



Electric Vehicles

Why fleet operators need to start planning for the transition to zero emissions vehicles in 2017

Introduction

Rapid growth in sales of Electric Vehicles in recent years has put the UK in pole position to lead a quiet revolution in vehicle technology and the tipping point will arrive sooner than the majority of fleet operators anticipate

Sales of Ultra Low Emission Vehicles (ULEVs) in the UK have accelerated significantly over the last 18 months, catapulting Britain to the forefront of the expanding European market for electric vehicles.

As more and more Plug-In Hybrid Vehicles (PHEVs) and Battery Electric Vehicles (BEVs) launch in the UK and the Government confirms its commitment to generous cash subsidies and additional incentives, most commentators agree that the recent growth in the EV market will be sustained in the short term (1-3 years).

In the medium term (3-5 years), new technological breakthroughs and falling prices of technology will make electric vehicles still more attractive to both fleet and retail customers – potentially leading to a situation where demand outstrips supply.

This tipping point is likely to be reached within the next five years, making it imperative for fleet operators to start planning their transition to Ultra Low Emissions Vehicles now.

Environmental legislation, the fiscal landscape, oil prices and the wider economic context could all accelerate or retard the speed of this transition. For example, moves to disincentivise diesel vehicles on air quality grounds, coupled with a sharp increase

in the oil price and additional incentives for electric vehicles could have a profound impact on demand – accelerating progress towards this tipping point.

However, according to the latest Sewells research, many fleet operators remain sceptical about the benefits of electric vehicles and few have started planning for a structured transition.

Anecdotal evidence suggests that company car drivers are more positive about electric vehicles and have recently started taking cash allowances to fund private purchases of increasingly popular models like the Mitsubishi Outlander PHEV.

This briefing will establish the timeline for this transition and identify key waypoints which fleet operators need to recognise and be prepared to act upon in order to capitalise on the impending low emissions revolution.



In numbers

Think you know how long it takes to recharge an electric vehicle at a rapid charging point? Or the size of the UK's expanding network of chargepoints? Think again...

£4,500

The maximum Government grant towards the purchase of a qualifying EV, plug-in hybrid or fuel cell vehicle.

303 miles

The range of the new Tesla Model X

£0.02

Pence per mile cost of electricity to recharge an EV

43%

3yrs/60,000 residual value of the Tesla Model S

7.1 miles

Distance of average individual journey in UK

30 minutes

Time required to charge an EV battery to 80 per cent using latest rapid charge technology

40%

Predicted reduction in maintenance costs over ICE

4146

Number of public EV charge points (www.zap-map.com September, 2016)

25 miles

Average daily distance travelled in UK

96%

Proportion of motorway services with rapid-charging points

2020

The year in which London (and several other large UK cities) ban all but ULEVs from operating in some urban areas

2040

The year by which 100 per cent of new cars sold in the UK must be ULEV

2020: A tipping point?

A combination of tighter emissions regulations and rapidly advancing battery technology is set to precipitate a radical shift in sentiment towards Electric Vehicles over the next three years

New urban air quality rules will come into force in 2020, designed to discourage older diesels from city centres in six UK cities by levying hefty additional charges on all but Ultra Low Emissions Vehicles.

New Mayor of London Sadiq Khan has pledged to introduce an extended ultra low emissions zone in the Capital from 2020 and at least five other major UK cities are expected to follow suite: Birmingham, Leeds, Southampton, Nottingham and Derby.

If current sales growth is sustained, 2020 is when sales of electric vehicles are predicted to account for as much as 10 per cent of total new car sales – prompting greater retail demand as awareness of their benefits reaches critical mass.

At around the same time, the cost of battery production is anticipated to fall below the threshold at which most electric vehicles can demonstrate a clear-cut cost saving over petrol or diesel vehicles when measured in Total Cost of Ownership (TCO) terms – increasing demand still further.

Beyond this tipping point, with retail demand for electric vehicles accelerating strongly, and a new generation of car-makers such as Tesla taking an increasing slice of market share, it may be increasingly challenging for fleet operators to



Outlander PHEV - huge growth in demand from company car drivers



Nissan Leaf - improved battery will double effective range

secure the volume of vehicles they require at the discounts to which they have become accustomed.

Fleet operators with large numbers of diesel vehicles on their fleets may also be exposed to a sudden change in sentiment towards used diesel vehicles, if this precipitates a sharp drop in residual values.

It is becoming increasingly clear that fleet operators need to start planning for this fundamental transition now, yet according to research conducted by Sewells, only a relatively small minority of fleets have any significant plans to manage the transition beyond trialling the occasional electric vehicle for evaluation purposes.

Best selling electric vehicles Q1 2016

	Make	Model	Volume Q1	Q4 2015
1	Mitsubishi	Outlander PHEV	19,945	16,100
2	Nissan	Leaf	12,469	11,219
3	BMW	i3 (inc range extender)	4,065	3,574
4	Renault	Zoe	3,918	3,327
5	Tesla	Model S	2,826	2,087
6	Volkswagen	Golf GTE	1,970	1,359
7	Mercedes	C350e	1,898	628
8	Toyota	Prius Plug-in Hybrid	1,651	1,580
9	Audi	A3 e-tron	1,445	1,218
10	Vauxhall	Ampera	1,261	1,272

Legislative context

UK Government confirms commitment to Electric Vehicle grants but environmental experts demand additional action to meet tougher air quality targets

Car makers face deadlines for average fleet performance relating to nitrogen oxide emissions (NOx) in the US and fuel efficiency and carbon dioxide (CO2) in the EU.

European targets are for CO2 emissions of 95 grams per kilometre by 2021, compared to a 2015 level of 130g for each km. The European Commission wants to halve the number of conventionally fuelled vehicles operating in cities by 2030 and eliminate them altogether by 2050.

Under the UK Government’s Energy Savings Opportunity Scheme ESOS – which is mandatory for large (250+ headcount companies) – switching a proportion of the fleet to hybrid or pure electric vehicles can go a long way to meeting some of the obligations imposed by this scheme.

The Government has earmarked over £600m until 2020 to support the Plug-in Car Grant (PiCG), expand the charging infrastructure, and boost the electric car industry. It has confirmed that the current PiCG scheme – which subsidises sales of new EVs by up to £4,500 – will continue until 2018.

The PiCG began in 2011 with just over 1,000 annual registrations of plug-in cars. Since then, record-breaking volumes of EVs have been registered every year – 2015 saw more than 28,000 electric cars

registered. This year started with the best period for EV uptake since records began, with UK buyers registering the equivalent of one electric car every 13 minutes. With vehicle manufacturers introducing more and more electric and plug-in hybrid models, the new car market is accelerating towards a point in the future where plug-in power overtakes petrol and diesel as the dominant fuel type.

In March 2016, the Government changed the rules, reducing the maximum grant from £5,000 to £4,500 and introducing bands that discriminate against more expensive hybrid models and making any vehicles costing more than £60,000 ineligible. The revised grant values remain in force until March 2018 – or until a total of 95,000 grants across all three new categories.

And there’s a legal imperative behind these programmes. In April 2015 the Supreme Court ruled that the British Government had been failing in its legal duty to protect people from the harmful consequences of air pollution and ordered "that the Government must prepare and consult on new air quality plans".

ClientEarth, a group of environmental lawyers, had brought the case, arguing that the UK had been breaching legal limits for nitrogen dioxide (NOx) since 2010 in 16 different cities and regions, and that

Revised PiCG bands

Category	CO2 emissions	Zero emission range	Grant value	Example Vehicle
1	< 50 g/km	70 miles +	£4,500	Nissan Leaf
2	< 50 g/km	10 – 69 miles	£2,500	Volvo V60 Twin
3	50 – 75 g/km	20 miles +	£2,500	Mercedes S500

these levels will continue to 2020 or even 2025.

And a group of MPs on the Parliamentary Environmental Audit Committee has urged the Government to redouble its efforts to encourage the uptake of Electric Vehicles in a strongly worded report which criticised Ministers for falling way short of the growth trajectory needed to hit their own targets for EV sales in 2020. (Source: Sustainability in the Department for Transport www.parliament.co.uk August 2016)

The Government’s climate advisors recommended that ultra-low emission vehicles such as electric cars should make up 9% of the fleet by 2020, but current forecasts by the Department for Transport (DfT) show the figure by the end of the decade is likely to be about half that. Ministers have not said what should happen if the target is not met, nor produced a plan for beyond 2020.



Fleet operators remain sceptical about EV growth

While company car drivers have embraced hybrids to cut their tax bills, fleet managers remain to be convinced about the operational viability of pure Electric Vehicles

British fleets are edging towards the tipping point where hybrid and electric cars could become key elements of their operations, but progress to date has been slow.

Up until 2015, most commentators anticipated that a significant transition to electric vehicles wouldn't happen until the latter part of the next decade – between 2025 and 2030. But since the UK Government committed to incentivise EV sales with upfront grants and discounts on VED and benefit-in-kind tax, sales have suddenly taken off.

The diesel emissions scandal has further catalysed the debate, raising the prospect of a more punitive approach to diesel emissions across Europe and forcing the continent's largest manufacturer, Volkswagen, into a wholesale realignment of its manufacturing strategy to accelerate the transition to electric drivetrains.

In the last 18 months, many commentators have revised their predictions of when the tipping point will happen – some to as early as 2020.

Nudged by emissions-based tax rules, corporate environmental commitments and dramatic improvements in vehicle technology, fleets are more inclined than ever before to consider alternatively-fuelled vehicles.

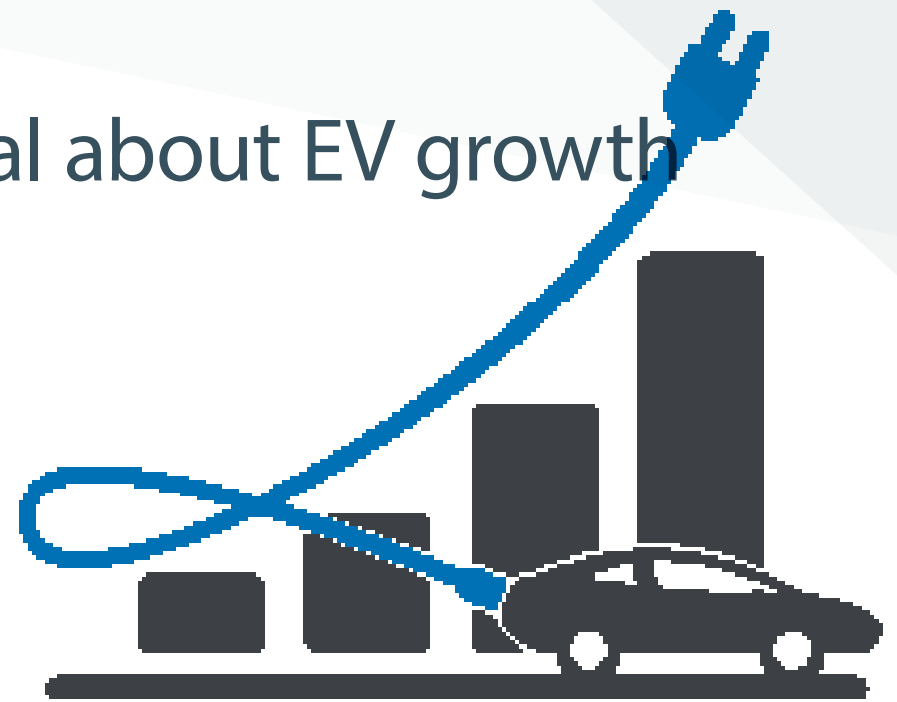
New research by Sewells has discovered that 41% of fleets have introduced or are considering the introduction of hybrid cars in place of diesel models, while 20% are thinking of trialling pure electric cars.

The discrepancy between the popularity of hybrid and electric cars indicates that range anxiety remains an issue for fleets, with businesses and company car drivers still attaching significant importance to the flexibility of a car offering unrestricted mileage.

The fact that there are greater tax incentives to run zero-emission electric cars compared to hybrids underlines the continuing importance of range in car-buying decisions.

Most fleets see hybrid power sources as the fuel of the near future, anticipating a steady rise in the adoption of alternatively fuelled vehicles over the next five years. Range and the availability of charging points are the principal barriers that prevent them from adopting electric cars.

Sewells' research indicates that almost a quarter of fleet operators expect EVs to account for more than 5 per cent of their fleet within five years and three-quarters receiving enquiries about electric vehicles from drivers. (Source: Fleet Market Report 2016)



However, 81% say manufacturers must overcome range issues, 77% say recharging times of electric vehicles need to be shortened and 73% want to see more recharging points.

The higher acquisition price of EVs remains an issue for 74%, as does residual value uncertainty for 70% of fleet operators, a position that correlates with fears over the longevity of batteries.

Interestingly, 40% of fleets believe their company car drivers are ready to accept EVs, but range anxiety remains the biggest obstacle to acceptance, followed by doubts about their ability to calculate

accurate wholelife costs and the lack of a comprehensive charging infrastructure.

However, more than half of fleet managers admitted that they had little to no knowledge of specific details relating to the Government grants available, choice of vehicles on the market, recharging networks or SMR savings for EVs.

Fleet operators' attitudes are at odds with Government forecasts and the predictions of the electric vehicle and recharging industry, who are predicting that EVs could account for 10% of overall new car sales by 2020.

Early adopters begin to reap EV dividends

Pioneering EV fleet operators are beginning to see operational and SMR savings by running EVs, but perhaps the biggest surprise is just how much the drivers seem to enjoy using their new electric vehicles

Sewells' Electric Vehicles research established that the overwhelming majority of fleet operators who ascribe a high priority to cost control, brand image, environmental impact and long-term profitability are already operating EVs.

Public and private sector organisations that already use EVs, or offer them to employees as company cars, are eligible for Go Ultra Low Company status,

providing there's a commitment for EVs to make up at least 5% of their vehicle fleet by 2020.

Organisations like British Gas, the Environment Agency, London Fire Brigade and software giant Microsoft are already running dozens of EVs and are starting to see an impact in terms of reduced SMR costs, declining wholelife costs and increased driver satisfaction.

Based on data from KeeResources and real world operating costs from Lex Autolease, the SMR costs of pure electric vehicles are typically 40 per cent lower than equivalent diesel or petrol vehicles.

App-based mobility provider Uber recently announced a decisive shift towards electric that could see it become Britain's biggest electric vehicle fleet operator by the end of 2017.

Working with the Energy Saving Trust, Uber will conduct a three-month trial to assess the viability of electric cars for high-intensity taxi usage.

The company will deploy 50 Nissan LEAFs and Chinese-made BYD E6s in London for the trial, which, if it proves successful, could see hundreds of electric vehicles added to the Uber fleet by the end of 2017.

British Gas Nissan e-NV200 vans are proving to be cheaper to operate than diesels - especially in the urban environment.



Growth projections

Faced with relentless competition from upstart technology giants like Tesla, Apple and Google, mainstream motor manufacturers recognise that the electric revolution is going to happen sooner than anyone anticipated

Electric power could be the dominant form of propulsion for all new cars sold in the UK as early as 2027, with more than 1.3m electric cars registered each year, according to new automotive industry forecast analysis by Go Ultra Low, the government and industry-backed campaign.

Go Ultra Low analysed a series of market forecasts and trends for plug-in vehicle uptake considering forecasts by government, the Committee on Climate Change, the RAC Foundation, Auto Express and other industry authorities. With EV uptake continuing to grow, this new analysis by Go Ultra Low suggests that the Government forecast for all new cars and vans to have ultra low emissions by 2040 is on track to be met.

These conclusions are supported by Bloomberg New Energy Finance, which is forecasting that plummeting battery costs mean that EVs will become cheaper than their ICE counterparts in terms of Total Cost of Ownership (TCO) – what UK fleets would refer to as Whole Life Costs. (Source: The Peak Oil Myth and the Rise of the Electric Car, February 2016).

Based on this projection, Bloomberg believe that sales of EVs will grow at a rate of 30% per annum over the next 10 years, precipitating a further

collapse in the oil price as EV sales increase to account for 35% of total new car sales by 2040. In some of Bloomberg's modelling, this crash could be triggered as early as 2023.

And researchers at respected global consultancy McKinsey are almost as optimistic about the prospects for a dramatic acceleration in the shift towards electric vehicles after 2020.

"Stricter emission regulations, lower battery costs, more widely available charging infrastructure, and increasing consumer acceptance will create new and strong momentum for penetration of electrified vehicles (hybrid, plug-in, battery electric, and fuel cell) in the coming years.

"The speed of adoption will be determined by the interaction of consumer pull (partially driven by total cost of ownership) and regulatory push, which will vary strongly at the regional and local level.

"In 2030, the share of electrified vehicles could range from 10% to 50% of new-vehicle sales. Adoption rates will be highest in developed dense cities with strict emission regulations and consumer incentives (tax breaks, special parking and driving privileges, discounted electricity pricing, et cetera)." (Source: Automotive Revolution – perspective towards 2030: How the convergence of disruptive

"I believe the auto industry will change more in the next five to 10 years than it has in the last 50. We are moving from an industry that, for 100 years, has relied on vehicles that are standalone, mechanically controlled and petroleum fuelled, to ones that will soon be interconnected, electronically controlled and fuelled by a range of energy sources."

Mary Barra, chief executive officer, General Motors

technology-driven trends could transform the industry. McKinsey & Co January 2016).

Rapid expansion of the recharging infrastructure is pivotal to accelerating uptake of EVs, spawning a whole new industry of chargepoint installers, whose growth projections are similarly confident.

Erik Fairbairn, CEO of POD Point estimates fleet operators have got just four years to get their act together: "That may seem a little strong, and perhaps a bit scary, but there's a real opportunity to be grabbed here. Rapid growth in EV sales is happening now and predicted to remain buoyant for years to come, and workplace charging is steadily shifting from perk to expectation.

"Looking at how the trends are set to continue, we reckon that by 2020 10% of all new cars sold in the

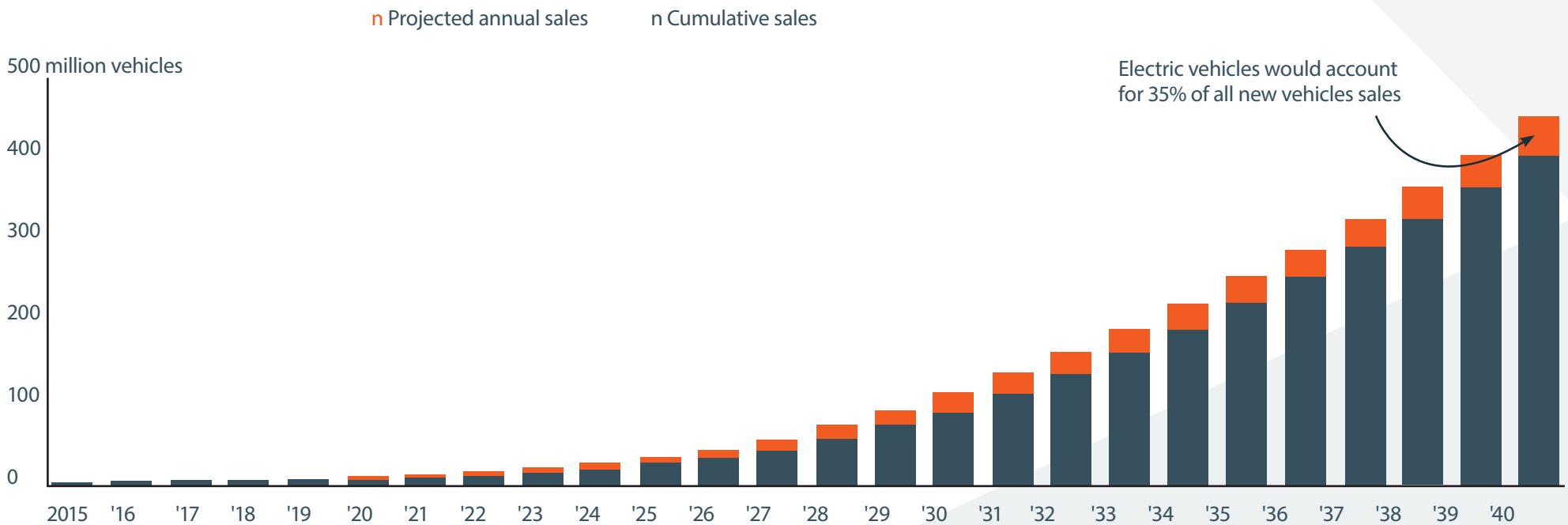
UK will be electric. Put that into context, and you realise that this means 250,000 new EVs will be sold in the space of a year. That's when company car drivers will really start noticing electric cars on the roads, and things will start getting really interesting.

"When they see hundreds of thousands of quiet, clean and cost-efficient cars on the roads, company car drivers will start asking for them. 2020 is, therefore, going to be a major watershed that's going to disrupt both private and business transportation for good.

"The EV revolution hasn't only just begun - it is already in full swing, and businesses will soon start feeling the pressure to keep up with the rapid pace of change." (Source Sewells SME Market Dynamics, Module 3, July 2016)

The rise of electric cars

By 2022 electric vehicles will cost the same as their internal combustion counterparts. This is when sales will accelerate rapidly.



Source: Data compiled by Bloomberg New Energy Finance, Marklines

Technological evolution

The price of batteries continues to fall while the energy output per kilo continues to rise as disruptors like Tesla begin to ramp up commercial production for the mass market

The automotive industry has been developing hybrids for several years. Toyota's popular Prius has been on sale for more than a decade and sold more than six million units worldwide, but the car-makers haven't really embraced pure EVs until relatively recently.

But the entry of huge technology companies into the automotive arena promises a seismic shift away from the status quo over the next decade, threatening the sort of disruption that has seen established and dominant players in other market sectors swept aside.

Disruptors like Apple, Google, Dyson and Tesla have no affinity with the oil industry and are forcing established vehicle manufacturers to wean themselves off hydrocarbons and reduce their dependency on the oil industry.

Renault's head of competitiveness Thierry Bolloré speculated in September that new air quality legislation and tough new European emissions testing regimes could force diesel engined vehicles out of the Renault range altogether.

As sales of diesel cars in France fell by almost 6% year on year, Bolloré said the Clio and Megane diesel derivatives could join the diesel Twingo in disappearing from the line-up as early as 2020.

Carmakers are currently pushing to hit a sweet spot on technology and price – a £26,000 car that can travel more than 200 miles, but within five years, those benchmarks are likely to be closer to £22,500 and 300 miles.

PSA Group will launch 11 electric Citroën, Peugeot and DS vehicles in Europe within the next five years while VW has aspirations to launch 30 new electric models – accounting for 20-25% of overall sales by 2025.

Mercedes is poised to launch a 'sub-brand' devoted solely to pure electric vehicles with an initial range of four vehicles available by 2020.

And Ford's decision to halve planned production of its new Dragon petrol engine at Bridgend may have more to do with an anticipated modal switch to electric power across Europe than Britain's Brexit vote.

Among the challenger manufacturers, Elon Musk is planning to build a massive 'Gigafactory' on every continent (including Europe) for battery and car manufacturing and Dyson's acquisition of Sakti3 solid state battery patents paves the way for commercial production of next generation batteries offering ranges of more than 300 miles between charges

Nissan is anticipating the availability of an affordable electric car that can travel almost 400 miles without needing to be charged within a decade, following a breakthrough in battery technology.

Nissan's current batteries have an energy density of up to 400 watt hours per litre, but new technology could extend that to 700Wh/L by 2020 with a target of more than 1,000Wh/L by 2025. This would see the distance a car could travel rise from 150 miles currently to 375 miles assuming no other improvements are made to the car or the battery technology.

Over the next decade, the pace of battery development will accelerate as the costs of production fall dramatically. Greater efficiencies in the manufacturing process have pulled down the cost of lithium-ion battery packs from \$1,000 per kilowatt-hour in 2010, to about \$350/kWh in 2016, according to Bloomberg New Energy Finance (BNEF).

The prototype Model 3 unveiled by Tesla in March 2016, which is due for delivery in 2017, has a battery cost of just \$200/kWh according to estimates from Bernstein Research.

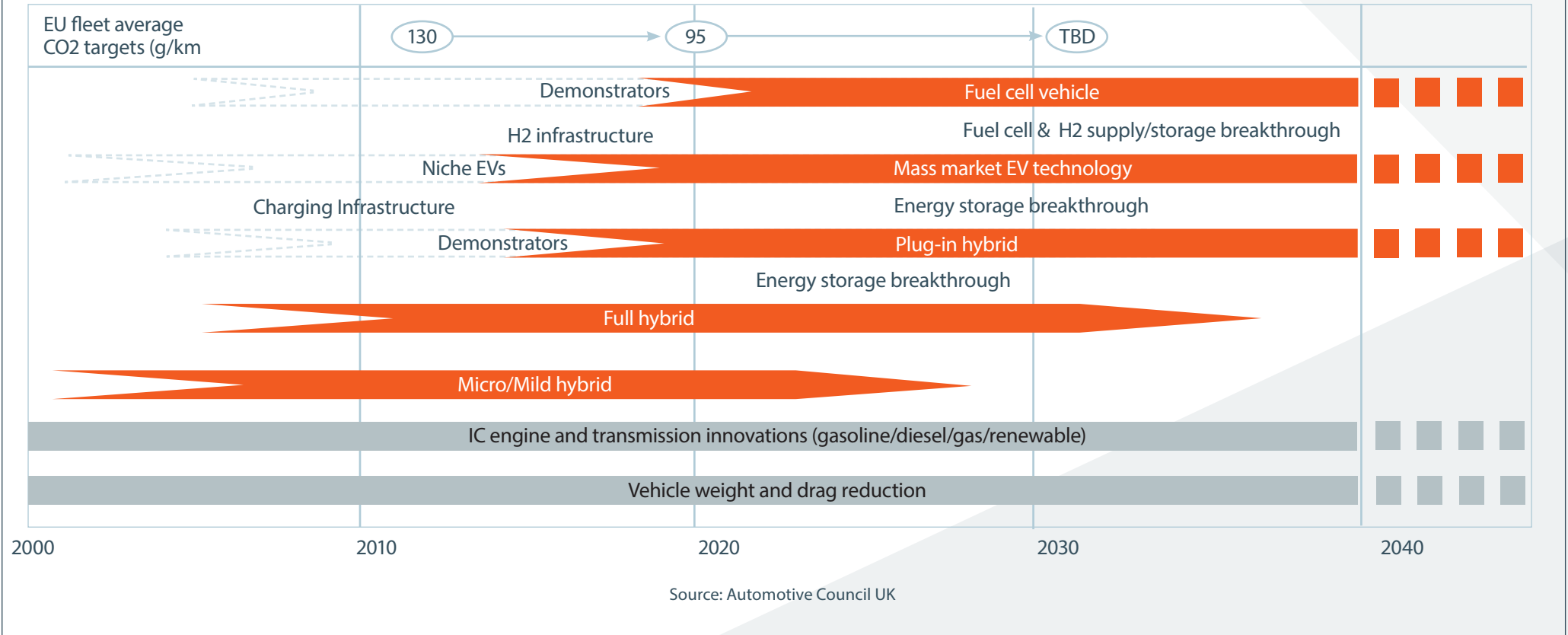
According to Stanford University lecturer in disruption and clean energy Tony Seba, when

the cost of batteries falls to \$100/kWh is the point at which the tipping point moment will happen, forcing traditional automakers to fast-track plans for EVs and cause a dislocation on margins, R&D and headcount. (Source 'Autocalypse' www.clsa.com).

At this point, traditional car manufacturers will almost certainly be forced to taper down internal combustion engine production because the costs of maintaining both ICE and electric drivetrain production lines will be prohibitive.

This is when the balance will tip from hybrid vehicles towards a pure electric play, prompting further efficiency, performance and cost gains.

Passenger car low carbon technology roadmap



Timeline

Industry experts believe the tipping point could come within the next five years



Catalysts

Factors which could accelerate the uptake of EVs

Oil price shock

Continuing instability in the Middle East and a return to growth in China and the other BRIC countries could see oil prices spike again. This will bring forward the point at which EVs become cheaper to operate than ICE vehicles – currently predicted to be between 2020 and 2022.

Cambridge Econometrics has predicted return to \$130 a barrel by 2050, yet further drastic falls in the oil price – even to as little as £20 a barrel – will do little to retard the adoption of EVs according to modelling undertaken by Bloomberg New Energy Finance.

Further disincentivisation of 'dirty' diesel

In the wake of the diesel emissions scandal, the UK Government scrapped plans to remove the diesel levy element of BIK, leaving thousands of company car drivers facing bigger BIK bills than they anticipated.

Further moves to penalise diesels could be in the pipeline – such as higher duty at the pumps or increases in VED – making EVs even more attractive to both fleet and retail customers

Next generation battery technology

The cost of batteries is falling rapidly due to massive commercialisation of battery manufacture. This process will accelerate as Tesla builds more huge factories around the world and new technology such as Lithium-Air and solid state batteries extend ranges out beyond 300 miles.

Hardening in second-hand values

An increase in secondhand demand as retail customers take a greater interest in electric vehicles would bolster currently shaky residual values, giving the leasing industry greater confidence to set attractive monthly rentals which fully reflect lower SMR charges.

Constraints

Factors which could slow the growth of EV sales

Range anxiety

This is still the number one objection to EVs from potential customers and as well as improvements to battery efficiency and range and the development of a comprehensive recharging infrastructure it requires a cultural shift.

The average journey by car in the UK is just 7.1 miles and most cars cover fewer than 25 miles a day, so for the vast majority of motorists on most days, range anxiety isn't a factor.

The charging network is expanding rapidly and battery ranges will continue to improve, but EV drivers will need to get used to plugging in to top up the battery wherever and whenever they can. Long business trips will need to be punctuated with a proper break at a rapid-charging point, where a battery can be 80% replenished in as little as 30 minutes – ideal for grabbing a coffee and catching up on emails or messages.

Evolution of the charging infrastructure

A perceived lack of chargepoints is often cited as an obstacle to EV ownership, yet according to the latest figures from chargepoint mapping website Zap-Map, there are some 4146 sites throughout the UK. Some 70 service stations on England's motorway

network now have EV charge points. This equates to 72% of the 97 total. Of the 165 individual charge points, 92% are rapid, allowing batteries to be 80% replenished in around 30 minutes.

RAC Foundation analysis of data from the publicly available Government-established National Charge Point Registry shows that an electric vehicle driver will now be no more than 20 miles from a service station charge point on 98% (1,831 miles out of 1,859 miles) of the motorway system in England.

When the analysis is broadened out to the whole of the Strategic Road Network managed by Highways England – not just motorways but also major A roads – then 82% (3,845 miles out of 4,668 miles) of the system is within 20 miles of a charge point.

With dozens of conventional filling stations closing every year, Nissan estimates that chargepoints will outnumber petrol stations by 2020, when the number of forecourts will drop below 8,000 while the network of chargepoints continues to increase.

Withdrawal of Government grants

This happened in the Netherlands in 2014, when Government grants were withdrawn, triggering a precipitous fall in EV sales – from over 17,000 units in December 2013 to fewer than 1,000 units

in January 2014 but sales then recovered to trend levels by May 2014. (Source: Vergis et al 2014)

The UK Government is committed to the existing PiCG scheme until spring 2018 – subject to levels of uptake. Bloomberg New Energy Finance predicts that electric vehicles will achieve parity with ICEs in terms of Total Cost of Ownership without any subsidies by 2022. (Source: BNEF bulletin February 2016.)

Battery life and fear of obsolescence

To qualify for the PiCG, electric vehicles must have a three-year or 60,000-mile vehicle warranty and a three-year battery and electric drivetrain warranty, with the option of extending the battery warranty for an extra two years.

Vehicles must have either a minimum five-year warranty on the battery and electric drivetrain as standard or extra evidence of battery performance to show reasonable performance after three years of use.

Many of the question marks hanging over EV residual values are centred on fears over the effective life of the batteries and concerns that 'first generation' electric vehicles will quickly be rendered obsolete by rapid technological advances.

Currently, batteries cost in the region of £5,000 to replace, but that figure is likely to fall rapidly over the next 3-5 years. Furthermore, with fewer moving parts, EVs are subject to significantly lower wear and tear than ICE cars, so that when a battery is replaced after 3 years/60,000 miles, this should significantly extend the working life of the vehicle. As battery technology improves, fitting a new battery could be perceived as an upgrade that significantly extends the range and performance of the vehicle.

Residual value uncertainty

Uncertainty over residual values is one of the biggest barriers to fleet uptake of EVs and the picture is far from clear about the future direction of travel.

According to the Auto Trader Retail Price Index, values for used pure EVs grew strongly in the first quarter of 2016, along with advert views, but as more used vehicles found their way into the used market over the summer months, prices dropped back in June according to residual value forecasters at CAP HPI.

However, as EVs from premium brands such as BMW, Mercedes and Volvo begin to appear on the used market, retail car buyers' perception of secondhand EVs is likely to improve.



The Sewells' View

The tipping point may still be more than three years away, but fleet operators need to start planning for a structured transition to Electric Vehicles now

After years of predictions that sales of electric vehicles were about to take off, many commentators now acknowledge that demand for battery-powered cars and vans is about to hit a tipping point.

Sales of alternatively-fuelled vehicles grew by 40.3% last year, securing their biggest ever market share of 2.8%. Plug-in hybrids experienced phenomenal growth, with new registrations more than doubling, while pure electric vehicles saw an uplift of around 50%. (Source: SMMT Guide to Ultra Low Emissions Vehicles 2016)

Nearly all the major automotive manufacturers have either pure electric or hybrid vehicles on the market and market-leaders such as Tesla and Nissan have unveiled new models which threaten to change the game, with extended ranges capable of shifting public perception and easing 'range anxiety' – one of the biggest barriers to driver acceptance of pure electric vehicles.

Domestic and European emissions legislation will ratchet up significantly in 2020, with some UK cities – led by London – discouraging all but the cleanest ULEVs (Ultra Low Emissions Vehicles) from operating in the urban environment.

And with continuing concerns about the real-world emissions of diesel vehicles, even super-clean Euro 6 diesel engines may struggle to meet expectations in terms of air quality beyond 2020.

Britain leads the continent in the growth of EV sales, with almost 70,000 sold since the Government introduced subsidies in 2011. (Source: SMMT)

If current rates of growth are sustained, this figure could easily top 250,000 by 2020, with annual sales of pure electric EVs and hybrids passing 50,000 units per annum.

At the time of writing (September 2016) sales of alternatively fuelled vehicles (AFVs) were up by almost a third year on year. Almost 54,000 AFVs have been registered so far in 2016, compared with just over 44,000 last year.

Despite continuing scepticism among some fleet operators and company car drivers, most expert commentators now predict a significant acceleration in the shift towards electric vehicles over the next five years.

If current projections of effective battery life and reduced SMR costs are borne out, the potential for extending replacement cycles by adopting electric vehicles could prove decisive.

"The timing of the decision to switch and the extent of their commitment to Electric Vehicles will be the defining strategic choice facing fleet decision-makers over the next five years."

Operating an electric vehicle over a five-year/100,000 cycle may be feasible – carrying the potential to massively reduce fleets' depreciation, fuel and SMR costs – the three most expensive aspects of operating a vehicle.

Residual values should strengthen further when retail demand for EVs ramps up and failing to plan for the transition to low emission vehicles may leave fleet operators exposed to sharp falls in residual values of older vehicles powered by 'dirty' technology.

The future direction of the tax treatment of fuel, Vehicle Excise Duty and Benefit in Kind tax will continue to influence the uptake of EVs but the sort of increase in fuel prices witnessed in the early 2000s could be equally decisive.

Fleet operators face stiffer charges for driving diesel vehicles into city centres and some older diesel

vans may face a total ban on city centre operation.

At some point before 2020, the majority of fleets – especially those operating vans predominantly in urban environments – will need to formulate an emissions reduction strategy that will see them replace a portion of their fleet with electric vehicles.

The timing of this decision and the extent of their commitment to EVs will be the defining strategic choice facing fleet decision makers over the next five years.

The risk for fleet operators in delaying adoption of EVs is that by the time the next phase of emissions legislation makes the switch unavoidable, demand for EVs may already outstrip supply, leading to serious availability issues which could impact on fleets' ability to operate cost-effectively in the urban environment.

Jargon buster

- AFV** Alternative Fuel Vehicle
- BEV** Battery Electric Vehicle (also referred to as 'Pure EVs')
- DC** Direct Current
- DFT** Department for Transport
- EV** Electric Vehicle
- E-REV** Extended Range Electric Vehicle (also known as REEV)
- ICE** Internal Combustion Engine
- OLEV** Office of Low Emission Vehicles
- PHEV** Plug-in Hybrid Electric Vehicle
- PiCG** Plug-in Car Grant
- PiP** Plugged-in Places
- TCO** Total Cost of Ownership
- ULEV** Ultra Low Emission Vehicle
- FCEV** Fuel Cell Electric Vehicle

Charging times

- Standard Charge**
Takes 6-8 hours to fully recharge an EV battery
- Fast Charge**
Dedicated 7kW EV chargepoints for reduced 3-4 hr recharge
- Rapid Charge**
Dedicated 50kW chargepoints that will recharge to 80% capacity in 30 minutes

Sources and further reading

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- n** Bloomberg New Energy Finance www.bloomberg.com





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