

Time to make the switch?

A REVIEW OF THE
PLUG-IN LIGHT
COMMERCIAL
VEHICLE MARKET.

Venson fleet management solutions

Company vehicles are an important asset for supporting core business operations and that's why our fleet management solutions are created in response to our clients' needs and are based on our commitment to long term partnership and exceptional customer service.

Testimony to this is our customer retention rate of over 95%. Along with exceptional service we ensure our clients receive great value from their fleet, by delivering solutions that are based on impartial advice and that provide tangible financial return. We can do this because we've only ever specialised in fleet services, so our knowledge and in-depth understanding of the market is the best in this sector and relevant to public, private, not for profit and emergency service organisations. We also believe in true partnership, working with fleet operators and their drivers to ensure they always receive the most appropriate solution to support their organisation's operational and financial needs.

venson

Executive SUMMARY

The plug-in light commercial vehicle market is in its infancy, but over the coming months an increasing array of 100% electric and plug-in hybrid models from mainstream manufacturers are due for launch.

Currently only Citroen/Peugeot, Iveco, Mitsubishi, Nissan and Renault among mainstream manufacturers have plug-in vans on sale.

But later this year and in 2018 Renault will introduce a second zero emission model and new entrants will come from LDV, Mercedes-Benz and Volkswagen. Additionally, van market leader Ford will launch a Transit Custom plug-in hybrid fleet trial this year that is set to herald the showroom arrival of the vehicle in 2019.

This year, registrations of plug-in vans account for less than 0.3% of new van sales and compared to the demand for plug-in cars - more than 22,400 plug-in models were registered between January and June 2017, a rise of 14.3% on 2016 and 53.8% up on the same period in 2015 - the market has yet to take-off.

But, while weaning fleets and businesses off diesel vans - more than 96% of commercial vehicles on the road are diesel - will be a challenge, supporters say that plug-in vans are viable for many operators, particularly in urban areas.

So-called 'last mile' delivery fleets, city centre courier companies, local authorities, utility companies, SMEs and

sole traders are among those organisations who experts believe should turn to plug-in vans - and some already have.

What's more the expected April 2019 introduction of London's Ultra-Low Emission Zone and the potential implementation of Clean Air Zones in many towns and cities across Britain should spark further demand for electric vans.

What is clear is that the government's ambition is for all new vans and cars to be zero emission by 2040 with the transformation to a wholly electric van and car parc expected to be completed by 2050.

Latest data from Go Ultra Low - the joint government and motor industry campaign to encourage corporate and private demand for plug-in vehicles - reveals there are now more than 100,000 electric cars on the UK's roads with the organisation claiming that "awareness and appetite" for those models is growing.

While, the van market has a long way to go to achieve such registrations, Venson Automotive Solutions believes that fleet managers should consider whether plug-in light commercial vehicles have a home within their operations.





Electric Vans

currently on UK sale from mainstream vehicle manufacturers

Citroen Berlingo Electric and Peugeot Partner Electric:

Sister models from the French brands the two models deliver a range of 106 miles, a top speed of 70mph and maintenance costs claimed to be 30-40% lower than diesel models in the respective line-ups. A household 240-volt socket allows a 100% recharge in approximately 10 hours, while a quick charging socket enables a full recharge in 30 minutes on dedicated terminals. Available in two different lengths, L1 (3.3 m³) and L2 (up to 3.7 m³), payload is 636kgs and 552kgs respectively. The plug-in van grant is applicable to both vehicles.

Iveco Daily Electric: The van is the largest electric vehicle available on the market with a gross vehicle weight up to 5.0 tonnes and up to 19.6 m³ cargo volume. Offering an extended “real driving condition” mileage range of up to 150 miles when operating with a three-battery configuration - derivatives are also available with one or two batteries - ‘fast’ charging takes two hours, public/private charging 10 hours and domestic charging 24 hours. However, the greater the number of batteries the lower the payload - down from 1,100kgs to 800kgs. Available as a single or twin wheel van with power ranging from 60-80kW, the range of derivatives available comprises panel van, chassis cab, chassis-cowl and minibus, with gross vehicle weights from

3.5 and wheelbase lengths from 3,000 to 4,100 mm. Drivers can choose between two driving modes: Eco and Power. In Eco mode, the engine torque is moderated to minimise energy consumption, without imposing any limits to maximum speed. In Power mode, the driver can enjoy the full performance of the electric drive motor. The plug-in van grant is applicable to the vehicle - it is currently the only van on sale eligible for the higher grant (see page 5) - with Iveco’s application currently in the approval process (the van is currently not included on the list of eligible vehicles published by the government).

Mitsubishi Outlander Plug-in Hybrid 4Work: The van is the only plug-in hybrid currently on the market and is at its most efficient and environmentally-friendly in urban areas due to its electric range of up to 32 miles, but for longer journeys or on occasions when a rapid charger isn’t available there’s the backup of a 2.0-litre petrol engine which helps give the vehicle a total maximum range of 541 miles. The van, available in two trim levels, offers a load volume of 1,603 litres (measurement up to roof) and a payload of 495kg. The vehicle officially offers combined cycle fuel economy of 156mpg and CO₂ emissions of 42g/km. The model is plug-in van grant eligible.

Nissan e-NV200: Providing a zero-emission light commercial vehicle solution to businesses, the van has a range of up to 106 miles on a single charge with Nissan promising an average running cost of 2p per mile. The van, available in five trim levels, has 4.2m³ of load space and a payload of 703kgs. The e-NV200 was Europe's best-selling electric van in 2016, where the UK is its largest market ahead of Norway and France. It was announced in spring 2017 that London's iconic Harrods store had added the e-NV200 to its delivery fleet. At the time the company said: "As one of Britain's largest established department stores, we are committed to reducing our carbon emissions and mitigating our environmental footprint. As part of our carbon and energy management policy, we have identified transportation as a key area where we can make a real impact." The vehicle is plug-in van grant eligible.



Renault Kangoo Z.E: The Kangoo Z.E. has been on UK sale since 2011 and now an updated version will go on sale in time for the September 2017 registration plate change delivering a range of up to 168 mile range (NEDC) - up more than 60% over the outgoing model (106 miles) and, claims Renault, the longest of any electric LCV. The new Kangoo Van Z.E. also allows for faster charging times with a new 7kW 32A charger making it more practical for business users, according to the marque, with a full charge now taking six hours. The van is also the first electric LCV to be equipped with a heat pump, allowing it to maintain autonomy in cold weather. New Kangoo Van Z.E. has gained a new Z.E.33 (33kWh) battery, a new R60 (44kW) motor and offer a payload of 650kgs and load capacity of up to 4.6m³. UK prices and further specification details will be announced shortly. Renault offers the option of businesses being able to rent or buy the battery on the Kangoo, and a similar arrangement will be available on the all-new Master Z.E. (see below). The vehicle is plug-in van grant eligible.



Vehicles eligible for plug-in vans grants are listed at <https://www.gov.uk/plug-in-car-van-grants/what-youll-get>. The Mercedes-Benz Vito E-Cell is not on UK sale.



Model	Range (miles)	Payload (kgs)
Citroen Berlingo/Peugeot Partner	106	636 & 552
Iveco Daily Electric	150	1100-800
Mitsubishi Outlander Hybrid	541	495
Nissan e-NV200	106	703
Renault Kangoo Z.E	168	650
LDV EV80	127	950-900
Renault Master Z.E	124	1100
Volkswagen e-Crafter	129 (concept vehicle)	1.7t (concept vehicle)



What's coming *from mainstream vehicle manufacturers*

Ford: Britain's best-selling van manufacturer is Ford and it will begin fleet trials of its Transit Custom plug-in hybrid van in London in the autumn.

Five fleets - Transport for London, the Metropolitan Police, Clancy Plant, Addison Lee and British Gas - have been selected in the first wave of participants in the trial.

The test phase is designed to explore how plug-in vans could contribute to air quality improvements, while boosting commercial productivity in a major city - the toughest working environment for commercial vehicles.

The van will be powered by an electric battery mated to a petrol engine and while no powertrain details have been announced yet, Ford says it is aiming for a pure electric range of 31 miles depending on driving style, load volume and other factors.

The 20-vehicle, 12-month trial will see the Transit plug-in hybrid vans run on electric power for the majority of inner-city trips. However, the vans are equipped with 'range extenders' meaning journeys are not limited by battery range, making them capable for longer trips that may be required by businesses and 'blue light' services.

The five fleets will integrate the vans into their day-to-day operations and, using Ford telematics, will collect data on the vehicles' financial, operational and environmental performance

to help understand how the benefits of electric vehicles can be maximised.

Andy Barrett, chairman and managing director, Ford of Britain, said: "Working directly with fleets is vital in delivering an electrified commercial vehicle that adds value to the many different businesses going in and out of our cities every day."

Mark Harvey, director of Ford's urban electrified van programme, said:

“ Commercial vehicle use is incredibly varied from sector-to-sector, and the trial should allow us some really interesting insight into how commercial vehicles are used across a range of industries in the city, allowing us, as a manufacturer, to better develop electrified commercial vehicles that work for customers, whilst also improving air quality. ”

The Transit Custom plug-in hybrid van is planned for commercial introduction in 2019.

Ford in Germany has entered into a partnership with Deutsche Post subsidiary StreetScooter to manufacture electric delivery vehicles. Deutsche Post has already left its mark in the smaller van segment by designing and producing the emission-free StreetScooter, now both partners are working on a larger

vehicle type. The chassis of the Ford Transit provides the technical basis. It will be equipped with a battery-electric drive train and fitted with a special body construction based on fleet operating requirements. Vehicle production started in summer 2017 and before the end of 2018, at least 2,500 vehicles will support the urban delivery traffic of Deutsche Post DHL Group. With that volume, the joint project will become the largest manufacturer of battery-electric medium-duty delivery vehicles in Europe. The left-hand drive vehicles are not destined for the UK, but a Ford spokeswoman did not rule out leveraging the partnership to provide electric vans for the British market.

LDV EV80 (Electric Van): LDV will enter the UK electric van market in the first quarter of 2018 with the launch of the EV80 (Electric Van).

The vehicle, which will be available as a 3.5-tonne panel van and chassis cab, will offer a 127-mile range. The payload is 950kgs (chassis cab 900kgs) and panel van load volume is 10.2 m³. LDV says battery recharge to full capacity takes 60 minutes. The plug-in grant will apply, with the application in the final stages of approval.

Mercedes-Benz: The German marque is expected to start production of an all-new electric van, potentially based on the Sprinter, in 2018.

The brand signalled its intent at the 2016 IAA Commercial Vehicle Show in Hanover and earlier this year announced that it would produce 1,500 all-electric vans for Germany's largest independent logistics firm, Hermes. The electric fleet will comprise electric version of the Mercedes-Benz Vito and Sprinter.

Hermes will receive the first all-electric vans in early 2018 for a pilot phase in Stuttgart and Hamburg. The focus of the trial will be on the economy, sustainability and practicality of emission-free delivery vans when used for the 'last mile'.

Logistics firms are increasingly finding it economical to convert their fleets to electric vehicles, especially for urban routes and so-called 'last-mile' deliveries.

Over a two-year period, the two companies will expand the partnership to 1,500 electric vans, making it one of the biggest all-electric fleets in operation in Europe.

Volker Mornhinweg, head of Mercedes-Benz Vans, said:

“Electric drive is a key technology for urban transport - especially in commercial use. Last-mile deliveries must become more efficient and - in specific applications - emission-free.”

Mercedes-Benz Vans UK declined to discuss its plans for the domestic electric van market.

Renault Master Z.E.: Due to go on UK sale in December 2017/January 2018 following its world debut at this year's Brussels Motor Show, arrival of the electric Master will make Renault the only mainstream van manufacturer with two zero emission vans in showrooms.

The French marque says the Master Z.E. has been created to primarily satisfy last-mile urban distribution and municipal needs.

The large panel van will be available in four versions - three body lengths (L1, L2 and L3) and two heights (H1 and H2) - including as an L3 flatbed cab. Payload as a panel van will be up to 1,100kgs and 1,400kgs as a flatbed including the body.

The van will be equipped with a Z.E.33 (33kWh) battery mated to the R75 (57kW) motor enabling a range of 124 miles (NEDC). A full charge from a 7kW wall box will take six hours. UK pricing and further specification details will be announced in the autumn.

Volkswagen e-Crafter: The all-new Volkswagen Crafter went on UK sale early in 2017 and an electric version of the van may be in showrooms in late 2018.

Volkswagen anticipates that a "testing phase" with left-hand drive versions of the van on trial with UK fleets will start in late 2017 and, assuming "strong interest" then the vehicle could potentially enter showrooms towards the end of next year.

The concept van has a range of 129 miles and the capability of carrying loads up to 1.7 tonnes. Batteries can be charged up to 80% in 45 minutes.

However, the manufacturer says that the e-Crafter's design already takes into account future battery developments with which, depending on customer requirements and specification, make a range of almost 260 miles possible on a single charge.



Among major van manufacturers, Vauxhall is the only one without an electric vehicle on sale or in the pipeline. A company spokesman said: "Demand from our customers is overwhelmingly for diesel commercial vehicles." However, there is industry speculation that following the manufacturer's acquisition by PSA, the owner of Citroen and Peugeot, that could rapidly change as both French marques have zero emission vans on sale in the UK. The spokesman declined to comment on Vauxhall's future product portfolio.

GOVERNMENT BACKS ELECTRIC VANS

with plug-in grant support

The government is backing fleets acquiring electric light commercial vehicles with a plug-in grant to help offset the additional purchase price over that of petrol and diesel models.

A grant of up to 20% of the cost of a vehicle, up to a maximum of £8,000 has been available to small commercial vehicles of up to 3.5 tonnes since 2012.

The government has said that the plug-in van grant will be maintained at the current rate until March 2018 or until 5,000 vans have been ordered, whichever comes first.

However, the government admits that sales of new electric vans “have remained limited” so in a bid to further boost demand it committed an additional £4 million to the scheme in October 2016, extending eligibility to larger models.

As a result, electric commercial vehicles about 3.5 tonnes now qualify for plug-in grants of 20% off the list price up to a maximum of £20,000. The government has said that once 200 grants have been made to N2 vans (3.5-12 tonnes gross vehicle weight) and N3 vans (over 12 tonnes gross vehicle weight), plug-in grant level will fall in line with current grant levels for light electric vans - 20% off the price, up to a maximum of £8,000.

The number of higher plug-in grants available is restricted to a maximum of 10 per business.

When the plug-in van grant was extended to larger vehicles, the government said that only around 2,500 grants had been claimed since the scheme began in 2012.

But the government believes that electric vans have a critical role to play in delivering air quality benefits in urban areas, particularly as presently more than 96% of commercial vehicles are diesel.

When launching the expanding plug-in van grant scheme, Business Energy and Industrial Strategy Secretary Greg Clark said: “The electric car revolution is well underway with consumers and this funding will encourage more businesses to consider switching to cleaner vans and trucks.”

Furthermore, the Office for Low Emission vehicles, a joint unit of the Department for Business Energy and Industrial Strategy and the Department for Transport, believes extending the scheme



will stimulate demand for more electric vans and trucks, and consequently encourage new entrants into the electric van market.

However, that is yet to happen and currently there is just one plug-in van on the market that qualifies for the higher plug-in grant, that's above 3.5 tonnes and from a mainstream manufacturer - the Iveco Daily Electric. The manufacturer's application for acceptance into the plug-in van grant scheme is currently being processed.

The plug-in van grant is available for both plug-in hybrid and 100% electric vehicles. To be eligible for the grant, vans must have tailpipe emissions of 75g/km of CO₂ or less, and achieve a zero-emission range of 10 miles for plug-in hybrid vans and 60 miles for fully electric vans.

To deliver confidence to fleets operating electric vans, the rules for vans qualifying for plug-in grants include being backed by a three-year or 60,000 miles vehicle warranty and a three-year battery and electric drive train warranty, with the option of extending the battery warranty for an extra two years. 'Drive train' means the parts that send power from the engine to the wheels and include the clutch, transmission (gear box), drive shafts, U-joints and differential.

Additionally, the rules specifically state that vans must have either a minimum five-year warranty on the battery and electric drive train as standard or extra evidence of battery performance to show reasonable performance after three years of use.

A total of 3,684 plug-in vans have been registered with plug-in grant support since the initiative was introduced in 2012 (figure is up to June 30, 2017), according to data from the Society of Motor Manufacturers and Traders (SMMT).

In the first six months of 2017, 551 models were registered - accounting for 0.29% of light commercial vehicle registrations - compared with 494 vans in the first six months of 2016. To date no plug-in vans above 3.5 have benefited from extended grant support.

Poppy Welch, head of Go Ultra Low, said:

“ Finding the right use for the right vehicle is key in all fleet operations, and that is no different with plug-in vans. Simply put, electric and plug-in hybrid vans can save businesses money. Hundreds of thousands of operators run small and medium-sized vans as back-to-base or short-haul vehicles, a duty-cycle perfectly suited to pure-electric vans, including the Nissan e-NV200 and Renault Kangoo Van Z.E.

It is important that fleet managers look beyond the initial list price of the vehicle. Plug-in vans benefit from government grants, significant tax incentives, as well as cheaper fuel costs, all of which help to reduce the total cost of ownership. Many businesses are well on the road to low-cost motoring, taking significant numbers of electric vehicles onto their fleets. Our Go Ultra Low Companies are perfect examples of how to make electric vehicles work, while laying the foundations for a massive technology step-change in the future. ”

Go Ultra Low Companies are employers that have already adopted electric vehicles on their fleet and has committed to at least 5% of models being electric by 2020. Further information is available at <https://www.goultralow.com/company-cars-and-fleet-vehicles/go-ultra-low-companies/>



Government supports home and workplace charging points with

grant aid

Government is supporting the establishment of both home and workplace charging points with financial backing.

The Electric Vehicle Homecharge Scheme provides grant funding of up to 75% towards the cost of installing electric vehicle chargepoints at domestic properties across the UK capped at £500 (including VAT).

The Workplace Charging Scheme (WCS) is a voucher-based scheme that provides support towards the up-front costs of the purchase and installation of electric vehicle charge points, for eligible businesses, charities and public sector organisations. A grant of £300 for each socket up to a maximum of 20 across all sites is available.

In both cases an approved list of authorised installers is available.

In short, charging a plug-in van at home or work is no different to charging a mobile phone - drivers arrive home or at work, plug-in and make their next journey with a 'full tank'.

The cost to charge an electric van in the UK varies between home, work and public charging, but the following prices are indicative:

- **Charging at home: Costs about £3 for a full charge or 2p per mile**
- **Charging at work: Some employers will install workplace charging points and typically offer free access**

throughout the day. Others opt for a time-based tariff to encourage sharing of charging stations

- **Charging at public stations: Public charging points at supermarkets or car parks are often free to use for the duration of a stay**
- **'Rapid' charging stations: Typically cost £6.50 for a 30 minute charge, although costs can vary from free to being more expensive.**

Currently chargepoints are categorised by the power they produce. That's measured in kilowatts (kW), and the higher the number, the faster a vehicle's battery will charge. Most networks offer a mix of 'rapid' (43kW-50kW), 'fast' (7kW-22kW) and 'standard' (up to 3kW) charging options. So the options are:

- **Rapid - will charge a battery from flat to 80% in under 30 minutes and are generally installed at motorway service stations, retail outlets and other public facilities**
- **Fast - a battery recharge in two-four hours (depending on battery size) and installed in public locations**
- **Standard - generally used at home and work and takes about six hours to fully charge a battery.**

However, it should be noted that power range and recharging times can vary between recharging point suppliers.

A new 'Getting Electric Vehicles Moving' guide from UK Power Networks, which owns and maintains the electricity cables and lines that bring electricity to more than eight million homes and businesses across London, the South East and East of England, suggests that the cost of up to three 'fast' or one

'rapid' charge point is £1,000-£3,000 and the cost of multiple 'fast' or 'rapid' charge points is from £60,000.

The guide is available at: http://www.ukpowernetworks.co.uk/internet/en/our-services/documents/A_guide_for_electric_fleets.pdf

The lack of recharging points across the UK has in surveys been shown to be the biggest deterrent for drivers to go electric, including in Venson Automotive Solutions' own survey.

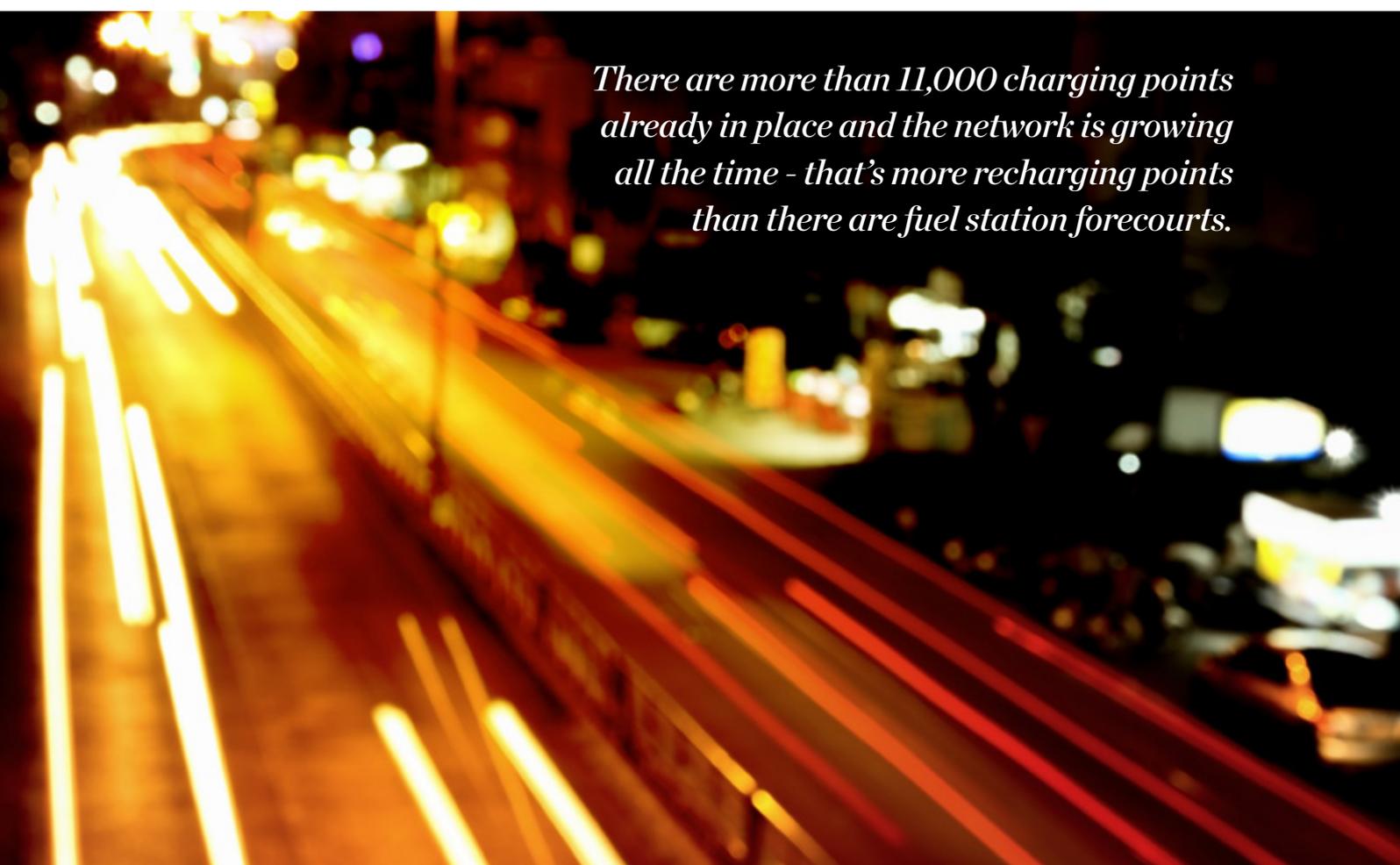
But the facts prove otherwise. The government calculates that there are more than 11,000 charging points already in place and the network is growing all the time - that's more recharging points than there are fuel station forecourts (2015: 8,490).

The government continues to make millions of pounds available for more charging points to be located in key areas, which include retail shopping car parks, railway station car parks and other popular locations.

Additionally, the government has said in a bid to answer criticism that the plug-in vehicle recharging infrastructure is inadequate, that Highways England will support the uptake of electric cars and vans by working to ensure that 95% of the major road network it manages will have a chargepoint every 20 miles and that where possible, they will be rapid chargepoints.

Furthermore, fuel companies such as Shell and Total have pledged to put charging points on their forecourts.

A map showing all vehicle recharging points can be viewed at: <https://www.zap-map.com/live/>



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Venson in partnership with EO Charging to help fleets install



recharging points

To enable fleets to install charging points, Venson Automotive Solutions has formed a partnership with EO Charging. EO Charging - EO stands for Electricity Online - was founded by Charlie Jardine, who believes the time is ripe for light commercial vehicle fleets, and specifically those operating in towns and cities, to look at introducing plug-in vans to their transport operations.

Admitting that limited choice, payload and range had hampered electric van market growth he, nevertheless, believes that a combination of factors will accelerate the market.

Critically, he says, introduction of the Ultra-Low Emission Zone in London in April 2019 and the government's Air Quality Plan that will see a network of Clean Air Zones introduced across towns and cities nationwide will be the catalyst for demand.

Simultaneously, vehicle manufacturers are expanding van

choice - notably in the medium and large van sectors - and battery range is improving and battery weight reducing that will help overcome journey distance and payload concerns of operators.

Additionally, with various reports suggesting that the total cost of ownership - combining purchase price and running costs - of plug-in vehicles could reach parity with petrol and diesel models by around 2022, van fleet operators must consider introducing electric vans, according to Mr Jardine.

He said:

“Fleet operating costs must stack up and parity will be reached quickly. A combination of legislation, government incentives and manufacturer developments are rapidly driving the market to the point where businesses must analyse introducing electric vans to their operations.”

He continued: “Education of fleet leaders is critical. There has been a reluctance to embrace electric vans because of available choice, cost, range, payload and concerns about the recharging infrastructure, but moving forward those fears are not valid.”

Further information is available at <http://www.clean-fleet.co.uk/>

Tax and legislation driving fleet demand for

PLUG-IN VANS

The government's ambition is for all new vans and cars to be zero emission by 2040 - the transformation to a wholly electric car and van parc is expected to be completed by 2050 - and tax incentives and measures to improve urban air quality are critical to achieving that aim.

In addition to providing financial help to fund the purchase of plug-in vans and vehicle recharging points, tax incentives available to businesses operating electric vans include:

- **Vehicle Excise Duty - the rate for electric vans is £0. For plug-in hybrid vans the standard rate for light commercial vehicles applies which in 2017/18 is £240**
- **Capital allowances - a 100% first year allowance is available for zero emissions vans until March 2018. However, vans are not eligible for both the plug-in van grant and the first year allowance**
- **A 100% first year allowance for the introduction of electric vehicle recharging infrastructure was announced in the Autumn Statement 2016, applicable for expenditure incurred on or after November 23, 2016. However, the measure was dropped from the 2017 Finance Bill due to a shortage of Parliamentary time when the June 2017 general election was called. It is likely to be revived in the Autumn 2017 Budget**
- **Van Benefit Charge - in 2017/18 the van benefit charge for zero emission vans is 20% of the main rate (£3,230). This will then increase on a tapered basis - 40% in 2018/19, 60% in 2019/20, 80% in 2020/21 and 90% in 2021/22 - reaching parity with the main rate in April 2022. The government says it will review the impact of the incentive in the 2018 Budget**
- **Van Fuel Benefit Charge - electricity is not classed as a fuel by HM Revenue and Customs, so there is currently no fuel benefit charge for electric vans.**

Additionally, plug-in vans not exceeding 3.5 tonnes gross vehicle weight receive a 100% discount on the London Congestion Charge and many car parks and local authorities offer free parking to electric vehicles.

Plug-in vans will also be exempt from the Ultra-Low Emission Zone entry charge in London when it is introduced in April 2019 and that policy is expected to be adopted by many towns and cities if they go ahead with implementing Clean Air Zones in the coming years.

The government's newly published and long-awaited Air Quality Plan - a draft version was published earlier in 2017 - puts the focus firmly on driving up demand for plug-in vehicles and reducing fleet reliance on petrol and diesel models.

Clean Air Zones are expected to be introduced by local authorities that have breached air quality standards and they are the central focus of the government's long-awaited plans to reduce nitrogen dioxide (NO₂) levels nationally. Plug-in vehicles will be exempt from any charges imposed on vehicle entering Clean Air Zones.

Five cities - Birmingham, Leeds, Nottingham, Derby and Southampton - are already required to introduce Clean Air Zones under the government's 2015 UK Air Quality Plan.

Additionally local authorities in Greater Manchester and in Bristol and South Gloucestershire have secured Air Quality Grant funding to develop Clean Air Zone proposals.

The government says it will work closely with local authorities with a view to them finalising detailed proposals covering entry and charging criteria to the Clean Air Zones within 18 months for introduction in 2020 or sooner if possible.

Additionally, the government announced in the 2017 Spring Budget, it would continue to explore the appropriate tax treatment for diesel vehicles with any changes announced in the Autumn 2017 Budget.

Furthermore, the government has signalled that it wants public sector fleets to move away from operating diesel vehicles and has called on businesses to follow that lead highlighting corporate social responsibilities.

The government is also now consulting separately on regulatory changes to support the uptake of alternatively fuelled (non-diesel) vans.

The government said: "Vans spend much of their time driving around our towns and cities and over 96% of them are diesel powered so there is a pressing need to support innovative new solutions. The UK government wants to support the continued contribution of vans to the economy whilst also reducing their environmental impact. One way of achieving this is to encourage the uptake of cleaner fuels in our delivery vehicle fleet."

It suggests that one way of achieving that was to encourage the uptake of cleaner fuels in delivery vehicle fleets. Proposals include:

- **Increasing the weight limit of alternatively-fuelled vans that can be driven on a category B driving licence in the UK**
- **Exempting certain alternatively-fuelled vans from goods vehicle Operator Licensing requirements in Britain**

- **Introducing roadworthiness testing for electric vans in Britain.**

The Department for Transport has launched a consultation on the category B licence derogation - people that passed their driving test prior to January 1, 1997 are usually allowed to drive a vehicle and trailer combination up to 8.2 tonnes, but people who passed their driving test on or after January 1, 1997 are only legally able to drive vehicles up to 3.5 tonnes.

The proposed driving licence changes would allow category B (car and van) licence holders to drive a slightly heavier vehicle, if it was powered by a low emission technology, by offsetting the additional weight of the powertrain. That, said the Department for Transport, would help compensate for lost payload capacity due to the added weight and size of alternative fuel technologies.

The threshold for moving from a category B (car and van) licence to a category C1 (lighter goods vehicle) licence is currently 3,500kg maximum authorised mass. But the government is proposing increasing that to 4,250kg.

Additionally, vehicle manufacturers have raised with government officials the possibility of increasing the 3.5-tonne gross vehicle weight threshold above which businesses that operate commercial vehicles must hold an Operator Licence.

As a result, the government is also consulting on a similar exemption from Operator Licensing requirements for alternatively-fuelled vans used for own account haulage. That would help operators to avoid becoming subject to the full Operator Licensing regime if they invested in cleaner but slightly heavier vans up to 4.25 tonnes.

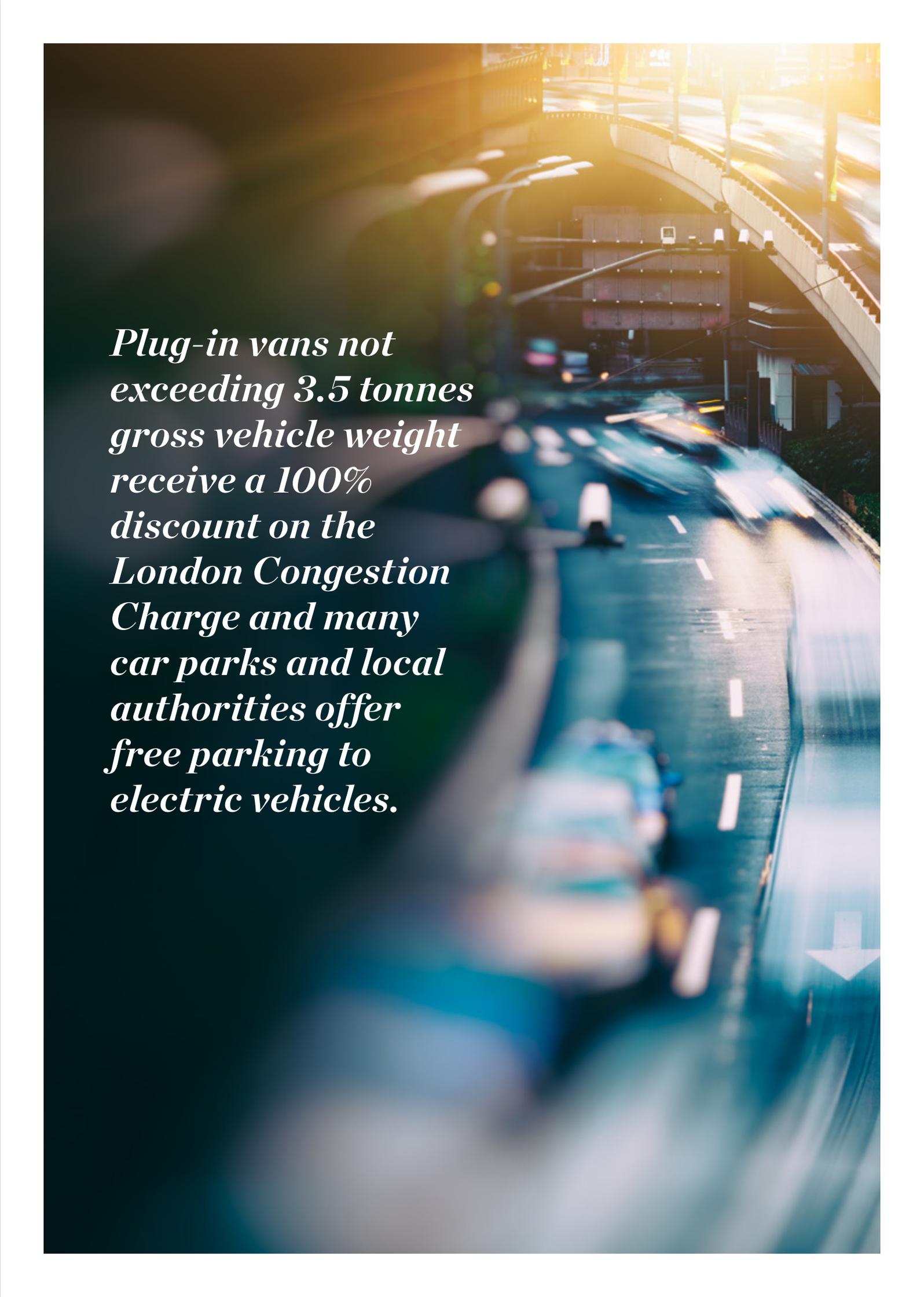
Therefore, to accommodate the weight of batteries and not lose payload, it is suggested that the permitted gross vehicle weight of electric vans could be increased to 4.25 tonnes thus delivering a so-called 'payload bonus'.

Simultaneously, the government is proposing to correct a regulatory anomaly, which means that electric vans are currently exempt from MoT testing.

The government hopes to introduce the regulatory changes from sometime next year.

The consultation, which runs to October 18, on 'Category B Driving Licence Derogation for Alternatively-Fuelled Commercial Vehicles' is available at: <https://www.gov.uk/government/consultations/category-b-driving-licence-derogation-for-alternatively-fuelled-commercial-vehicles>

Similar laws already apply in France, Germany and Italy, and there is vehicle manufacturer optimism of change, which would allow electric vans to carry an extra 350-400kgs payload, thus overcoming the 3.5 tonne handicap.



Plug-in vans not exceeding 3.5 tonnes gross vehicle weight receive a 100% discount on the London Congestion Charge and many car parks and local authorities offer free parking to electric vehicles.



The *pros*

OF OPERATI

Drones and autonomous vehicles may be the ultimate answer to ‘last mile’ deliveries in urban areas, but in the interim plug-in vans are the real-world solution.

Notwithstanding that Amazon undertook a much publicised parcel delivery to a customer in Cambridgeshire in 2016 with a drone, and in summer 2017 Ocado announced it was using a driverless van to deliver goods to more than 100 customers in the Greenwich area of London, they are very much the long-term future.

Nevertheless, the world’s largest online-only supermarket is running the UK’s first trials of an autonomous CargoPod vehicle as part of the TRL-led GATEway Project (Greenwich Automated Transport Environment), which is part funded by the government.

The research findings will help guide the wider roll out of autonomous vehicles which, in the future, may play an important role in cutting inner city congestion and air pollution.

David Sharp, head of 10x department, Ocado Technology, said: “We are always looking to come up with unique, innovative solutions to the real-world challenge of delivering groceries in densely-populated urban environments. This project is part of the on-going journey to be at the edge of what is practical and offer our Ocado Smart Platform customers new and exciting solutions for last mile deliveries.”

In the interim e-mobility solutions are going to be increasingly the vehicle solution for not just couriers and home delivery companies amid the dramatic explosion in online shopping, but also for a wide range of businesses - from sole traders to SMEs and large corporates - if they want to escape tax rises,



and cons

ING PLUG-IN VANS

congestion charges and Clean Air Zones charges associated with internal combustion engine vehicles depending on their emission levels.

While there are operational drawbacks, it is anticipated that as van manufacturers improve technology - particularly relating to battery range and weight thus simultaneously improving electric vehicle payload - such hurdles will be overcome.

Meanwhile, the available choice of electric vans will grow over the coming months and new government legislation should help fleets overcome the current payload concerns as highlighted above.

Additionally, as demand for plug-in vans accelerates so the purchase price can be expected to reduce as the economics of supply and demand come increasingly into play.

So increasingly electric vans will provide a vital role in fleet operations and in addition to buying incentives and their zero emission environmental-friendliness, other major advantages over petrol and diesel models include:

Operating costs: due to electric vans having fewer moving parts than their internal combustion engine rivals - no pistons or crankshaft for example or any requirement for oil and timing belt changes - service, maintenance and repair costs are lower. Indeed, Nissan estimates an approximate 40% maintenance cost saving, while Citroen/Peugeot calculates

costs to be 30-40% lower than diesel models in the respective line-ups. Wear and tear maintenance costs are also reduced - and fuel economy boosted - as there is less of a requirement to use the brakes on an electric van. That's because when lifting off the accelerator, the electric motor turns into a generator recovering energy to top up the battery and working to slow down the van.

Fuel costs: this is potentially the single largest cost saving over petrol and diesel models. The Department for Transport calculates that electric vehicle running costs are as low as just 2p a mile and the Energy Saving Trust suggests such vehicles cost £2-£3 to fully charge at home for a 100-mile range. The equivalent petrol or diesel van costs £9-£13 to drive 100 miles - more than 400% more on a mile for mile. Therefore, the cost of charging an electric vehicle is significantly less than filling up a petrol or diesel vehicle. In fact, Nissan calculates a potential 60% saving compared to petrol or diesel fuel bills. If selecting a plug-in hybrid the more miles driven on electric power, the greater the financial savings.

Corporate social responsibility: public image is important to all business and utilising electric vans can deliver added value in that respect enabling the 'green' flag to be waved and a company's carbon footprint reduced.

Martin Flach, Iveco's director of alternative fuels, argues that for some inner-city fleet operations, the Daily Electric was starting to make practical sense.

He said:

“ If you take a two-battery configuration Daily costing £80,000, and deduct 20% as a plugged-in van grant, the cost reduces to £64,000. Then take off the comparative price of a diesel vehicle - say £20,000 - and you're left with £44,000. From this, remove the direct advantages of only paying for electricity, not diesel, and there is a further £4,000 saved annually, plus £3,000 in congestion charge payments if operating in London. Over six years that totals a further £42,000 saving. Suddenly, you have virtually a cost-neutral situation - and that's without allowing for any residual value on the vehicle, or the PR value of turning your fleet electric. ”

Furthermore, whole life cost data from the Low Carbon Vehicle Partnership suggests significant financial savings for fleets from the operation of both 100% electric and plug-in hybrid vans.

But, while there are clear benefits - and potential financial savings to including plug-in vans on fleets there are also drawbacks. They potentially include:

Fuel costs: while traditionally highlighted as a benefit, fuel savings depend on a raft of factors not least the way an electric vehicle is driven; the weight of loads carried; road and weather conditions; and the demand on the battery of vehicle features such as lights, heating, air conditioning and infotainment. That is turn gives rise to range anxiety, which can impact on the number of miles an electric van can clock up between charges.

Charging time: as previously explained this will vary

depending on the recharging system, but it clearly takes longer to 'refuel' a plug-in van than it does a petrol or diesel rival. Additionally, a vehicle that is being charged is not working so is costing businesses in downtime. As a result, journey schedules and when vehicles are recharged must be carefully managed and that makes electric vans generally impractical for distance driving.

Payload: the weight that an electric vehicle can carry is frequently lower than petrol or diesel vans due to the weight of the batteries - 5-15% for a small van and up to 25% on a large panel van. As a result and as already mentioned, the government is looking at raising the gross vehicle weight of vans before an Operator Licence is required and altering driving licence regulations. At the same time van manufacturers are working on reducing both the weight and size of batteries to increase payload. What's more, one study suggested maximising an electric van's payload could see its range reduce by almost half the distance it could achieve unladen. However, all vehicles lose range when fully laden and the same study suggested that a diesel van with a full payload would typically see its range reduced by around 35%, so not too much difference or improvement required before battery technology achieves parity with traditional diesel van performance.

Battery performance: electric vehicle sceptics have warned of potential battery degradation, but such suggestions would appear to be ill-founded. Extended warranties - five years warranties are typically the norm but up to eight years are available in some cases - should give peace of mind to operators. However, while there is no recorded data on electric van battery performance, Nissan has published data on the battery performance of 35,000 zero emission Leaf cars going back five years that showed 99.99% of battery units remained entirely fit-for-purpose.

The performance characteristics of a plug-in van are very different to those of a conventional internal combustion engine vehicle. Therefore, to maximise performance - notably fuel economy - the way an electric van is driven is critical if operating cost efficiencies are to be maximised.

Keith Bell, quality manager, Royal Society for the Prevention of Accidents Fleet Safety, Venson Automotive Solution's driver training partner, said: "All the usual driver training advice of no harsh braking/acceleration, using acceleration sense and driving sympathetically applies to electric vans. However, it is particularly important for drivers to understand how the torque/power of electric vehicles is available instantly. Engine braking can also be greater than in a traditional petrol/diesel vehicle.

It is also crucial to be aware of the van's range as that is determined by many factors - such as load carried and driving conditions - on a vehicle-by-vehicle and day-by-day basis.

Additionally, with regards to plug-in hybrid vans it is important to understand that each vehicle will be set up differently in terms of when it would use pure electric/pure internal combustion engine combination.

While we don't have a specific training course for plug-in vehicles. All of our driver training courses are delivered in a 'client-centred style', which means the trainer will tailor the course to the needs of the person they are training on the day. If the driver has a plug-in vehicle the trainer would certainly talk about how to get the best from the vehicle and the additional hazards which are unique to these vehicles, such as no engine noise.

Figures calculated for the latest edition of its 'Low Emission Van Guide' suggest replacing a Nissan NV200 1.5dCi Acenta van with the equivalent electric model will deliver a whole life cost saving of £4,514 based on annual mileage of 12,000 miles, rising to £17,639 if the vehicle is used daily in the London congestion charge zone.

While, the e-NV200 costs around £7,000 more than the equivalent diesel, the higher list price is offset by the government's plug-in van grant, fuel and maintenance cost savings and the fact that the applicable Vehicle Excise Duty rate is £0. As a result, pence per mile operating costs are calculated to be more than 7p a mile less.

Turning to the only plug-in hybrid van currently on sale, the Mitsubishi Outlander 4Work, in GX3h trim, and comparing it with the equivalent Outlander 2.2DID GX1 model and whole life cost savings over the same five-year period, but with annual mileage of 15,000 miles, amount to £446, rising to £13,571 if the vehicle is used daily in the London congestion charge zone.

The plug-in van grant almost wipes out the price premium of the plug-in hybrid over the diesel and there are also calculated to be fuel cost savings, but maintenance costs are higher. That all adds up to a small cost per mile saving of just under 1p a mile.

Further information is available in the 'Low Emission Van Guide' and by accessing the Van Cost an Carbon Calculator at <http://www.lowcvp.org.uk/lev.htm>

Emission Analytics tests hundreds of new cars and vans annually in real-world condition and produce emissions and MPG data. It is also the organisation behind the EQUA Air Quality Index.

The organisation says it has seen similar levels of variability from official fuel economy and emissions figures in vans as in cars. Data for cars reveals that real-world CO2 emissions are around 30% higher than official manufacturer figures on average with the MPG gap around an average 29% worse.

The EQUA Index for vans - <http://equaindex.com/equa-lcv-index/> - reveals that all diesel models tested deliver worse MPG than advertised. The average was 17.1% below but the range was from -5.3% to -38.8%.

Fleet managers can check the real-world on-road MPG and emissions performance of light commercial vehicles via new data from Emission Analytics, which reveals that diesel power may not be as efficient as manufacturers claim.

Similarly, all of the tested vans were homologated to either the Euro5 or Euro6 emission standard and yet 10 models when tested emitted 12 times or more the current Euro6 limit when they were out of laboratory conditions. The best performing van tested in terms of emissions was 1.5 times above the legal limit.

Tested on the same EQUA cycle as passenger cars, vans additionally run parts of the route ballasted to 50% of their maximum payload. The effect of load on fuel economy was an average of -11.2% for a fully loaded van. A quick calculation by Emission Analytics based on average diesel price showed that for every 100 miles driven with a fully loaded van, refuelling costs were on average almost £2 more than empty. Multiply that by the average yearly mileage travelled per van and it amount to a fuel bill rise of approximately £450 per year.

Furthermore, the latest analysis of the EQUA Index data shows that the average daily distance driven in passenger cars is not sufficient for a vehicle's pollution control system to warm up and become fully functional which, if replicated across petrol and diesel vans, further plays to the zero-emission operational performance of electric models.

As a result, says Emission Analytics: "The resultant high levels of cold start NOx emissions, from both petrol and diesel engines, could provide an additional challenge for urban air quality initiatives such as the proposed Clean Air Zones in the UK."

According to the Department for Transport more than half of car driver trips nationally are under five miles. In inner London, the average journey distance by car per-person-per-day is just 1.5 miles. For the majority of vehicles tested by Emissions Analytics, it can take more than five minutes for after-treatment systems to reach operating temperature.

Such tests provide fleet operators with further evidence that on short urban trips electric power could replace traditional internal combustion engine vans and deliver even greater air quality improvements than previously thought.

Petrol vehicles have lower NOx in absolute terms but proportionally much higher NOx in the first minute, but which then falls more rapidly than for diesel cars. That is typically as the three-way catalyst reaches effective operating temperature.

Emission Analytics' tests suggest that petrol engines suffer proportionally much more from cooler exhausts although produce less NOx in absolute terms, whereas the diesel engines have a 29% uplift in NOx when the exhaust temperature is lower (217% for petrol-engined models).

Emission Analytics says:

“The potential introduction of Clean Air Zones in UK cities is a cornerstone of the government's strategy to reduce air pollution. However, driver behaviour in cities - short trips, the use of stop-start technology and/or choice of hybrid vehicles - when combined with exhaust after-treatment technologies which are sensitive to exhaust temperature, means that other measures will be necessary if NOx emissions are to be reduced.”

The European Union has acknowledged the importance of cold start emissions by including their measurement in the new Real Driving Emissions regulations that start in September 2017. However, said Emission Analytics, there was a danger that the effects would be under-measured compared to real-world journeys of short length.



Whole life costs savings running into thousands of pounds over a five-year operating cycle could be achieved by fleets replacing diesel vans with plug-in models, according to the Low Carbon Vehicle Partnership.



There are widespread in-life financial savings to be garnered from operating electric vehicles, not least in terms of reduced fuel bills and maintenance costs.

IN-LIFE COSTS AND PERFORMANCE *what the experts think*

Businesses operating in urban areas should be adding plug-in vans to their fleets and ensure their use embraces fitness-for-purpose to overcome operational hurdles, according to experts.

What's more, with the used electric van market at an embryonic stage local businesses, which typically buy second hand models, such as painters and decorators, carpenters and plumbers, should be considering turning to plug-in models and not allow perceived operational hurdles colour their view and prevent widespread adoption.

Education is key, according to Andy Picton, chief commercial vehicle editor at motor industry data provider Glass's, who said: "In the right operating environment electric vehicles work - and that's in urban areas and for 'last-mile' deliveries with diesel vehicles delivering to the outskirts of conurbations."

He believes the whole attitude of the industry must change - and that means motor manufacturers, franchise dealers and used vehicle traders - better promoting the benefits to businesses with urban operations.

As highlighted above there are widespread in-life financial savings to be garnered from operating electric vehicles, not least in terms of reduced fuel bills and maintenance costs.

Meanwhile, the availability of the government's plug-in grant helps to offset the higher purchase/lease cost of plug-in vans.

Nevertheless, for fleets to achieve payback it means, almost certainly, that vans must be operated over a replacement cycle of perhaps five years or even longer compared with the more traditional four-year replacement cycle for a petrol or diesel van.

But operating conditions will mean that in most cases average mileage is likely to be limited to stop-start urban journeys, which is where electric vans operate more efficiently than their internal combustion engine counterparts, so a greater age replacement cycle is unlikely to be a barrier.

However, light commercial vehicle technology and the recharging infrastructure needs to change remarkably for electric vans to secure a significant place on fleets, according

to Steve Botfield, senior editor, commercial vehicles and motorcycles at CAP HPI.

He believes, notwithstanding the push by government to encourage fleets to operate electric vans, that diesel power will reign for many years to come. Additionally, larger diesel vans will remain in particular demand due to torque capability, among other factors.

Typically it is local authorities and utility and power companies that have to-date plugged electric vans into their fleets and very few, according to CAP HPI data, have reached the used market.

For fleet operators, Mr Botfield believes that the decision of van market leader Ford to develop and launch fleet trials of a Transit Custom plug-in hybrid van in the autumn could in the near future offer the optimum solution for businesses that want to go electric.

Hybrid vans may be more beneficial to fleets in the near future, particularly for 'last mile' deliveries as the challenges that pure electric vans offer will not need to be overcome" said Mr Botfield.

It's a view shared by Mr Picton, who says that "electric hybrid will be very popular for last-mile urban deliveries".

While 100% electric vans will have their place on fleets - small car derived vans are already proving their worth, while large panel vans are also expected to be popular as they offer a one tonne payload - it is in the medium van sector where plug-in hybrid will be in the vanguard as payload on a 100% electric medium-sized vans was compromised by battery weight.

Issues that fleets needed to consider prior to operating a plug-in van were, according to Mr Botfield:

- **Notwithstanding the availability of a plug-in grant, list price was high versus internal combustion engine models which then potentially impacted on whole life costs**
- **Vehicle servicing had to be via a franchised dealer as independents would not be able to undertake service, maintenance and repair on such vehicles thus potential bills could be higher**
- **Concern over battery longevity and related warranty as fleets would typically have to operate a 100% electric**

van into a fifth and even sixth year to obtain 'payback' and there was little or no operational experience of electric light commercial vehicles of that age. What's more acquiring a new battery could cost perhaps £10,000 on average thus dramatically impacting on operating costs

- **Vehicle range was a concern with real-world mileage typically less than 100 miles between charges thus limiting journey suitability to typically urban journeys to and from depots where recharging could take place**
- **Vehicle payloads were typically lower than equivalent petrol and diesel vans due to the weight of batteries thus fleets may have to operate two electric vans in place of one internal combustion engine unit.**

Meanwhile, the used van market remained sceptical of electric vans which, said Mr Botfield, were typically only suitable for drivers/owners with an off-street parking facility.

He said:



Local authorities and utility and power companies are under pressure from government to run electric vans and wave the 'green' flag. But there are many operating restrictions currently on these vehicles that limit fleet suitability.

Fleets are pushing for electric vans to be produced that can travel 300-400 miles on a single charge with the ability to recharge on route as well as a depot. Until the landscape changes many fleets will not operate electric vans.



Illustrating that point is that from 2012-June 2017 around 1.7 million new light commercial vehicles were registered of which just 0.19% were electric, according to CAP HPI.

Furthermore, CAP HPI data collected from vehicle remarketing companies over the past three years reveals that less than 100 electric vans - mostly Nissan and Renault models - have gone through auction halls. Of those 75% were under two years old with vendors typically being vehicle manufacturers, leasing companies or short-term cycle businesses.

"The used market is not ready for the mass injection of electric vans because the market has not set values yet," said Mr Botfield, who highlighted that many electric vans with non-leased batteries were not achieving CAP HPI valuations.

"It is very difficult to predict what the used value of an electric van will be," he said. "Used buyers will factor in the cost of replacing the battery so until the technology is proven buyers are reluctant."

CAP HPI does not value vans with leased batteries, such as the Renault Kangoo Z.E., as no one wants to buy the "shell of a vehicle without a battery", said Mr Botfield.

Mr Picton added: "The independent trade is not geared up to remarket and refurbish electric vans. As a result, buyers will only bid on them if they have a confirmed order from a customer. There are a lot of unknowns with regards to second hand vans, but there should be a greater take-up among business that traditionally buy used vans."

Glass's data, like that from CAP HPI, suggests that values achieved at auction for used electric vans were "very much below book"; but Mr Picton defended guide valuations claiming: "It is not that we are over valuing, it's the whole mindset of the trader buying vehicles. Our residual values are relatively positive for the first years of a vehicle."

However, they then typically "fall off the edge of a cliff" due to fears over battery longevity and concerns that a battery failure could provide costly. As a result, vehicle manufacturers must provide confidence to the market that batteries do have a long life.

So what could change to encourage fleet demand for 100% electric vans?

There is industry speculation that dedicated electric car manufacturer Tesla could break into the commercial vehicle market. If that happens and the model offers a range similar to that of its cars - potentially up to 335 miles - then, depending on price and payload and other factors, demand may accelerate.

A further boost will come if the government goes ahead with increasing the 3.5-tonne gross vehicle weight threshold above which businesses that operate commercial vehicles must hold an Operator Licence and changing the law in respect of the legal maximum gross vehicle weight for a standard UK driving licence being 3.5 tonnes.



Hybrid vans may be more beneficial to fleets in the near future, particularly for ‘last mile’ deliveries.

To accommodate the weight of batteries and not lose payload, it has been suggested that the permitted gross vehicle weight of electric vans could be increased to perhaps 4.25 tonnes thus delivering a so-called ‘payload bonus’. Simultaneously, raising the driving limit barrier as well.

Increasing payload means more goods on-board, which might result in a company not requiring to send two electric vans to carry what would legally fit into a single diesel van.

As Mr Botfield said: “Cost of ownership, vehicle payload and range are critical. Until those numbers stack up, alongside the ability to recharge quickly and easily, most fleets will remain diesel.”

Mr Picton added:

“

The electric van market is in its infancy, but the time is right for many fleets to look at operating electric vans. As more van manufacturers come to the market and

vehicle choice expands the market will grow, but it will take time.

“However, every fleet must analyse electric vans on their merits and match performance to business requirements. Demand will grow, but at a slower pace than sales of cars because light commercial vehicles are a business tool and must be fit-for-purpose.

”

Equipping vans

for service -
maximising

Adding weight to a vehicle will naturally increase MPG - or in the case of plug-in vehicles reduce battery range - and impact on payload.

It is therefore critical when fitting out plug-in vans with features that might include vehicle lining, racking and storage solutions, roof bars, storage tubes and ladder holders and lighting and security solutions, that optimum operating efficiency is maintained.

Venson Automotive Solutions has more than 20 years' experience of fitting out and converting vans through its Equip for Service centre and, additionally, it works with industry-leading supplier Tevo as well as Sortimo International.

When fitting out vans both partner organisations highlight the importance of utilising materials that are not only durable and resilient as well as light, and Tevo has developed special solutions to maximise the operating efficiency of plug-in vans.

Tevo uses ultra-high strength steel that is claimed to deliver up to a 30% saving over traditional steel. Effectively using stiffer material and less of it, explained managing director Paul Railston, delivered up to a 70kgs saving in terms of available payload as well as conserving battery range on 3.5 tonne vans with an equivalent saving of 30-40kgs on smaller vans.

Mr Railston said: "Our lightweight van conversions offer increased load capacity and conserve battery range."

Furthermore there are many 'no drill zones' in plug-in vans because battery packs are located underneath the vehicle. That requirement for "non-intrusiveness" has resulted in Tevo developing an alternative to the traditional van ply-lining that

is glued to the vehicle floor with any racking system sitting on a rail on the floor.

Many vans also carry ladder racks and other equipment outside of the vehicle, but that always impacts on fuel economy. Therefore, once again to conserve battery range, Tevo has developed an internal ladder rack.

Other initiatives especially developed by Tevo for the fitting out of plug-in vans include:

- **Strobe lights in the front grill and in the rear quarter panels above the light clusters to remove any requirement for light bars or beacons on the vehicle's roof thereby also improving environmental efficiency**
- **To enable auxiliary power consumption for ancillary products such as drills, instead of simply fitting an independent battery, a charger has been developed that gives the vehicle battery an initial boost to increase the amps from one battery to another.**

Mr Railston said:

“The aim of all the various features is to preserve vehicle battery range as much as possible, while also maximising payload. All the developments are important, but we believe that with an ever-increasing number of operators seeking to obtain greater functionality from a van's electronics that the auxiliary battery is particularly critical.”

A white delivery van is driving on a two-lane asphalt road that curves through a lush green forest. The sky is a vibrant blue with scattered white clouds. The van is positioned in the right lane, moving away from the viewer. The road is bordered by a metal guardrail on the left and a grassy shoulder. The overall scene is bright and clear, suggesting a sunny day.

efficiency

Our lightweight van conversions offer increased load capacity and conserve battery range.

Conclusion

Fleet decision-makers must future proof their light commercial vehicle operating decisions, particularly in urban areas, and that is likely to mean utilising plug-in models.

The choice of plug-in vans currently on sale is, admittedly, minimal and includes just one plug-in hybrid model. However, as the white paper highlights, more models are coming to market.

What's more, with purchasing help from the government's plug-in van grant the price premium of electric models over petrol and diesel equivalents can be reduced. Add in fuel and maintenance cost savings and the fact that electric vehicles are £0 rated for Vehicle Excise Duty and, if operating in London exempt from the congestion charge, whole life costs certainly look far more attractive and potential a match for more traditional rivals.

Meanwhile, with the Ultra-Low Emission Zone due to be introduced in London in April 2019 and many towns and cities across the country expected to introduce Clear Air Zones in the future, businesses that fail to modernise their fleets and look to the future may see themselves penalised with additional local charges.

Plug-in vans are not viable for all fleets and Venson Automotive Solutions does not yet anticipate a wholesale switch over.

Nevertheless, for urban operations 100% electric vans are a viable option and for fleets that require vehicles to undertake urban and some distance driving then plug-in hybrids may provide the solution.

It is critical that fleet decision-makers investigate the pros and cons of plug-in vans, compare and contrast with internal combustion engine rivals and then carefully marry that analysis to typical journey profiles.

In all likelihood it is possible that many fleets will discover that plug-in vans deliver a viable operating solution without any impact on business efficiency - and they may just save the business some money and well as boosting its corporate social responsibility.



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