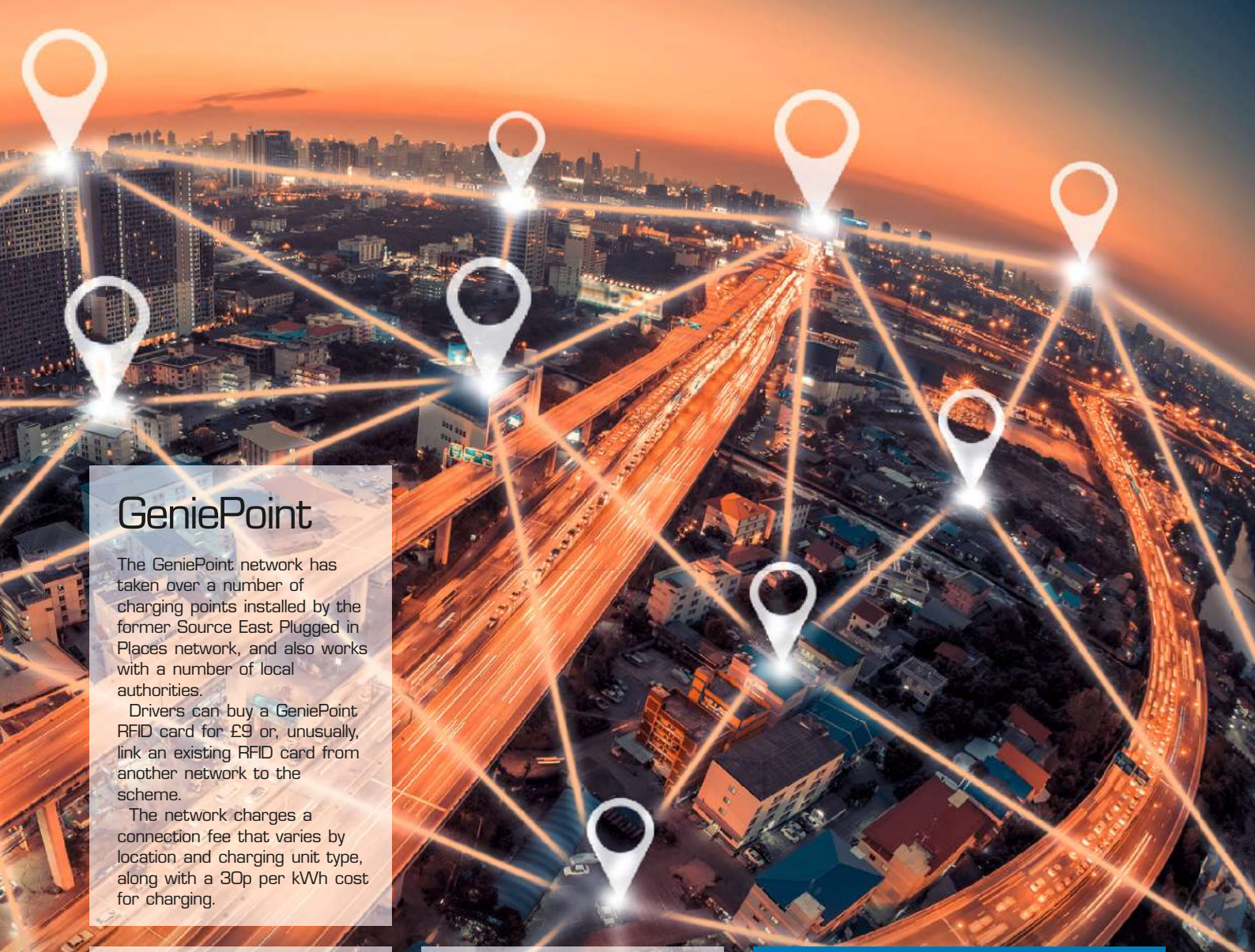
Electric Highway

The Electric Highway network has been operated by green energy firm Ecotricity since 2011 and consists of around 300 charge points located primarily at motorway and trunk road service stations, along with some branches of the IKEA furniture chain.

From June 26 drivers will pay a £3 connection fee followed by 17p/kWh, with a maximum charge time of 45 minutes.

The charging points are now managed by apps, available for iPhone and Android devices, and are primarily fast- or rapid-charging points, meaning a Nissan Leaf could reach 80% charge in the time allotted.

Ecotricity does not offer a corporate system – drivers wishing to use the network on company business will have to make payment personally then reclaim the cost through their expense system.



GeniePoint

The GeniePoint network has taken over a number of charging points installed by the former Source East Plugged in Places network, and also works with a number of local authorities.

Drivers can buy a GeniePoint RFID card for £9 or, unusually, link an existing RFID card from another network to the scheme.

The network charges a connection fee that varies by location and charging unit type, along with a 30p per kWh cost for charging.

Source London

Source London is one of the last of the Plugged in Places programme, now operated by French firm Bollore.

The charging structure is two-tier, with either full or flexible membership levels. Full membership is £4 a month, with a 3.6p per minute cost for charging on a standard charging point, or a Flexi membership, with a £10 one-off cost and a 5.9p per minute rate.

Both membership levels make a charge of £1.80 plus 30p per kWh of power used for rapid chargers. All rates have a 20-minute minimum charge.

Drivers using on-street parking to charge their vehicle do not have to pay a parking charge – just the cost levied by Source London.

Corporate membership is also available, so fleets can manage usage and payments centrally.

Pod Point

In addition to being a charging point designer and manufacturer, East London based Pod Point operates its own network. The 'Open Charge' public network of around 270 locations uses an app or mobile web page to activate charging, although drivers without an account can generally access 15 minutes of 'emergency power' without logging in.

These charging points are operated by a mix of hosts, from local authorities to businesses, supermarkets and shopping centres.

Like their owners, the payment structures vary, too. Many remain free, while others now levy a charge per kWh of power used, or time spent.

To make the process more understandable, the Pod Point app will show a 'range per hour' figure, estimating the distance the extra charge can allow the driver to cover.

On the horizon

In preparation for the introduction of 'zero emission capable' taxis in the capital in 2018, Transport for London is investing £18m in infrastructure to facilitate the rollout of 300 additional rapid charging points in and around the city by 2020.

These points will be funded, installed and operated by five companies and consortia, with strategic hubs at Shell sites and around airports under consideration.

One of the key points is that drivers can pay as they go using a contactless credit or debit card, in a similar way to travel on the London Underground, without having a special RFID card, smartphone app or membership of a specific scheme.

Meanwhile, the latest Renault Zoe range includes the 'ZE Pass' dashboard and phone app, which will allow payments and charging activations to be made centrally from the car, without use of individual apps or cards.

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Figures are obtained in a standardised test cycle using a combination of battery power and petrol fuel after the battery has been fully charged. They are intended for comparisons between vehicles and may not be representative of what a user achieves under usual driving conditions. The BMW iPerformance range is a selection of plug-in hybrid electric vehicles that require mains electricity for charging.

MAJOR RECHARGING PLAYER PRACTISES WHAT IT PREACHES

Chargemaster uses electric vehicles on its own fleet to prove to companies that plug-in cars make good business sense

By John Maslen

The company behind the country's biggest electric vehicle (EV) recharging network is using its fleet to prove the potential of zero-emission motoring in business.

Chargemaster is used by thousands of private owners, businesses and councils, with more than 50,000 customers across the UK and Europe. In the UK, it operates the Polar network, which has more than 5,000 recharging points.

It is also the official charging partner for most of the leading plug-in vehicle manufacturers, including BMW, Kia, Mercedes-Benz, Mitsubishi, Nissan, Renault and Toyota, along with a range of other fleet providers, such as leasing giant Alphabet.

For Chargemaster's founder and chief executive officer, David Martell, the company's own vehicle choice is a public vote of confidence in the future of electric vehicles within the fleet market.

He says: "We are showing customers through our vehicle choices that we are serious about the potential growth in the market. We are also giving them confidence that plug-in vehicles are a viable fleet choice."

Chargemaster operates a fleet of around 40 electric cars, including battery electric vehicles (BEV), range-extenders and plug-in hybrid electric vehicles (PHEVs).

They are used for everything from management cars to vehicles for sales staff and pool cars, with models including the BMW i3, Nissan Leaf, Mitsubishi Outlander, Renault Zoe, Vauxhall Ampera, Volkswagen e-Golf and Tesla Model S.

From its Luton headquarters, the company serves customers throughout the country, so different types of technology are allocated for different types of usage.

For example, drivers who cover higher mileages, such as sales staff, will receive a range-extenders or PHEV, while managers with lower mileages can operate BEVs.

This reflects the limited range BEVs can cover on a single charge, although Martell is keen to be an early-adopter as technology increases the distance they can travel.

Martell, who drives a Tesla, says: "It is interesting how the market is changing and we are not far away from saying we will move to BEVs rather than PHEVs.

"Cars such as the Nissan Leaf will develop significantly longer range, while the Tesla Model 3 also has a battery that will provide substantial range."

Martell suggests that a range of around 160-200 miles is the tipping point at which BEVs can become the sole fleet choice for most companies.

He adds: "My view is that, for sales guys and support teams, they need a genuine 160-mile range for it to make economic sense. For the sales team, we require range extenders or PHEVs, as the BEV range of around 110-miles is not quite there.

"You have to match the technology to the role. There is not a one-size-fits-all solution, but with a range of choice, a fleet can run a substantial number of plug-in cars."

For the first quarter of 2017, the UK was one of the leading markets for plug-in vehicles throughout Europe.

With sales of more than 12,000, it is ahead of key economies such as Germany and France, although demand still only accounts for less than 1.5% of the new car market.

For Martell, who previously launched telematics and congestion monitoring firm Trafficmaster, rising demand will generate more demand for Chargemaster's services and, in turn, lead to expansion in its fleet as more employees are required.

New staff members, who may not be familiar with electric vehicles, receive an induction that ensures they understand the different driving dynamics.

Martell says: "We provide an induction course when someone joins covering how to drive an EV and things like regenerative braking [a system that uses momentum from the car to recharge the battery when slowing down] and optimum speed. The difference between 60mph and 70mph is huge in terms of energy consumption.

"We also look to ensure they are comfortable with charging and running the vehicle."

Running a plug-in vehicle requires a change in mindset compared to operating a petrol or diesel model, but, with the right approach, it can easily fit into a busy business schedule.

James Jean-Louis, group commercial director for Chargemaster, who has day-to-day management control of the fleet, says: "With a car using an internal combustion engine, you would just set off in the morning without thinking what was in the fuel tank. With an electric vehicle, it requires an adjustment in the way you think.

"Drivers need to plug in the night before to ensure they are starting the day on a full battery. Your behaviour then changes on the road, as you think about opportunities to charge.

"You don't need to focus on keeping the battery fully charged during the day, you just need to top-up. So, you might charge during a break in your journey or during a meeting. Even an extra 20 miles charge makes a difference.

5,000
UK recharging points operated by Polar

£2
per 100 miles running costs compared to £14 for diesel or petrol

David Martell – proving the potential of EV motoring

Behavioural changes are needed when driving EVs with much more thought being given to recharging possibilities

"You just change your behaviour from 'fill-up' to 'top-up' and make sure you plan ahead, based on the charging infrastructure."

The most important element is assessing employee mileage requirements and ensuring the right vehicle is chosen for the job.

For example, if a staff member typically has a long journey to a particular area, but then several days with little mileage between customers or sites, a PHEV would be ideal.

Jean-Louis says: "The outward journey may require the internal combustion engine, but then once they arrive, they may be driving solely on electric power for several days.

"The key thing is putting the right person in the right vehicle for the work they are doing. There is just no point putting someone in a pure EV if they are doing 300 miles a day."

All drivers have a Polar access card, so they can charge when required and the experience has meant that some have started using electric vehicles for private motoring, including taking on ex-fleet cars.

Fleet funding is mixed, with some cars provided by manufacturers on short replacement cycles, while the majority are outright purchased. Defleet mileages can vary from a few thousand to more than 60,000, so there isn't a fixed replacement cycle.

Martell is confident in his decision to buy vehicles outright, including their batteries, because they have been problem-free.

The company's use of a wide-range of models over substantial mileage has shown that batteries are robust and reliable, with little degradation in range, while SMR costs for items such as brake pads are low, because regenerative braking systems mean there is little wear and tear.

Disposal routes include manufacturer returns, sales to staff or retailing to dealers and the public through online platforms.

Running costs are consistently about £2 per 100 miles, compared with around £14 for diesel or petrol.

> "Employees are often excited about the prospect of using new technology. Generally they love it, particularly the experience of instant acceleration"
>
> **James Jean-Louis, Chargemaster**

Jean-Louis says: "Employees are often excited about the prospect of using new technology. Generally they love it, particularly the experience of instant acceleration.

"As we travel the country meeting customers and servicing charge points, we provide a lot of advice about operating electric vehicles to other fleets."

This advice doesn't yet extend to commercial vehicles, as the 35-strong fleet of vans is currently diesel-only, but Martell is keen to introduce a switch to zero-emission capability when plug-in hybrid models become available.

He says: "There is not a PHEV van that is available, but as soon as there is we would move into one. You have EV vans that have an extended range, but currently that is not enough for our requirements.

"However, we are on the cusp of a move away from diesel."

The essential element in driving the next stage of fleet growth in the market will be a long-term commitment from the Government to supporting EVs.

Martell says: "We are going in the right direction, but it will require consistent policy towards the expansion of the physical network and the use of plug-in cars.

"We need at least five years' clarity from the Government. Benefit-in-kind tax still represents a significant benefit, but the policy needs to be very clear in the long-term to generate consistent demand."

Factfile

Organisation: Chargemaster
Headquarters: Luton
Chief executive officer: David Martell
Car fleet size: 40 (battery electric and plug-in hybrids)
Van fleet size: 35 (all diesel)
Funding methods: Outright purchase, manufacturer partnership
Brands on fleet: BMW, Mitsubishi, Nissan, Renault, Tesla, Vauxhall, Volkswagen,

FleetNews PORTFOLIO

WHAT WE DO IN YOUR INDUSTRY

Fleet News magazine

The leading business publication for the fleet sector, offering insight, analysis, best practice and in-depth profiles of fleets and suppliers every fortnight. But don't take our word for it: 96% of readers say *Fleet News* is the most useful fleet publication (*Fleet News* reader survey). Every issue is packed with information that helps companies to run efficient and effective fleets – and our readership of 16,000 is restricted to named decision-makers, running fleets of 10-plus vehicles.

Commercial Fleet magazine

***Commercial Fleet* offers insight into the world of light commercial vehicles and trucks to provide operators with detailed analysis on key topics such as operations, safety, remarketing and the environment. Case studies in every issue provide best practice advice to help you to improve your efficiency. The magazine is supported by the commercialfleet.org website and events.**

Driving Business magazine

This quarterly magazine is sent to managing directors and finance directors at 25,000 small to medium enterprises (SMEs) that are running fewer than 50 vehicles. Focusing on the key elements of running cars and vans, *Driving Business* provides practical advice to reduce cost and improve safety with a minimum of time and effort.

Websites and newsletters

The *Fleet News* website is an extensive library of best practice advice, fleet case studies, news and tools. Compare car and van running costs, check how much tax employees will pay and find out which models use the least fuel with our easy-to-use tools. We also send *Ignition, a* monthly newsletter which contains car reviews and interviews not included with our print magazine.

Fleet events

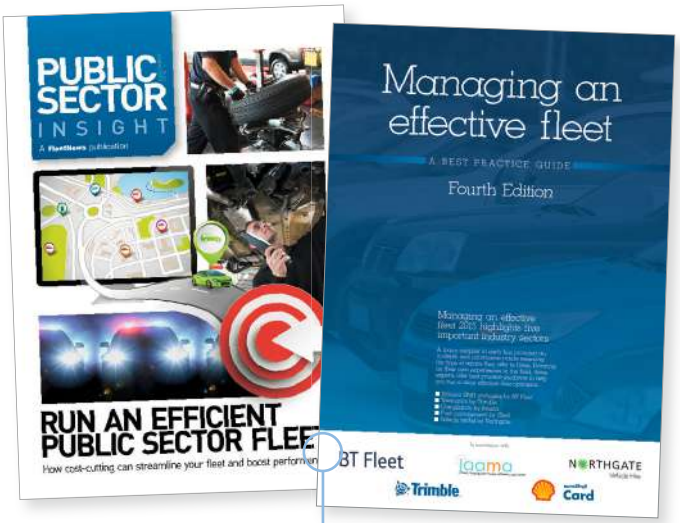
Fleet News events are the biggest and best in the sector. Our annual awards night attracts more than 1,500 people; the FN50 Dinner sees 950 leasing, manufacturer, rental and supplier companies networking and *Commercial Fleet* Summit provide insight into key areas of fleet operation; monthly roundtables enable 10-15 fleets to discuss issues and share solutions.

Fleet Leasing magazine

Fleet Leasing provides insight and analysis to board level executives, senior management and regional sales staff at contract hire and leasing companies. Its objective is to inform and educate about fleet trends, new models and technological developments, once a quarter, supported by a website regularly updated with the latest leasing news.

Bespoke publications

Magazines, supplements, brochures and digital products are produced for commercial partners. These bespoke publications inform fleets about companies and topics relevant to their business. They include manufacturer and supplier reports, in which *Fleet News* journalists interview key personnel to unearth the developments of interest to fleet operators.



Best practice guides

Special supplements that complement the magazine, our best practice guides look at areas that are core to fleet management or which are topical, such as electric vehicles. They provide you with the knowledge you need to make the right decisions. We also publish reports into the Fleet200, which analyse the UK's biggest fleets, and the FN50 contract hire and leasing sector.

VIEWS POLARISE ON EV RESIDUAL VALUES

Leasing companies take an optimistic approach for a competitive leasing rate but pricing guide forecasts are far more pessimistic

RVs for electric vehicles is a hot topic for lease companies, auction houses and price guide producers

By Tom Seymour

From the outset, electric vehicles have been hampered by uncertainty surrounding their residual values (RVs) which has resulted in pessimistic forecasts by the pricing guides.

This lack of clarity has been due to a number of factors, such as questions over demand in the used market due to unfamiliarity with the technology, the restricted charging infrastructure and a lack of used EVs to provide solid re-sell data.

In 2014, ALD Automotive managing director Mel Dawson said that future RVs of electric vehicles was "one of the biggest issues" facing leasing companies. He put this down to lack of certainty about Government strategy long term, worries over used car market acceptance in three to four years' time and developments around the technology.

The feeling was that if these factors led to low residual values, then an EV's appeal to a fleet would be reduced. Those who bought outright would have a vehicle worth substantially less than its petrol or diesel counterpart at defleet time, while a lower RV would also have a negative impact on leasing rates.

Time and investment has provided reassurance in some of these areas.

However, according to Andrew Mee, senior forecasting editor at Cap HPI, for most buyers "a used EV will still be seen as expensive and potentially difficult to use until the UK charging infrastructure is improved".

The company says that out of the pure EV and plug-in hybrid technologies, the latter are currently the preferred electric powertrain among used car buyers because of their perceived fuel economy and lack of range anxiety.

8,500
number of plug-ins at Lex Autolease

18%
of Total Motion's risk fleet are plug-ins

Glass's agrees. It predicts that hybrids will remain as the main EV choice for at least two years while manufacturers develop the next generation of pure electric vehicles with greater range.

However, despite this preferential view of hybrids, their RVs continue to trail those of petrol and diesel alternatives.

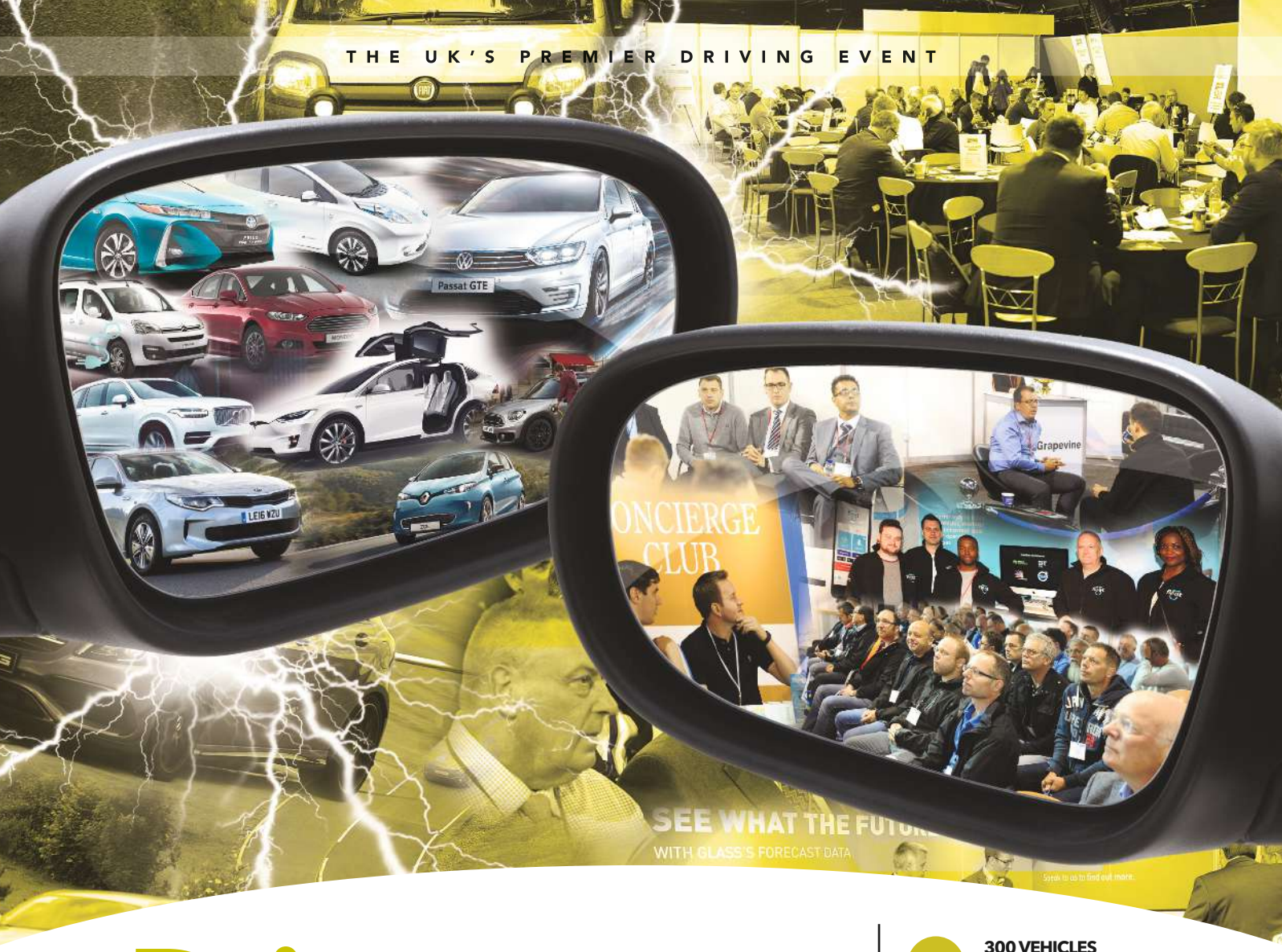
Year-on-year comparison of Cap HPI's Black Book values for the same model at the same age and mileage over the past five years shows values have fallen an average of 5.4% for hybrids, compared to 3.7% for petrol and 3.8% for diesel.

Mee says: "This higher deflation of hybrid values shows no signs of improving, as over the past year it has averaged -7.3% for hybrids, compared to -4.2% for petrol and -5.2% for diesel."

Rupert Pontin, Glass's director of valuations, says that, although values for plug-in vehicles have been lower than that of other propulsion types, press coverage and improved products are helping to bring about change.

However, one threat to improved RVs, he says, is how quickly technology in the EV sector is advancing.

For example, "a pure EV with a 120-mile range coming to the used market at three years old will find itself battling with newer cars with far greater ranges and therefore more



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relevance as an everyday used car", adds Pontin.

"At the moment this causes concern for all contract hire and leasing companies that take these units on risk on behalf of their customers."

However, while there may be concerns, a grwing number of leasing companies are committed to EVs. Lex Autolease, Alphabet and Total Motion are among those most heavily invested in plug-in vehicles.

Lex Autolease leads the market with more than 8,500 plug-in vehicles, Alphabet has a pure EV fleet of 889 while Total Motion has more than 1,000.

Simon Hill, managing director of Total Motion, says RVs on EV and hybrids are not stacking up as well as they should be.

"The result of that poor RV is a higher lease rate," he says. "However, we're very bold with setting our own RVs. We look at the guides, but I would say we're probably up to as much as 20% higher than Cap HPI on some models.

"This means we can set our lease rates at a competitive level as a consequence."

David Bushnell, Alphabet product manager mobility, says his company takes a "very optimistic view" on EV RVs and said they have been performing as expected.

He says Alphabet's remarketing team are not reporting "horror stories" on defleeted EVs.

Bushnell adds: "We're expecting a positive impact on RVs for EVs over the next 12 months due to what is happening around diesel and changes to VED on pure EV. This will only help to boost demand from fleets further."

Chris Chandler, Lex Autolease principal consultant, says his RV stance isn't as "rock bottom" as the guides. "We do still have to exercise caution. Our RVs are quite close between plug-in hybrids and the equivalent diesel," he says.

"It really does depend on the vehicle and the brand. If we were way out of step with the guides, we would, of course, have a look at that."

Chandler says more awareness of plug-in vehicles in the used market and "not so many scare stories" would help improve RVs.

"We're seeing that the battery will outlast the vehicle by twice as long"

Karl Anders, Nissan GB

One of these 'scare stories' concerned the reliability of vehicle batteries, but these have proved unfounded.

Lex Autolease, Alphabet and Total Motion have experienced no battery failures among the vehicles on their risk fleets, while C&C Taxis, a 100% pure EV fleet based in Cornwall, recently retired its second generation Leaf after 174,000 miles.

It saw battery capacity remain at 70% after four years of use and almost 11,000 recharges.

Karl Anders, Nissan GB national EV and public sector manager, says Nissan is seeing between 70% and almost 100% battery ranges remaining on three- and four-year-old Leafs returning to the used market. His view was mirrored by the three leasing companies.

"The technology is defying what people original thought about these vehicles and what we're seeing is that the battery will outlast the vehicle by twice as long," says Anders.

This level of performance can only be positive news for used buyers and EV RVs in the future, adds Mark Jowsey, director of Kee Resources.

Cap HPI says careful control over how EVs go to the used market can also help protect values.

"Keeping them within dealer networks who can identify potential purchasers has proved useful for several brands. Conversely, EVs being sold in auctions can achieve lower values," says Mee.

Anders accused the price guides of being "overly pessimistic" with their forecasts.

He says: "Guides using pricing data from auctions is misleading because the amount of Leaf volume going through that channel is minimal. The franchised dealer network is retailing these ex-lease vehicles through retail used PCPs."

Jowsey adds that visibility on RVs can be lost when cars are sold at retail and the majority of data that informs pricing is compiled from contract hire and auctions.

He says it may well be fair that the guides need the retail data in order to rethink the RV position, but Nissan's remarketing team needs to share this data.

Anders adds Nissan is looking to continue to invest in educating the price guides.

ELECTRIC VEHICLE EXAMPLE RESIDUAL VALUES

	Model	P11D value (£)	Plug-in car grant (£)	Capital cost (£)	Residual value (£)	RV (%)
Full electric	BMW i3 170 Lodge Professional Media eDrive	35,475	4,500	30,975	12,050	34%
	Nissan Leaf Acenta 30kW	31,385	4,500	26,885	6,800	22%
	Renault Zoe Dynamique Nav 41kWh	28,965	4,500	24,465	6,525	23%
	Tesla Model S Executive Edition Auto	84,680	-	84,680	30,625	36%
	Volkswagen e-Golf	32,135	4,500	27,635	10,500	33%
Plug-in hybrids	BMW 330e SE Professional Media	35,320	2,500	32,820	14,650	41%
	Mercedes-Benz C350e Sport	39,500	2,500	37,000	15,925	40%
	Mitsubishi Outlander PHEV 2.0h	40,999	2,500	38,499	15,100	37%
	Volkswagen Passat GTE	36,960	2,500	34,460	11,175	30%
	Volvo V60 2.4D5 SE Nav	38,650	2,500	36,150	16,225	42%
Mild hybrid	Ford Mondeo 2.0HEV Titanium X Pack	29,870	-	29,870	5,800	19%
	Hyundai Ioniq 1.6h-Gdi	20,440	-	20,440	7,950	39%
	Mercedes-Benz C300 2.1h SE Executive Edition	37,965	-	37,965	9,225	24%
	Toyota Prius 1.8VVT-h Business Edition	24,945	-	24,945	9,500	38%
	Toyota Prius+ 1.8VVT-h Icon Snav	28,245	-	28,245	8,325	29%

Source: KeeResources

Replacement cycles are 36 months/30,000 miles for pure electric and plug-in hybrids; 48 months/80,000 miles for mild hybrids

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DRIVING INTELLIGENCE

PLUG-IN CARS COMING SOON

We take a look at some of the plug-in hybrids and pure electric vehicles expected in the near future

Kia Niro PHEV

Available Late-2017
Price £30,000 (estimated)
Power 141PS
CO_2 <30g/km (estimated)

The Kia Niro was launched in the UK last summer and offers an affordable petrol-electric hybrid model in a crossover body. It will share its powertrain with the Hyundai Ioniq Plug-in, and should also offer attractively low CO_2 emissions. It will be Kia's second plug-in model in the UK, joining the Optima PHEV launched in 2016.

Tesla Model 3

Available Late-2018
Price £40,000 (estimated)
Power 200PS (estimated)
CO_2 0g/km

Hundreds of thousands of deposits were taken for the Tesla Model 3 a year before any prototypes surfaced, such is the way the technology company has changed the automotive EV landscape. Tesla has made EVs genuinely exciting and its cars feel like premium products (with premium pricing), but the Model 3 is intended to be 'affordable', should seat five adults, achieve more than 200 miles on a single charge and still offer plenty of performance with a 0-60mph acceleration time expected to be around six seconds. The waiting time to buy one will be considerably longer.

Hyundai Ioniq Plug-in

Available July 2017
Price £30,000 (estimated)
Power 141PS
CO_2 26g/km

Combining a 104PS 1.6-litre petrol engine with a 60PS electric motor, the Ioniq Plug-in will offer an alternative to the Toyota Prius Plug-in when it arrives this summer. Few details have been made available at the time of writing, but we expect the car to undercut the Toyota, as the non-plug-in Ioniq does with the standard Prius. It offers CO_2 emissions of 26g/km – slightly higher than the Prius – and can be driven for up to 39 miles on a fully-charged battery.

DS 7 Crossback Plug-in Hybrid

Available 2019
Price £45,000 (estimated)
Power 280PS (estimated)
CO_2 40g/km (estimated)

Peugeot, Citroën and DS Automobiles are all readying plug-in hybrid technology for launch in the next few years, and the DS 7 Crossback, a medium-sized SUV, will probably be the most sophisticated vehicle we see this technology in. Standard powertrain versions of this car are set for launch later this year, but these will be front-wheel drive. Only with the introduction of the hybrid version a year or so after the DS 7 Crossback launch, will customers be able to choose a four-wheel drive variant.

Smart Fortwo Electric

Available Autumn 2017
Price £21,500
Power 81PS
CO_2 0g/km

This will be the third electric Smart Fortwo on UK roads, although it perhaps doesn't push the boundaries of what's possible with electric vehicle technology as much as it should. A maximum range of just under 100 miles is nothing special, but no other car is as compact as the Fortwo, and perhaps as well-suited to the cut and thrust of urban driving.

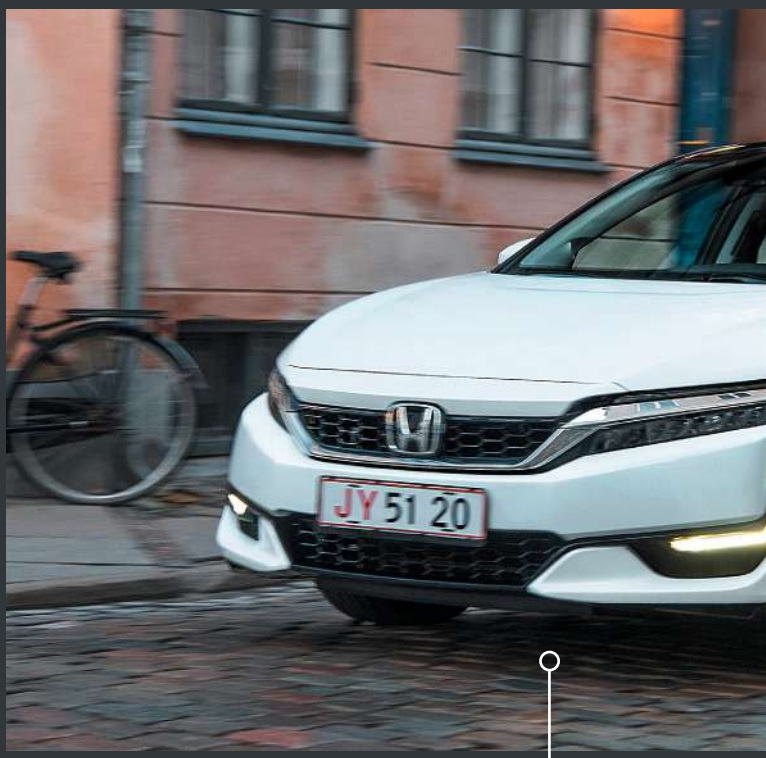
Smart Forfour Electric

Available Autumn 2017
Price £22,000
Power 81PS
CO_2 0g/km

The first time Smart has offered a four-seat electric vehicle, the Forfor Electric is expected to be more popular than its two-seater sibling. With a maximum range of 96 miles, it won't travel quite as far as a Volkswagen E-Up on a single charge, and customers might want to wait for rapid charger-compatible versions that will be introduced in 2018, rather than the earlier models available from launch.

Electric vehicles available now

	P11D price from (£)	Battery range	CO_2 (g/km)
Battery electric			
BMW i3	33,015	125	0
Citroën C-Zero	20,440	93	0
Ford Focus Electric	31,625	100	0
Hyundai Ioniq electric	29,440	174	0
Kia Soul EV	30,440	132	0
Mercedes Benz B250 e	33,235	124	0
Nissan e-NV200 Combi	28,252	106	0
Nissan Leaf 24kwh	26,125	124	0
Nissan Leaf 30kwh	30,235	155	0
Peugeot Ion	20,440	93	0
Renault Zoe 22kW	24,290	149	0
Renault Zoe ZE40	28,215	250	0
Tesla Model S	68,330	253	0
Tesla Model X	71,380	259	0
Volkswagen e-Golf	32,135	118	0
Volkswagen e-up	25,225	93	0
Plug-in hybrid/range extenders			
Audi A3 e-tron	35,875	31	38
Audi Q7 e-tron	65,945	31	48
BMW 225xe Active Tourer	33,130	25	46
BMW 330e	34,420	25	44
BMW 530e	43,930	29	46
BMW 740Le	70,085	29	49
BMW i3 Range extender	36,165	190	12
BMW i8	106,255	23	49
BMW X5 xDrive40e	55,665	29	77
Kia Optima plug-in hybrid	33,940	33	37
Mercedes-Benz C350 e	39,500	19	48
Mercedes-Benz E350 e	45,455	19	49
Mercedes-Benz GLE 500 e	66,485	19	84
Mercedes-Benz S500 e	91,610	20	65
Mitsubishi Outlander PHEV	34,749	31	41
Toyota Prius Plug-in	31,640	39	22
Volkswagen Golf GTE	30,580	31	38
Volkswagen Passat GTE	36,960	31	40
Volvo V60 Twin Engine	38,650	30	48
Volvo XC90 T8 Hybrid	61,650	25	49
Hydrogen fuel cell			
Toyota Mirai	66,000	342	0
Mild hybrid			
Ford Mondeo Hybrid	27,870	n/a	92
Hyundai Ioniq hybrid	20,440	n/a	79
Infiniti Q50 3.5h hybrid	41,260	n/a	144
Infiniti Q70 3.5h hybrid	43,410	n/a	145
Kia Niro hybrid	21,490	n/a	88
Lexus CT 200h	22,440	n/a	94
Lexus NX 300h	30,940	n/a	116
Lexus GS 300h	35,940	n/a	104
Lexus GS 450h	52,805	n/a	141
Lexus IS 300h	29,940	n/a	97
Lexus LS 600h	99,450	n/a	199
Lexus RC 300h	39,940	n/a	116
Lexus RX 450h	48,440	n/a	120
Mercedes-Benz C300 hybrid	36,595	n/a	94
Mercedes-Benz S300L hybrid	75,695	n/a	120
Toyota Auris Hybrid	20,840	n/a	79
Toyota CH-R	23,540	n/a	86
Toyota Prius	24,045	n/a	70
Toyota Prius+	27,495	n/a	96
Toyota Rav4	33,070	n/a	118
Toyota Yaris	16,125	n/a	75
Vans			
Nissan e-NV200	27,160	106	0
Renault Kangoo ZE	21,813	107	0
Peugeot Partner Electric SE	25,560	106	0
Citroën Berlingo Electric	25,560	106	0
Mitsubishi Outlander Commercial PHEV	30,103	32	42



Honda Clarity Fuel Cell

Available Late-2017
Price TBC
Power 177PS
CO_2 0g/km

Honda has been a pioneer in the development of hydrogen fuel cell technology, but it has taken until 2017 for it to launch one in the UK. Honda expects extremely low volume for the UK, partly because of the lack of a refuelling infrastructure. However, with 177PS and instantaneous torque from its electric motor, as well as no harmful exhaust emissions, it should have appeal for organisations set up to run hydrogen-fuelled vehicles. But it also heralds future Honda vehicles that will offer multiple zero or ultra-low CO_2 emissions on the same platform.

Audi A6 e-tron

Available 2018
Price £45,000 (estimated)
Power 250PS (estimated)
CO_2 45g/km (estimated)

We haven't seen or heard much of the next-generation Audi A6 yet, other than the fact that it's destined to follow around a year after the introduction of the current BMW 5 Series, one of its biggest rivals. Both the 5 Series and the A6's other big rival, the Mercedes-Benz E-Class, offer plug-in hybrid versions, so we expect Audi to extend the roll-out of its e-tron electrified technology to the new A6 range soon after the new model's introduction.

Volvo XC60 T8 Twin Engine

Available 2018
Price £55,000 (estimated)
Power 410PS
CO_2 <45g/km

Volvo's new XC60 was seen for the first time at the 2017 Geneva motor show, and was shown with the T8 plug-in hybrid powertrain also available on other large Volvo models. It will have performance that takes the XC60 into the top money for this segment – we expect around £55,000 – as the combination of the car's turbocharged 2.0-litre four-cylinder petrol engine, plus powerful electric motor results in a 0-62mph time of less than 5.5 seconds.

Audi A8 e-tron

Available Late-2017
Price £75,000 (estimated)
Power 400PS (estimated)
CO_2 49g/km (estimated)

Audi plans to unveil its latest A8 model this summer, and with the Mercedes-Benz S-Class and BMW 7 Series providing ultra-low CO_2 rivals with plug-in hybrid variants, we expect Audi to launch a model that competes. We expect Audi to be targeting around 400PS with CO_2 emissions below 50g/km for this model, with a plug-in charge range of around 30 miles.

Jaguar I-Pace

Available Late-2018
Price £60,000 (estimated)
Power 400PS
CO_2 0g/km

It might look more compact than other large SUVs, but it's a trick that has been enabled by adopting a fully electric powertrain for the new Jaguar I-Pace. It's shorter than an F-Pace, but the I-Pace is roomier inside. Although we haven't seen a production version yet, as the car's launch is still more than a year away, Jaguar is talking of a 300-plus miles range on a full charge, and lively performance from its 400PS electric motor, with 0-62mph achieved in around four seconds.

SPONSOR'S COMMENT

By Chris Chandler, principal consultant

The increasing focus on vehicle emissions, vehicle connectivity, automation and plug-in vehicle technologies is making fleet management ever more complex.

Despite making the fleet operator's job more challenging, it also provides an opportunity for leasing and fleet management companies to add value by providing guidance and technical assistance.

This can support fleet operators in selecting the right technologies for the right applications and ensuring their fleet and fuel policies are in good shape to receive these electric vehicles.

We are at an exciting point where plug-in and zero-emission vehicles are now becoming a viable option, both operationally and from a cost-saving perspective.

The past two years has seen a significant increase in the number of fleet operators adopting plug-in technology. What's more, across the industry, people are preparing for a future of ultra-low emission vehicles (ULEVs).

Great progress has been made to date and, in fact, Lex Autolease now has in excess of 8,500 plug-in vehicles on its fleet, and this is growing all the time. Our plug-in vehicle proposition aims to assist customers in understanding both the challenges and the benefits of the new technology. We are focused on supporting customers deciding what technology is fit for their use now, and in the future.

Some guidance points for the successful adoption of plug-in vehicles:

- Understand the vehicle drive cycles and look at which fuels/technologies best suit your actual requirements
- Look for the 'sweet spots'. Plug-in hybrids or pure electric vehicles may not be suitable for all drivers but there are nearly always some applications where these new technologies will be suitable
- We suggest having a five-year plan to assess how and when you move to ULEVs – early adopter or follow the market?

Our Driving Technology report is available now, providing information to support your decision-making concerning electric vehicles. To find out more, visit:

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