

# Appendices

Availability and cost of charging points

Examples of initiatives

Background on the challenges to developing infrastructure

Government intentions, industrial strategy and air pollution strategy

Media reports

The range of charging points and operators

Useful websites

## Availability and cost of charging points

The cheapest chargers are those for home use which can be fully installed from as little as £199 (incl. VAT), given the householder is OLEV grant funded. For example:

- 32Amp Universal Type 2 Socket Charge Points now £199.00\* (inc VAT)
- 32Amp Type 1 or Type 2 tethered Charge Points now £249.00\* (inc VAT)

**‘Go Smart** For just £100 extra you can make your chargepoint smart, allowing you access to ChargeVision, the online portal for accessing and tracking your charging sessions and usage data. Future smart capabilities may be added.’

<https://www.chargedev.co.uk/at-home>

The Energy Saving Trust advises:

‘The typical cost for a home charge point and installation is approximately £1,000. As part of its Electric Vehicle Homecharge scheme, OLEV (Office for Low Emission Vehicles) currently offers applicants £500 towards this cost. EST will provide up to £500 further funding on top of this.’

<http://www.energysavingtrust.org.uk/scotland/grants-loans/domestic-charge-point-funding>

For workplaces or businesses looking to offer the public the opportunity to charge their EV choices range from the relatively inexpensive to more costly. Zap-Map advises:

‘Customer and visitor electric cars will have different charging connectivity needs, so it is important to install a charging point most likely to be compatible with the widest range of vehicles possible. The most common workplace installation is a wall-mounted Type 2 7kW charger, which is compatible with most of the best-selling electric vehicles and will charge a vehicle fully in around 3-4 hours. Some businesses may wish to install a faster 22kW unit or even a Rapid charger if cost and space allow. See [charging basics](#) page for more info on different charging points.

Most workplace installations select wall-mounted units as they are typically cheaper to install. The alternative is a post, which are good on-street options but usually have higher installation costs due to the need to get the electricity to the post under the ground.

For businesses that plan to install their charge point in areas that are publicly accessible, it is essential to consider access issues. Most charge point manufacturers offer units that can be accessed with either a key or RFID card to prevent unwanted usage.

The majority of manufacturers offer some form of back-office support to report on energy use, charge point use and CO2 impact. The level of assistance varies and can usually be tailored as a package for the company buying the service, from basic maintenance to full network support.’

<https://www.zap-map.com/charge-points/charging-work/>

Zap-Map goes on to suggest that there are two elements to the overall costs, namely the price of the charging unit and the installation cost. Every situation will be different, so it is assumed there are no particular difficulties, indicating for a ‘standard’ scheme ‘a fully installed Type 2 7kW double-header would typically cost around £1500, after the WCS (Workplace Charging Scheme) Grant – in this case worth £600 – has been applied. Likewise, a 22kW double-headed post unit costs £2,500-£5,000 (including WCS Grant), while a fully installed rapid charge unit can cost up to £35,000.’

Normal business practice applies of identifying suitable units and installers to provide quotes for the unit and installation costs. Extra care should be taken if it is intended to offer charging to the public to consider how this would work, for example only during normal

business hours or accessible independently 24/7. Any restrictions applicable to users should be made clear on site and also on websites listing the service.

Pertinent issues to consider would be the means of access from the public highway, public perceptions of safety and security, signage to clearly identify the charge point location, restricting parking in the bay(s) with a charge point to those recharging an electric vehicle, night-time lighting and CCTV surveillance, providing live data on the equipment status in public information sources, etc.

Where EV users are to be charged a fee for recharging this should be clearly signed and the means of payment explained, including for example Pay As You Go (PAYG) using a debit or credit card via equipment included within the charge point unit. The charge point operator's telephone helpline should be highlighted to allow for circumstances where, for example, payment equipment included within the charge point unit is not functioning.

There should be arrangements in place for the on-going inspection, testing, maintenance, repair and renewal of the charge point unit and associated infrastructure to ensure the facility operates in a safe and serviceable condition.

Consideration is required to meet the needs of disabled electric vehicle users.

## Examples of initiatives

There are many examples of initiatives being taken across the country to invest in new charging points. Those described below are only a selected sample to illustrate the potential here in Herefordshire and Shropshire.

### Warner hotels roll out free Rolec EV charge points

Warner Leisure Hotels has installed free-to-use EV charge points across its portfolio of locations, allowing hotel guests to recharge their plug-in cars during their stay.

The move has seen a number of Rolec AutoCharge units installed at the 13 Warner Leisure Hotel sites in England and Wales.

Fuel filling stations are an obvious opportunity with national suppliers such as BP and Shell taking appropriate action. The local challenge is that Herefordshire and Shropshire's fuel filling stations are likely to be low on the priority list for investment in comparison to London, Birmingham and Manchester, for example. Our intention is to encourage local filling stations to invest sooner rather than later.

### BP to install electric car charging stations

2 August 2017

BP is set to install electric car charging stations across its UK petrol station empire in the future, according to the company's chief executive Bob Dudley.

Speaking to Reuters, Dudley said the company is in talks with car manufacturers on installing electric car charging points across BP fuel stations. The company has over 3,100 fuel retail sites in the UK. "We have discussions going on with a lot of the EV manufacturers to have a tie-up with our retail network for charging," said Dudley.

### Will more fuel stations set up EV charging points?

18/10/2016 in [Fleet Industry News](#)

Electric vehicle (EV) charging points could become a familiar sight on fuel station forecourts after Shell confirmed it hopes to start introducing them from next year.

The availability of charging points has long been a barrier to the wider uptake of plug-in vehicles, especially for higher mileage company car drivers.

Major retailers have also begun to rise to challenge, including, for example, Waitrose.

### Charging ahead with Electric Vehicles

Owners of electric cars can 'fill up' their vehicles while shopping at **Waitrose**, as we expand our network of charging points.

The popularity of electric vehicles, known as EVs, in Britain, is rising as motorists discover the benefits of nominal energy costs and a smaller carbon footprint. More charge points will spark interest in switching to an EV.

'The main barrier in people's mind to the take up of electric cars is their travel range and charging times,' says Dale Vince, founder of Ecotricity, the company installing charge points at Welcome Break services, home to Waitrose shops on motorways.

Leisure venues have also seen the opportunity to cater to their customers and perhaps attract new ones, including Hawkstone Park.

## Hawkstone Park becomes first venue in Shropshire to install electric vehicle charging points {golf club}

8th May 2012

A Shropshire tourist attraction and a local car dealership have connected to celebrate sharing pole position in the county's electric vehicle race. **Hawkstone Park** in Weston-under-Redcastle, near Shrewsbury, has become the first location in Shropshire to install electric vehicle (EV) charging points while William A Lewis is the county's first dealership to have fully electric vehicles on general sale.

There is also developing investment by charitable organisations such as the National Trust.

## National Trust to expand EV charge point offering with Rolec

23 November 2016

The National Trust will roll-out EV charge points across an increasing number of its sites after agreeing a partnership deal with Rolec EV.

The result will see the charge point provider's units and wall boxes installed across the UK, with millions of visitors each year heading to National Trust locations.

Rolec EV's AutoCharge: EV Pedestals will be installed in National Trust visitor car parks, with wall mounted units also set to be installed too, primarily for staff and fleet use. Rolec will also install charging points at National Trust holiday cottage sites.

These examples of initiatives are strong indications of the positive response that is likely to be met by a concerted effort to promote a network of charging points across Herefordshire and Shropshire.

## Background on the challenges to developing infrastructure

The first challenge to developing EV charging infrastructure in Herefordshire and Shropshire is that there is little to start with and there are likely a number of reasons for this.

The rural nature of much of Herefordshire and Shropshire with its sparse population does not rate highly for prioritising private investment when there are ostensibly more attractive opportunities on motorway service areas, major highways, in cities and large towns.

Even with towns such as Hereford, Shrewsbury and Telford these are not necessarily high on the list of priorities.

Where charging point operators may wish to expand into rural areas there are the potential challenges of limited access to power capacity and broadband / telecom services. Potential additional cost is contrasted with likely lower patronage in comparison to major urban locations.

The public sector has not seen providing charging infrastructure as a priority and has had relatively little pressure applied to raise its priority. Additionally there has been a significant reduction in local authority staffing and understandable prioritisation of legally required service provision.

The private sector has shown relatively interest in installing charging points at the workplace where some businesses have their own parking spaces or as a service to complement their normal business, such as a tourist attraction, hotel, restaurant or retail operation.

Developing this strategy and action plan offers the opportunity to begin a dialogue with the private and public sector to stimulate the consideration of hosting a charging point and using it as a means of providing an improved service to customers but also to raise the profile of the business.

The National Grid perspective is provided here.

### National Grid - Our energy insights - Forecourt thoughts: Mass fast charging of electric vehicles

**{For a 90 kWh EV battery}** If you assume you have an average size battery charger; it is a 3.5 kW device (equivalent to a fast boiling domestic kettle's electricity usage) . It would take about 19 hours to charge one of these batteries from being 25% full to 100% charged.

This time could be halved to 10 hours with a 7 kW charger. This size of charger is already available and will soon become more prevalent than the 3.5 kW versions.

However, these batteries can accept a 50 kW input and it would take about 80 minutes to charge if you could plug into that level of power. A home charger will not support this level of power requirement, but commercial sites do. Table 1 illustrates the charging times required for various battery and charger sizes.

**Table 1** Approximate times it takes to 75% charge EV batteries by charger size

Charger size	Large battery 90 kWh	Average battery 28 kWh
3.5 kW	19:20	06:00
7 kW	09:40	03:00
11 kW	06:10	02:00
50 kW	01:20	00:30

There are two potential areas why fast home charging will be a problem. The first is for those with on street parking and the second is network connectivity issues.

Not all EV owners / users have a permanent parking spot which could accommodate a connector to the network – or at least one that would be safe. Extension leads or long cables to the street are inappropriate in several ways, not least safety.

In a survey<sup>1</sup> 57% of households had access to off street parking and by implication 43% did not. With estimates of 20 million EVs on the road that suggests there would be some 8.6 million vehicles without the necessary facilities to charge from home. So either these (potential) EV users persist with old fossil fuelled vehicles or will require alternative charging facilities.

Stating the obvious, the quantity of power that can be drawn from the electricity network is limited and will differ at various points across the grid, from household (or place business or other potential charging point location) through distribution networks to the transmission system.

### **Presently available fast chargers**

There are several fast charging national suppliers including Ecotricity, Charge Your Car, Polar Network, Tesla, etc. The fastest chargers are typically 50 kW. Such chargers take around 30 minutes to charge an average present day EV. It would require over an hour for one of the desired long distance EVs with a 90 kWh battery to three-quarters charge.

Recent announcements by VW, Ford, Daimler and BMW have indicated that they plan to build a network of at least 400 rapid EV chargers across Europe. These are likely to be 150 kW units and may be capable of supporting 350 kW chargers in the future<sup>2</sup>.

This suggests drivers hanging around for less time, given their vehicle is suitable to be charged at such a rate but conversely potentially substantially increasing the power demand on the charging point site and local network at any one time. The more such very 'rapid' chargers at one site the worse the power situation, for example a 'filling' station, although the turnover of vehicles taking up parking spaces improves, assuming a prompt departure when charged up.

### **Why may rapid charging at home be a challenge?**

The average household is supplied with single phase electricity and is fitted with a main fuse of 60 to 80 amps. Using a 3.5 kW battery charger requires 16 amps. If one were to use an above average power charger, say 11 kW, this would require 48 amps. When using such a charger it would mean that you could not use other high demand electrical items (such as kettles, oven, and immersion heaters) without tripping the house's main fuse. Using an 11 kW charger would take 6 hours to fully charge a Tesla Model S, which also has a 90 kWh battery, from the 25% full state.

If your house had fitted the maximum 100 amp main fuse then a more powerful 22 kW charger could be used. It would take only 3 hours to charge the battery (or 5 hours if the battery was completely flat); but all the other electrical equipment in the house would have to be turned off as the charger requires 96 amps. In reality an 11 kW charger, with an above average main fuse, is likely to be a good compromise. So the house electricity capability is one 'pinch point'; unless the car is not used too much so the battery just needs 'topping up' and one is happy to trickle feed it each and every night. ...

Smart chargers are becoming common place and they will be the norm in the near future. These will help with spreading the demand away from peak times. When large numbers of EVs need charging they will be one important part of the solution jigsaw.

1

<http://webarchive.nationalarchives.gov.uk/20111006052633/http://dft.gov.uk/pgr/statistics/datatablespublications/trsnstatsatt/parking.html>

2 Bloomberg, European automakers charge into EV infrastructure, 1 December 2016

Another 'pinch point' would be the substation and the peripheral routes and branches within a local distribution network. Pilot projects, such as My Electric Avenue, were reporting potential issues at the distribution level. In one more extreme example they were identifying voltage issues when five 3.5 kW chargers were connected to a network cluster (with 134 dwellings) and were charging at the same time. The project concluded that across Britain 32% of low voltage circuits (312,000) will require reinforcing when 40% – 70% of customers have EV's based on 3.5 kW chargers<sup>1</sup>. These problems will only be exacerbated when 7 kW chargers are used.

### **How many charging stations would be required?**

... The average number of pumps per forecourt was 7.3 in 2011<sup>2</sup> and this has been rising as the larger petrol stations predominate. The average number could be around 9 in 2050.

By applying these numbers to charging points, nine pumps of 350 kW capabilities would require an infrastructure capable of handling 3.1 MW. This is enough power to supply 1,000 average households<sup>3</sup>. In current forecourts, having 20 pumps is not unknown. Such EV charging stations would require a 7 MW infrastructure to support them. All these megawatt sites will be significant connections and would warrant a direct connection to the distribution network which would be above the domestic 240 volts.

### **In summary**

In a world where almost all cars will be electric:

- 43% of car owners will not have access to off street parking
- too many domestic charging points will cause network stress.

So perhaps one potential solution would be to build a few thousand super-fast charging forecourts of over 3 MW capacity rather than carry out a large scale rebuild of the domestic electricity infrastructure. It may well be that the charging from home option may not be in the long term interest of the consumers even with smart chargers.

1 <http://myelectricavenue.info/sites/default/files/Summary%20report.pdf>

2 <http://www.ukpia.com/docs/default-source/default-documentlibrary/ukpia-2015-statisticalreviewf72b5c889f1367d7a07bff0000a71495.pdf?sfvrsn=0>

3 <https://www.ofgem.gov.uk/gas/retail-market/monitoring-dataand-statistics/typical-domestic-consumption-values>

**Extract** from p.2 - 4, Our energy insights - Forecourt thoughts: Mass fast charging of electric vehicles, National Grid

<http://fes.nationalgrid.com/insights/forecourt-thoughts-mass-fast-charging-of-electric-vehicles/>



## Government intentions, industrial strategy and air pollution strategy

<https://www.autocar.co.uk/car-news/new-cars/government-make-ev-chargers-mandatory-large-petrol-stations-and-motorway-services>

### Government to make EV chargers mandatory at large petrol stations and motorway services

New bill edges Britain closer to the EV tipping point and introduces framework for autonomous car insurance

by [Jimi Beckwith](#)

19 October 2017

The Government has introduced a bill to make electric vehicle (EV) charging points mandatory at all large petrol stations and motorway services.

Introduced by transport minister John Hayes, the Automated and Electric Vehicles Bill will lead to multiple charge points being installed at each of the UK's motorway service stations, as well as at many of the 8500 other filling stations up and down the country.

Currently, there are more than 11,500 public EV charging points in the UK. This move will nearly double the country's charging infrastructure, which has been a major barrier to the uptake of EVs.

<https://services.parliament.uk/bills/2017-19/automatedandelectricvehicles.html>

### Automated and Electric Vehicles Bill 2017-19

The Bill passed its [Second Reading](#) on Monday 23 October 2017 and was considered in a [Public Bill Committee](#) and reported without amendment on Thursday 16 November 2017.

<https://www.gov.uk/government/news/new-measures-set-out-autonomous-vehicle-insurance-and-electric-car-infrastructure>

### New measures set out autonomous vehicle insurance and electric vehicle infrastructure

... Other measures set out in the Bill will mean easier access to infrastructure for electric vehicles. They could also ensure the right infrastructure is in place for the growing market for electric vehicles.

Motorway services and large fuel retailers could be made to provide electric charge points and hydrogen refuelling stations under planned new laws.

The measures could also make sure data about the location and availability of charging stations is openly available, and make it easier to use the different networks which are available. They follow a [public consultation on measures to improve charging infrastructure](#).

John Hayes, Minister of State for Transport said:

If we are to accelerate the use of electric vehicles we must take action now and be ready to take more action later. I recognise that to encourage more drivers to go electric, the infrastructure needs to become even more widespread than the 11,000 charging points already in place and more straightforward. We are determined to do all we can to make electric vehicles work for everyone and these new laws will help make this a reality.

<https://www.gov.uk/government/news/pm-unveils-plans-for-a-modern-industrial-strategy-fit-for-global-britain>

Press release

## PM unveils plans for a modern Industrial Strategy fit for Global Britain

First published: 22 January 2017

- new ‘sector deals’ and investment in research and development will support the industries of the future where Britain has the potential to lead the world – **from electric vehicles** to biotech and quantum technologies
- PM sets out plan to drive growth across the whole country and create more high skilled, high paid jobs and opportunities as part of government’s Plan for Britain

<https://www.gov.uk/government/news/innovation-to-drive-affordable-energy-and-clean-growth-under-industrial-strategy>

## Innovation to drive affordable energy and clean growth under Industrial Strategy

[Department for Business, Energy & Industrial Strategy](#) and [Nick Hurd MP](#)

Part of: [Low carbon technologies](#) and [Industrial strategy](#)

Published: 25 January 2017

**£28 million for energy innovation projects will help to bring down energy costs, as part of government’s vision.**

- research and innovation lead to new products, services, and more effective ways of doing business with a lower carbon impact
- to get every part of the UK firing on all cylinders we **need to deliver an energy infrastructure system fit for the 21st century**
- investment in innovation will help to commercialise our world-leading ideas and place UK companies at the forefront of developing low carbon growth solutions

The [Industrial Strategy green paper](#) highlighted the government’s commitment to minimise business energy costs and support the competitiveness of UK companies as we pursue our climate change targets in the most cost effective way.

Today Minister of State for Climate Change and Industry Nick Hurd attended the [Rushlight Awards](#) where he announced funding for a series of energy innovation projects. The funding boost of £28 million will be invested in smart systems, industrial energy reduction and offshore wind demonstrating our commitment to building a low carbon, low cost future. This forms part of the government’s commitment to double support for energy innovation, up to £400 million per year in 2021.

More details of the government’s Energy Innovation Programme and funding are available from the [GOV.UK Energy Innovation page](#).

This financial support follows on the government’s vision to ensure the UK continues to be the global leader in science and research. The [Industrial Strategy green paper](#) identifies that

we need to do more to commercialise the world-class ideas and discoveries made in Britain, and put the UK and British companies at the forefront of innovation.

Minister for Climate Change and Industry Nick Hurd said:

Innovation in energy will play an important role to shape our low carbon future to rebuild an outdated energy system. That's why we've increased our financial support, helping to create jobs and opportunities for people across the UK.

Our Industrial Strategy green paper seeks views on how we can support these emerging technologies, ensuring we drive growth and develop international partnerships across our world leading research, science and innovation sector.

Etc. etc.

<https://www.gov.uk/government/news/developing-a-modern-industrial-strategy>

## Developing a modern industrial strategy

[Department for Business, Energy & Industrial Strategy](#)

Part of: [Industrial strategy](#)

Published: 23 January 2017

**We are building an industrial strategy to deliver a high-skilled, competitive economy that benefits people throughout the UK.**

Our economy has great strengths, but while many people, places and businesses are thriving, opportunities and growth are still spread unevenly across the country.

We are developing a modern industrial strategy. We want to build on our strengths to enable all parts of the country to succeed: helping to deliver a high-skilled, competitive economy that benefits people throughout the UK.

- [Read the Industrial Strategy green paper, 'Building our Industrial Strategy'](#)
- [Building our Industrial Strategy: 10 pillars](#) (PDF, 596KB, 1 page)

## Building our Industrial Strategy

Green Paper

January 2017

Text includes:

### Summary

#### Why we need a modern industrial strategy

We will also review the opportunities for growth from the energy sector and the opportunities for the UK. We are already testing the use of new grid technologies in various locations around the country in preparation **for the shift to electric vehicles**. To ensure that new energy technologies are developed here – and the UK benefits from global investment in this area – we have doubled support for energy innovation, and are already investing over £600 million in **support to accelerate the transition to ultra low emission vehicles**. At the Autumn Statement 2016 additional funding of £270 million was announced.

## Upgrading infrastructure

This includes:

- £2.6 billion for improvements in transport projects; including £1.3 billion for upgrades to local transport and national roads, £390 million for future transport, including support for ultra low emission vehicles and connected and autonomous vehicles, and over £450 million to support rail improvements including digital signalling, smart ticketing and other measures to improve services.

p.54

## Delivering affordable energy and clean growth

The Office of Low Emission Vehicles (OLEV) works to catalyse the transition towards ultra low emission vehicles. OLEV is delivering grants for electric vehicles, schemes to support charging and refuelling infrastructure, R&D competitions to harness innovation in the UK, and work to ensure the effective integration of electric vehicles into a smarter electricity grid.

p.92

## Government ministerial speech

<https://www.gov.uk/government/speeches/we-are-reaching-the-ultra-low-emission-vehicle-tipping-point>

### We are reaching the ultra low emission vehicle tipping point

Roads minister Andrew Jones hails rising ULEV sales and makes the case for better charging infrastructure.

21 January 2016

“By 2050, we want virtually every car and van on the road to be zero emission.

Councils in the capital and across the country have similar objectives, and we will shortly announce the winners of a £40 million Go Ultra Low Cities scheme.

The successful local authorities have clear plans for their own city-wide ultra-low emission vehicle revolutions, and will receive funding to achieve those plans.

The rationale for this kind of local funding is clear.

It’s often in the local area that the benefits of ULEV vehicles are most plainly felt — as contributing to cleaner air, healthier lungs and lower noise pollution.

... “What is so important about the charging network is that growth in ULEVs can only continue if the public’s confidence in their ability to charge is maintained.

... “So chargepoint technology is improving and reliability is getting better and better.

But drivers need to know that the chargepoint network in their area is comprehensive, expanding, and well-maintained; so that they can drive with confidence to the supermarket, the high street, or the local primary school.

And there’s lots that local authorities can do to improve their chargepoint network.

Such as requiring new building developments to include chargepoints, providing dedicated parking bays for local ULEV car clubs or allowing preferential access for ULEVs in low emissions zones.”

... “And when drivers have invested in a ULEV, they need the right information so they can set out with confidence; to know where their nearest chargepoint is, and that it’s in good working order.

Good information doesn’t help just existing drivers, it also helps newcomers take their first plunge into the ULEV market.

Through measures such as these, local authorities have a strong hand in encouraging the uptake of ULEV vehicles, and I’m really keen to see them play that hand well.”

... “We’re reaching that tipping point with the ULEV market.

But the closer we can work together — across government, manufacturers, chargepoint hosts and network operators.

The quicker we can transform our neighbourhoods.

And deliver the cleaner air and quieter streets we need.

That collaboration is our task in 2016.”

<https://www.gov.uk/government/news/plan-for-roadside-no2-concentrations-published>

## Plan for roadside NO2 concentrations published

26 July 2017

Plan includes an end to the sale of all new conventional petrol and diesel cars and vans by 2040 and a new Clean Air Fund

The Government confirmed today that it will end the sale of all new conventional petrol and diesel cars and vans by 2040, as it unveiled new plans to tackle air pollution.

[The UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations](#) produced by Defra and the Department for Transport outlines how councils with the worst levels of air pollution at busy road junctions and hotspots must take robust action.

Today’s announcement is focused on delivering nitrogen dioxide (NO2) compliance at the roadside in the shortest amount of time. This is one part of our programme to deliver clean air – next year the Government will publish a comprehensive Clean Air Strategy which will address other sources of air pollution.

Air quality in the UK has been improving significantly in recent decades, with reductions in emissions of all of the key pollutants, and NO2 levels down by half in the last 15 years.

Despite this, an analysis of over 1,800 of Britain’s major roads show that a small number of these - 81 or 4% - are due to breach legal pollution limits for NO2, with 33 of these outside of London.

To accelerate action local areas will be asked to produce initial plans within eight months and final plans by the end of next year.

The Government will help towns and cities by providing £255 million to implement their plans, in addition to the £2.7 billion we are already investing.

Due to the highly localised nature of the problem local knowledge will be crucial in solving pollution problems in these hotspots. The government will require councils to produce local air quality plans which reduce nitrogen dioxide levels in the fastest possible time.

Local authorities will be able to bid for money from a new Clean Air Fund to support improvements which will reduce the need for restrictions on polluting vehicles. This could include changing road layouts, removing traffic lights and speed humps, or upgrading bus fleets.

Air pollution continues to have an unnecessary and avoidable impact on people's health and evidence shows that poor air quality is the largest environmental risk to public health in the UK, costing the country up to £2.7 billion in lost productivity in 2012.

The UK is one of 17 EU countries breaching annual targets for nitrogen dioxide, a problem which has been made worse by the failure of the European testing regime for vehicle emissions.

The government will also issue a consultation in the autumn to gather views on measures to support motorists, residents and businesses affected by local plans - such as retrofitting, subsidised car club memberships, exemptions from any vehicles restrictions, or a targeted scrappage scheme for car and van drivers.

Measures considered will need to target those most in need of support, provide strong value for the taxpayer and be resistant to fraud.

Environment Secretary Michael Gove said:

Today's plan sets out how we will work with local authorities to tackle the effects of roadside pollution caused by dirty diesels, in particular nitrogen dioxide.

This is one element of the government's £3 billion programme to clean up the air and reduce vehicle emissions.

Improving air quality is about more than just transport, so next year we will publish a comprehensive Clean Air Strategy. This will set out how we will address all forms of air pollution, delivering clean air for the whole country.

Transport Secretary Chris Grayling said:

We are determined to deliver a green revolution in transport and reduce pollution in our towns and cities.

We are taking bold action and want nearly every car and van on UK roads to be zero emission by 2050 which is why we've committed to investing more than £600m in the development, manufacture and use of ultra-low emission vehicles by 2020.

Today we commit £100m towards new low emission buses and retrofitting older buses with cleaner engines.

We are also putting forward proposals for van drivers to have the right to use heavier vehicles if they are electric or gas-powered, making it easier for businesses to opt for cleaner commercial vehicles.

Local authorities will have access to a range of options to tackle poor air quality in their plans such as changing road layouts to reduce congestion, encouraging uptake of ultra-low emissions vehicles and retrofitting public transport.

If these measures are not sufficient to ensure legal compliance, local authorities may also need to consider restrictions on polluting vehicles using affected roads.

This could mean preventing polluting vehicles using some of these roads at certain times of the day or introducing charging, as the Mayor of London has already announced.

The Government is clear that local authorities should exhaust other options before opting to impose charging. Any restrictions or charging on polluting vehicles should be time-limited and lifted as soon as air pollution is within legal limits and the risk of future breaches has passed.

Plans will be assessed by government to make sure they are effective, fair, good value and will deliver the required improvements in air quality in the shortest time possible. If local plans do not meet that test, government will require councils to take action to achieve legal compliance.

### **Government is supporting councils to develop these plans through:**

- A £255 million implementation fund for all immediate work required to deliver plans within eight months to address poor air quality in the shortest time possible;
- A Clean Air Fund for councils to bid for money to introduce new measures such as changing road layouts to cut congestion and reduce idling vehicles, new park and ride services, introducing concessionary travel schemes and improving bus fleets. More details will be announced later this year.
- A £40 million Clean Bus Technology Fund grant scheme - part of a £290 million National Productivity Investment Fund announced in the Autumn Statement - to limit emissions from up to 2350 older buses. Government remains committed to putting the public finances back on a sustainable footing: so all money spent on air quality measures will be funded through changes to the tax treatment for new diesel vehicles or through reprioritisation within existing departmental budgets. Further details will be announced later this year.

### **Also announced today:**

- Van drivers are set to be given the right to use heavier vehicles if they are electric or gas-powered, in measures that will help improve air quality in towns and cities across the country.
- Manufacturers found to be using devices on their vehicles to cheat emissions tests could face criminal and civil charges, with fines of up to £50,000 for every device installed, under proposed new laws.

### **Background:**

1. Government plans to improve air quality include:
  - Plans to ensure that new vehicles used in the Government fleet are low NO<sub>2</sub>, as well as low carbon.
  - Lorry emissions checks at the roadside and new emissions standards for non-road mobile machinery.
2. Local Authorities will be expected to produce draft plans in eight months and final plans by December 2018.
3. According to Public Health England, poor air quality is the largest environmental risk to public health in the UK. Evidence from the World Health Organisation (WHO) shows that older people, children, people with pre-existing lung and heart conditions, and people on lower incomes may be most at risk. A review by the World Health Organization concludes that long-term exposure to air pollution reduces life expectancy by increasing deaths from lung, heart and circulatory conditions and there is emerging evidence from the Royal College of Physicians of possible links with a

range of other adverse health effects including diabetes, cognitive decline and dementia, and effects on the unborn child.

4. [Research commissioned by Defra](#) estimated that in 2012, poor air quality had a total cost of up to £2.7 billion through its impact on productivity.
5. Read [The Government's UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations](#).
6. Breakdown of £2.7bn government funding:
  - £1bn – Ultra low emissions vehicles. This includes investing nearly £100m in the UK's charging infrastructure and funding the Plug In Car and Plug In Van Grant Schemes.
  - £290m – National Productivity Investment Fund. In the Autumn Statement 2016, a further £290 million was committed for reducing transport emissions which includes £100 million for new buses and retrofit (of which £40million is made available today), £50 million for a Plug In Taxi programme and £80 million for ULEV charging infrastructure.
  - £11m – Air Quality Grant. We have awarded over £11 million under our Air Quality Grant scheme to help local authorities improve air quality.
  - £89m – Green Bus Fund. The UK Government has invested a total of almost £89 million via the Green Bus Fund to help bus companies and local authorities in England to put over 1200 new low carbon buses on the roads.
  - £27m – Clean Bus Technology Fund and Clean Vehicle Technology Fund. Since 2013, Government has awarded over £27 million to retrofit almost 3,000 of the oldest vehicles (mainly buses) including through the Clean Bus Technology Fund & Clean Vehicle Technology Fund.
  - £1.2bn – Cycling and walking. In April 2017, the UK Government published its Cycling and Walking Investment Strategy which identifies £1.2 billion which may be invested in cycling and walking from 2016-2021.
  - £100m – National road network. Through the Road Investment Strategy, the UK Government has allocated a ring-fenced £100 million for an Air Quality Fund available through to 2021 for Highways England to help improve air quality on its network.

For further information contact the Defra press office on 020 8225 7317.

<http://www.telegraph.co.uk/news/2017/07/25/new-diesel-petrol-cars-banned-uk-roads-2040-government-unveils/>

## New diesel and petrol cars banned from UK roads by 2040, as Government unveils new pollution tax on drivers in busiest areas

**Steven Swinford**, DEPUTY POLITICAL EDITOR

25 July 2017

Diesel drivers on congested roads in towns and cities across the UK face new pollution taxes under Government plans which will ultimately herald the end of the traditional car.

Ministers have identified 81 major roads in 17 towns and cities [where urgent action is required](#) because they are in breach of EU emissions standards, putting people's health at risk.

The Government will also commit to banning the sale of all new diesel and petrol cars by 2040 in a bid to encourage people to switch to electric and hybrid vehicles.



The air quality strategy urges local authorities to first try to reduce emissions by retrofitting the most polluting diesel vehicles, changing road layouts and removing speed humps.

However it concedes that as a last resort councils will be allowed to impose tough restrictions on the most polluting diesel vehicles as soon as 2020 to bring down the levels of harmful nitrogen dioxide emissions.

The strategy stops short of meeting the demands of motoring groups for a diesel scrappage scheme, under which diesel drivers would receive compensation for trading in their polluting vehicles.

It instead says that the Government will hold a consultation on a "possible" scrappage scheme in the autumn, which sources have suggested is likely to be "very, very targeted".

The Government will also commit to banning the sale of all new diesel and petrol cars by 2040 in a bid to encourage people to switch to electric and hybrid vehicles.

Michael Gove, the Environment Secretary, is expected to warn local authorities against "unfairly penalising" drivers by imposing pollution taxes and other restrictions on diesel drivers.

The Government is concerned that motorists were encouraged to buy diesel vehicles under Labour more than a decade ago because of concerns at the time over carbon emissions.

Mr Gove has significantly stripped back previous plans which could have seen restrictions on diesel cars across entire city and town centres. He instead wants councils to focus on reducing emissions on specific roads.

A new analysis found that 48 of the most polluted roads are in London. Others have been identified in Birmingham, Derby, Leeds, Nottingham, Southampton, Bristol, Bolton, Manchester, Bury, Coventry, Newcastle, Sheffield, Belfast, Cardiff and Middlesbrough.

The pollution hotspots are predominantly on A-roads but also include stretches of two motorways - the M4 near London and the M32 in Bristol.

<https://www.theguardian.com/business/2016/nov/25/electric-vehicles-greg-clark-jaguar-land-rover>

## Business secretary says electric vehicles at heart of industrial strategy

Greg Clark signals post-Brexit policy as Jaguar Land Rover confirms it plans to create 10,000 jobs in the UK

[Graham Ruddick](#)

25 November 2016

[Greg Clark](#), the business, energy and industrial strategy secretary, has said making Britain a world-leading hub for next-generation electric vehicles will be at the heart of the government's new industrial strategy, providing one of the clearest indications yet of the sectors it wants to focus on in a post-Brexit economy.

Clark said the automotive sector, particularly electric vehicles, driverless cars and battery storage, will be a "emblematic area of focus" and is going to be "one of the big features of the world and Britain's industrial policy during the weeks, months and years ahead".

The government is expected to lay out an outline of its industrial strategy in the next few weeks, with Clark saying it will publish "some directions that we want to work together [with businesses] to elaborate further".

The senior cabinet minister was talking at a meeting of political and automotive leaders from the Midlands on Thursday evening at the University of Warwick.

At the event, Ralf Speth, the chief executive of [Jaguar Land Rover](#), said his company is aiming to double its global workforce of 40,000 as it expands into electric cars and battery technology. This ambition would see the creation of 10,000 new jobs in the UK over the next few years as JLR continues its dramatic recovery since the financial crisis by opening new research and development sites.

Speth said that JLR wants to build a new electric car plant in Britain, as well as a factory that can produce batteries, but that the carmaker needs support from the government.

“We want to build our EVs (electric vehicles) in the west Midlands, in the home of our design and engineering,” Speth said. “This is clear, it goes without saying. But there is a huge problem – we don’t currently have the capacity to produce them at scale nor at speed, the costs of doing business in the UK are high compared to other countries, and alongside the access to the right skills, energy infrastructure remains the single greatest challenge to Jaguar Land Rover.”

Speth said JLR needs the equivalent of four power stations and the “right legislative framework” to develop its electric car plans, and for the fledgling industry to flourish in the UK. The company unveiled its first electric car, the I-Pace, earlier this month in Los Angeles.

The JLR boss warned Britain will lose investment to other countries, such as Germany, if the government did not act.

Etc. etc.

## Media reports

<http://www.coventrytelegraph.net/news/jaguar-land-rover-coventry-battery-13119182>

### Coventry on the charge - new electric vehicle battery centre could create 10,000 jobs

The battery development centre is part of a wider project to see Coventry become a 'motor city' once again

BY ENDA MULLEN

Updated 1 June 2017

Up to 10,000 new jobs could be created in **Coventry** if the go-ahead is given to create a national centre to develop batteries for the electric vehicles of the future.

The ambitious scheme to create a national centre for battery technology for the next generation of self-driving, connected and electric vehicles forms part of a wider aim to see Coventry become a motor city for the 21st century.

That also includes long-term hopes outlined by **Jaguar Land Rover** boss Ralf Speth to make Coventry the centre of the car maker's electric vehicle production plans.

The proposals for the National Battery Prototype Centre, developed by Warwick Manufacturing Group (WMG) at the University of Warwick and the Coventry and Warwickshire Local Enterprise Partnership (CWLEP), were outlined at a gathering of industry leaders last night.

The event also saw the proposals presented to Greg Clark, Secretary of State in the outgoing government.

Andy Street, the recently elected **Mayor of the West Midlands**, is fully behind the battery centre scheme.

He joined the chairman of the CWLEP, Jonathan Browning, and the chairman of WMG, Professor Lord Kumar Bhattacharyya, to press Coventry's case for the project.

If the bid is successful, the centre would become part of the Whitley South Technology Campus in Coventry, close to the site where Jaguar Land Rover is currently expanding its operations.

If given the go-ahead the project has the potential to unlock 10,000 new jobs in Coventry once it is running at full capacity.

In November last year Jaguar Land Rover's chief executive Ralf Speth said the company wants to build the next generation of electric cars and their batteries in Coventry - generating thousands of jobs and creating the UK's first 'smart city'.

However he added that government help would be needed if the plan is to come to fruition.

Mr Street said: "The West Midlands is the compelling choice for the National Battery Prototype Centre and I am proud to be leading from the front in presenting our case to government.

"I have committed to working as mayor to establish the West Midlands as a world-leading centre for advanced manufacturing, technology and the creative industries, life sciences, professional services, low carbon technology and construction.

“This proposal is part of that mission and we are optimistic of receiving support from the new government.”

Former John Lewis boss Mr Street said creating the facility in Coventry would build on what the city had already achieved and put it at the forefront of developing the cars of the future.

“The West Midlands is already the centre for the UK’s automotive industry,” he said.

“Now we have a golden opportunity to reinvent ourselves as the global centre for self-driving, connected and electric vehicles.”

Professor Lord Bhattacharyya, chairman of WMG, added: "Coventry and the sub region has a significant contribution to make in the delivery of the UK’s national industrial strategy, being in a strong position to lead the advancement of battery development, and vehicle electrification and autonomous vehicles.

"Building on our automotive heritage, this proposed new National Battery Prototype Centre, is the outcome of 15 years of R&D by WMG in this area, will be at the heart of the drive to make the city a smart motor city.

"Together with the LEP we are keen to develop and expand battery R&D, which will see the creation of these skilled jobs which will also be a trigger for other development by the private sector.

"This is a way to show the transfer of research from WMG and the University of Warwick to the market."

<https://www.gov.uk/government/policies/transport-emissions>

Transport accounts for around a quarter of UK greenhouse gas emissions and affects air quality at the roadside. We’re working to reduce emissions by promoting public transport choices, supporting the market for innovative forms of transport and encouraging a move to cleaner and lower carbon vehicles.

Home page for transport related announcements and access to documents.

<https://www.gov.uk/government/news/40-million-to-drive-green-car-revolution-across-uk-cities>

“The winning cities will deliver a rollout of cutting edge technology, such as rapid-charging hubs and street lighting that double as charge points, along with a range of innovative proposals that will give plug-in car owners extra local privileges such as access to bus lanes in city centres. Around 25,000 parking spaces will also be opened up for plug-in car owners saving commuters as much as £1,300 a year.”

<https://www.gov.uk/government/news/uk-government-pledges-bold-ambition-for-electric-cars>

“The UK was one of 13 international members of the Zero Emission Vehicle (ZEV) Alliance to sign a [commitment to promote cleaner motoring and slash transport emissions](#), alongside Germany, the Netherlands, Norway and California. It includes an agreement to make all passenger vehicle sales zero emission vehicles by 2050.”

<https://www.gov.uk/government/news/43-million-for-infrastructure-and-research-and-development-plug-in-vehicle-funding>

“A wave of chargepoints to support the fast-growing popularity of plug-in vehicles will be installed across the UK after the government set out £32 million of infrastructure support up to 2020.

Homes, hospitals, train stations and A-roads will be some of the locations for further chargepoints to maintain Britain's position as a global leader in this cutting-edge technology.”

<https://www.autocar.co.uk/car-news/industry/shell-recharge-electric-car-service-launches-first-uk-forecourts>

## Shell Recharge electric car service launches first in UK forecourts

Rapid chargers that can top up most EVs to 80% in 30mins are being rolled out in Britain

by [Sam Sheehan](#)

18 October 2017

Shell Recharge is the name given to a new forecourt-based electric car charging system being rolled out by fuel supplier Shell - which lands as plug-in car sales continue to surge.

The company has chosen Britain as the first market to offer its new service, after UK registrations of plug-ins last month increased by 36% compared with September 2016.

Shell will introduce 50kW fast chargers that can top up the batteries of most EVs to 80% in about 30mins, allowing users to drive in and connect their EV or plug-in hybrid vehicle without any pre-arrangement.

The brand is offering the service at its Holloway, Whyteleafe and Derby forecourts first, before rolling out more recharge stations in London and Reading ahead of the year's end.

The company's new service comes soon after it signed an agreement to purchase NewMotion, one of Europe's largest EV charging providers. The brand is working with Transport for London to boost the presence of chargers in the city, [as part of Mayor Sadiq Khan's plans to encourage a speedier uptake of electric vehicles](#).

The capital's deputy mayor of environment and energy, Shirley Rodrigues, said: "With sales of diesel cars declining, it's vital to have charging points for electric vehicles in service stations, car parks and on our streets.

<http://www.autoexpress.co.uk/car-news/consumer-news/100349/bp-to-install-electric-car-charging-stations>

## BP to install electric car charging stations

2 August 2017

BP is set to install electric car charging stations across its UK petrol station empire in the future, according to the company's chief executive Bob Dudley.

Speaking to Reuters, Dudley said the company is in talks with car manufacturers on installing electric car charging points across BP fuel stations. The company has over 3,100 fuel retail sites in the UK. "We have discussions going on with a lot of the EV manufacturers to have a tie-up with our retail network for charging," said Dudley.

The news comes just a week after the UK Government announced it would ban the sale of conventional petrol and diesel cars by 2040, placing an onus on the charging infrastructure to grow rapidly to meet growing uptake of electric vehicles.

A previous investigation by Auto Express found that the UK's public charging infrastructure is struggling to keep up with electric vehicle purchases. In this year's Queen's Speech, it was announced that major fuel retailers across the motorway network will be required to install charging points in the future.

But BP isn't the only fuel retailer eyeing electric charging. Shell, a main rival to BP, has committed to similar plans. Shell is aiming to open 10 charging stations at its fuel retailers across the UK this year, with more to follow in the future.

[https://www.bp.com/en\\_gb/united-kingdom/media/press-releases/bp-invests-in-mobile-electric-vehicle-charging-company-freeWire-to-deliver-rapid-charging-at-retail-sites.html](https://www.bp.com/en_gb/united-kingdom/media/press-releases/bp-invests-in-mobile-electric-vehicle-charging-company-freeWire-to-deliver-rapid-charging-at-retail-sites.html)

## BP invests in mobile electric vehicle charging company FreeWire to deliver rapid charging at retail sites

Date: 30 January 2018

- BP Ventures invests \$5 million in FreeWire, manufacturer of mobile rapid charging systems for electric vehicles
- BP to trial technology at selected retail sites in the UK and Europe during 2018
- Mobile system will allow flexible deployment of charging facilities while building understanding of fast-evolving market

BP today announced that its venturing business has invested \$5 million in FreeWire Technologies Inc. (FreeWire), a US-based manufacturer of mobile electric vehicle (EV) rapid charging systems, and plans to roll out FreeWire's Mobi Charger units for use at selected BP retail sites in the UK and Europe during 2018.

Tufan Erginbilgic, chief executive, BP Downstream, said: "Mobility is changing and BP is committed to remaining the fuel retailer of choice into the future. EV charging will undoubtedly become an important part of our business, but customer demand and the technologies available are still evolving.

"Using FreeWire's mobile system we can respond very quickly and provide charging facilities at forecourts where we see the greatest demand without needing to make significant investments in today's fixed technologies and infrastructure. The opportunity also to explore options for providing charging services away from our existing retail sites makes FreeWire an ideal partner for BP."

"We applaud BP's commitment to providing a wide range of charging methods for its global customer base," said Arcady Sosinov, CEO of FreeWire Technologies. "The Mobi Charger can be quickly and cost effectively scaled across vast transportation networks — flexibility that delivers benefits all along the EV charging value chain. We are thrilled that BP, which is such a significant provider of transportation infrastructure, has acknowledged the promise of our solution through this investment and partnership."

BP is committed to supporting the transition to a lower carbon economy through focusing on reducing its own operational emissions, improving its products to enable customers to lower their emissions and creating low carbon businesses. BP Ventures supports each of these areas by identifying emerging trends and businesses, making strategic investments and testing technologies and solutions for their scalability. The investment in FreeWire is an example of how BP Ventures is working alongside BP's Downstream business.

David Gilmour, vice president of BP Ventures, added: "BP first worked with FreeWire through the RocketSpace Tech Mobility Accelerator, and we believe its mobile fast charging technology will be one of a number of fuelling options that will be needed to address the future of lower carbon mobility. We were encouraged by FreeWire's expertise and their product. We are excited to be making this investment and to continue working with them, testing customer demand for the product and further developing the offering for the fast growing EV supply equipment market."



<http://www.fleetnews.co.uk/news/fleet-industry-news/2016/10/18/will-more-fuel-stations-set-up-ev-charging-points>

## Will more fuel stations set up EV charging points?

18/10/2016 in [Fleet Industry News](#)

Electric vehicle (EV) charging points could become a familiar sight on fuel station forecourts after Shell confirmed it hopes to start introducing them from next year.

The availability of charging points has long been a barrier to the wider uptake of plug-in vehicles, especially for higher mileage company car drivers.

However, by placing charging points alongside petrol and diesel, more drivers could be persuaded to make the switch.

Karl Anders, Nissan GB national EV manager for corporate sales, said the increase of supermarkets and petrol forecourts or “destination charging” would markedly boost the ability of EVs to perform a wider range of journeys.

He said: “While EVs can already cover most journeys, this helps ‘normalise’ full EVs and gives added peace of mind.

“The UK actually has a very comprehensive charging network although it is crucial that it is always dependable, accessible and cost-effective in order to shift more drivers into real world low-emission vehicles.”

According to Zap Map, a website which tracks charge point location and information in the UK, there are 693 rapid chargers and 11,700 trickle charge points available to EV owners in the UK.

Shell currently has just one charge point location available, but has a network of 1,002 fuel stations across the UK. It told Fleet News it is “examining the potential to introduce EV charging points across some parts of our UK retail network from 2017 onwards”.

However, it refused to comment on how many EV charging points will be installed and how much it will charge drivers to recharge their vehicle’s battery.

Poppy Welch, head of Go Ultra Low, the UK Government and auto industry-backed campaign group for ultra-low emission vehicles (ULEVs), welcomed the fact Shell is exploring EV charging across its network.

She said: “The addition of charge points at destinations such as fuel retailers will enable quick top-ups that fit around owners’ lives, boosting range and providing further consumer confidence as the growth of the electric car market accelerates.”

Welch said the majority of charging will still take place at home but a public network acts as a useful reassurance to drivers to give them the opportunity to top up on longer trips.

She said: “The UK also has the best rapid charger network in Europe, with the fastest chargers available at 96% of motorway service stations.”

Fleets have been driving the uptake of plug-in vehicles, with just one in four registered to private buyers (Fleet News: August 18).

The lion’s share – 72% of plug-in cars – was registered to businesses in the first six months of the year which, including July’s registrations, equates to more than 15,000 units – a 45% increase when compared to last year.

However, MPs on the Environmental Audit Committee say Government projections into ULEV adoption show it will miss the target for them to make up 9% of all new car and van sales by 2020 (Fleet News: September 15).

Alphabet believes the UK’s charging network is a critical issue for the future of EV sales.

David Bushnell, Alphabet product manager – mobility, said: “If the Government wants to hit its target for vehicles to be zero emission by 2050 the infrastructure will be a barrier to overcome.”

It is not clear, however, that other fuel retailers will follow Shell's lead. BP declined to comment on whether it was considering installing EV charging points and Texaco, which does not own its fuel stations outright, said it would be up to each retailer to decide whether they wanted to install EV charging points.

Of the 1,100 Esso-branded service stations around 500 are owned by the fuel retailer. It told Fleet News it would be up to the independent owners of fuel stations to install charging facilities, while it had “no plans” to install them at Esso-owned facilities.

In terms of the supermarket fuel retailers, Asda offers more than 150 charging points across its network, but the others trail much further behind (see table).

Bushnell told Fleet News that, although there have clearly been increases in the UK's vehicle charging network, a lot of this has been concentrated in and around London, rather than across the whole of the UK.

He said: “While it's positive that supermarket and fuel retailers are looking to increase the amount of EV charging points available, it also depends on how many points will be installed at each location.

“We are already seeing problems where charging points are being used as a free parking space at supermarkets or a single space is taken up by one EV owner for around 30 minutes at a time.”

Bushnell said the industry also needs to discuss whether plug-in hybrids should be using the UK's charging network at all, with the majority of plug-in hybrids able to reach their final destination to charge up. He thinks the industry needs to explore whether charging points should only be used for pure EVs.

He also said focusing on sheer numbers of charging points is irrelevant if they don't work. “There needs to be a clearer picture of whether the charging point you are going to is open to the public, whether it is working and how much it will cost you to charge. All these things are not very clear at the moment for EV drivers,” he said.

“We also need to see whether petrol retailers are completing a box ticking exercise or whether they're actually ready to invest in the direction transport is heading.”

Both Nissan and Alphabet want to see more Government financial support for workplace charging to help EV drivers charge their vehicles at either end of their journey.

Anders said: “There is a gap at the other end of the commute as workplace charging is not supported unless a fleet pays the full cost to install charging without grants. Assisting fleets with charger support or allowing drivers to use their grants at workplace would assist fleets.”

Bushnell said a lot of drivers, particularly in built-up areas where EVs are more prevalent, don't have access to off-street parking to install their own charging point at home so a lot of them will be charging at work.

He said: “The Government needs to do more to incentivise this. Employers also need clarification on how EVs will be treated in term of future taxation, how long the grants will be in place, whether they will be reduced, and further details on electric fuel reimbursement.

“A universal charging format should also be agreed by all vehicle manufacturers and the ability to rapid charge your vehicle should be standard on all plug-in vehicles, rather than an upgrade.”



<https://www.theguardian.com/environment/2016/aug/04/electric-vehicle-charge-points-to-outnumber-petrol-stations-by-2020-say-nissan>

## Electric vehicle charge points to outnumber petrol stations by 2020, say Nissan

Analysis by the car manufacturer marks end of the decade as a potential tipping point for the mass take up of electric vehicles, reports [Business Green](#)

James Murray for Business Green, part of the Guardian Environment Network

4 August 2016

Public electric vehicle (EV) charge points will outnumber petrol stations in the UK by the end of the decade, marking a potential tipping point in the adoption of zero emission vehicles.

That is the conclusion of a new analysis by auto giant and EV manufacturer Nissan, which argues that based on current trends EV charge points will overtake traditional petrol stations by August 2020.

The report found that there were 8,472 traditional fuel stations in the UK at the end of last year, representing a steady decline from the 37,539 recorded in 1970. Based on the rate of decline in recent decades the number of petrol stations is likely to fall to under 7,870 by summer 2020, Nissan said.

In contrast, the UK's EV charging network is expanding fast and plans are underway to accelerate its growth further over the coming years. As such, Nissan predicts the number of public EV charging locations will reach 7,900 by August 2020, although it adds that "[accelerating adoption of electric vehicles](#) means this crossover could happen a lot sooner".

The report notes that there are now 4,100 public EV charging locations in the UK, representing rapid expansion given there were only a few hundred as recently as 2011. In contrast, more than 75% of traditional petrol stations have closed in the last 40 years.

The rapid expansion of the EV charging network is being driven by both ambitious plans from operators and the growth in the market for electric cars and vans.

EVs continue to account for a small fraction of the auto market, but demand is growing fast with the most recent industry figures showing more than 115 electric cars were registered every day in the first quarter of 2016, equivalent to one every 13 minutes.

"As electric vehicle sales take off, the charging infrastructure is keeping pace and paving the way for convenient all-electric driving," said Edward Jones, EV manager at Nissan Motor (GB) Ltd. "Combine that with constant improvements in our battery performance and we believe the tipping point for mass EV uptake is upon us.

"As with similar breakthrough technologies, the adoption of electric vehicles should follow an 'S-curve' of demand. A gradual uptake from early adopters accelerates to a groundswell of consumers buying electric vehicles just as they would any other powertrain."

Growing numbers of analysts are predicting demand for EVs could accelerate sharply in the coming years as upfront costs continue to fall and battery ranges increase to a point where it becomes more cost effective to operate a zero emission vehicle than traditional cars.

Influential analyst firm Bloomberg New Energy Finance has predicted [EVs will be cheaper than conventional cars](#) on a total cost of ownership basis by 2022.

Meanwhile, a growing number of firms are investing in expanding the EV charging network to match increased demand. For example, Nissan recently teamed up with architects firm Foster + Partners to develop a conceptual vision for the EV-charging fuel station of the future, while UK start-up EV Hub recently unveiled plans for a network of UK charging stations that would also [incorporate coffee shops](#) and even fitness facilities.

<https://www.theguardian.com/environment/2016/aug/04/electric-vehicle-charge-points-to-outnumber-petrol-stations-by-2020-say-nissan>

Influential analyst firm Bloomberg New Energy Finance has predicted [EVs will be cheaper than conventional cars](#) on a total cost of ownership basis by 2022.

Meanwhile, a growing number of firms are investing in expanding the EV charging network to match increased demand. For example, Nissan recently teamed up with architects firm Foster + Partners to develop a conceptual vision for the EV-charging fuel station of the future, while UK start-up EV Hub recently unveiled plans for a network of UK charging stations that would also [incorporate coffee shops](#) and even fitness facilities.

<https://www.nationaltrust.org.uk/features/electric-vehicle-charging-points>

## Electric vehicle charging points

We would highly recommend checking with individual properties before your visit to confirm the charge points are in operation. It is also worth noting that the charge points may be occupied on arrival, so it's best not to leave it until you're running on empty.

If we don't have a charge point at the location you'd like to visit you may find it useful to take a look at Ecotricity's website for charging points nearby (link <https://www.ecotricity.co.uk/for-the-road/our-electric-highway> ).

<https://www.zap-map.com/national-trust-to-expand-ev-charge-point-offering-with-rolec/>

## National Trust to expand EV charge point offering with Rolec

23 November 2016

The National Trust will roll-out EV charge points across an increasing number of its sites after agreeing a partnership deal with Rolec EV.

The result will see the charge point provider's units and wall boxes installed across the UK, with millions of visitors each year heading to National Trust locations.

Rolec EV's AutoCharge: EV Pedestals will be installed in National Trust visitor car parks, with wall mounted units also set to be installed too, primarily for staff and fleet use. Rolec will also install charging points at National Trust holiday cottage sites.

Kieron Alsop, Rolec EV Managing Director, said: "We are delighted that the National Trust have chosen to install a range of our EV charging points at their many beautiful sites around the country.

"The organisation is clearly working hard to lessen its environmental footprint and has chosen Rolec products to help them achieve that goal."

As a charity that owns hundreds of sites across the UK, the National Trust has stated that it is aiming to cut its overall energy usage by 20 per cent by 2020, and source 50 per cent of that from renewable sources on their land.

You can find [existing National Trust locations with EV charge points on Zap-Map](#), find out more about [Rolec EV](#) by visiting the company's website, or use the [Zap-Map Installer Tool](#) to find Rolec installers for home or workplace installations.

<https://www.zap-map.com/warner-hotels-roll-out-free-rolec-ev-charge-points/>

## Warner hotels roll out free Rolec EV charge points

Warner Leisure Hotels has installed free-to-use EV charge points across its portfolio of locations, allowing hotel guests to recharge their plug-in cars during their stay.

The move has seen a number of Rolec AutoCharge units installed at the 13 Warner Leisure Hotel sites in England and Wales.

Mat Finch, Marketing Director for Warner Leisure Hotels, commented: “Our guests are seeking modern alternatives such as electric vehicles and we want to make sure that we are offering a service that facilitates this. We are very pleased with the Rolec charge points; it’s a new, exciting direction for Warner and our guests.”

Rolec Managing Director Kieron Alsop said: “Warner chose the Rolec AutoCharge pedestal due to its future-proof design, which enables it to be installed initially as a free-to-charge solution while being easily upgradable at a later date to incorporate one of our pay-to-charge solutions – such as the industry-leading EV Charge Online network.”

<https://www.ecotricity.co.uk/for-the-road/our-electric-highway>

## Our Electric Highway

It all started in July 2011 – with a single electric vehicle electricity pump at Welcome Break's South Mimms services. We now cover almost the entire motorway network in Britain, and are moving on to A roads and beyond.

Take a look at our map below to see all of our locations.

**For when you're on the go, our Electric Highway app allows you to check the location and status of our pumps in real time. It also shows if they're currently available or being used. You can download the Electric Highway app here.**

{ The Ecotricity network includes Welcome Break, Telford, M54 Motorway, Jct 4 }

[http://www.waitrose.com/home/inspiration/about\\_waitrose/the\\_waitrose\\_way/caring\\_for\\_the\\_environment/charging\\_ahead\\_withevs.html](http://www.waitrose.com/home/inspiration/about_waitrose/the_waitrose_way/caring_for_the_environment/charging_ahead_withevs.html)

## Charging ahead with Electric Vehicles

Owners of electric cars can ‘fill up’ their vehicles while shopping at Waitrose, as we expand our network of charging points.

The popularity of electric vehicles, known as EVs, in Britain, is rising as motorists discover the benefits of nominal energy costs and a smaller carbon footprint. More charge points will spark interest in switching to an EV.

‘The main barrier in people’s mind to the take up of electric cars is their travel range and charging times,’ says Dale Vince, founder of Ecotricity, the company installing charge points at Welcome Break services, home to Waitrose shops on motorways.

‘Really these issues are one and the same. Concern over the distance that an electric car will travel on a single charge, called range anxiety, can be overcome if you have the right charging infrastructure in the right locations – to quickly recharge.’

Many of the charge points on Waitrose motorway services are rapid, meaning some EVs can be charged in less than 30 minutes. Most of the charge points in Waitrose store car parks, provided by Chargemaster, take longer, but allow for two to be done at once.

There are a number of models of EVs and hybrids vehicles, which switch between fuel and electricity, on the market today. At the moment, there are EV charge points at 32 shops and 25 at Waitrose Welcome Breaks. Waitrose supports communities and reduces impact on the environment through the Waitrose Way.

<http://your.asda.com/news-and-blogs/electric-car-drivers-can-now-charge-up-at-asda>

## Electric car drivers can now charge up in Asda car parks

We're installing charging points for electric cars in our car parks for customers who want a cheaper and greener alternative to fossil fuels.

We believe the number of electric car owners will grow as electric charging points become more widespread.

Electric cars are cheaper to run – between 2p and 4p per mile according to the British Vehicle Rental and Leasing Association compared to 10-14p per mile for the equivalent petrol or diesel car.

We've already installed 24 charging points at 18 of our stores in England, Scotland and Wales and will be rolling the scheme out to more stores in the near future.

To gain access to the charging points you will need to be a member of an Electric Vehicle scheme such as Polar – each of the charging posts has a helpline number on it for customers to request support.

## The range of charging points and operators

These can be simply classified as standard (slow), fast, or rapid, depending on the rate at which power is transferred to the vehicle batteries. Typically, standard chargers can charge an EV to full battery capacity in around six to nine hours (typically done overnight at home or the vehicle base), fast chargers can fill up in some 2-4 hours (depending on the vehicle and the size of the battery) and rapid chargers (often provided at public chargepoint locations) can charge up to 80% capacity in less than 30 minutes. Likely future developments include 150kW and 350kW capacities.

Each electric vehicle should come with a charging cable to simply plug into the standard socket found on public chargers. This same cable can also be used to charge from a dedicated home charging unit - or a home charger can be provided with a 'tethered cable' already built in, which plugs straight into the vehicle.

Some cars are provided with a cable that can plug into a normal household 3-pin socket although this isn't recommended for everyday use, but can be useful as a back-up.

Rapid charger facilities have their own cables built in, akin to a traditional petrol pump, so are ready to use without the need for a separate charging cable.

The rate at which power is delivered varies from the household 'standard' to the commercial rapid charger which delivers much more power due to a higher capacity.

Looking at currently available charging points in Herefordshire and Shropshire on the internet reveals some to be, for example, Type 2 (Mennekes). More modern installations are CHAdeMO (allowing up to 62.5 kW of high-voltage direct current - DC) or CCS (AC but also DC facility). The latter is a combined socket which allows the vehicle to use both fast and more powerful rapid charge points.

Some of the charging points listed are the basic 3-pin 'household' types offering a 'slow' standard charge rate.

Looking forward to the installation of additional charging points to provide a wider and deeper network this will logically range from multi-standard (CCS and less likely CHAdeMO) rapid charging to single outlet standard AC charging.

A single charging point installation would ideally enable the simultaneous charging of two vehicles using either of AC or DC power. Also the facility would benefit from the standard communication protocol named Open Charge Point Protocol (OCPP compatibility). This protocol is still in development but it enables the different actors to have a common communication protocol and so to possibly interconnect their systems. Given OCPP is still under construction, the communication between a charging station and a supervision system makes it possible for instance to control the charging stations remotely or to manage the transaction and the energy transmissions.

Some existing operators require a RFID (Radio-Frequency IDentification) Access Card which allows drivers to access the charging points, for example CYC charge points (<http://www.chargeyourcar.org.uk/>). The card serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information. Other systems operated are based on smartphone apps with some charging points either free to use or chargeable on site by the local operator.

It is proposed that to effectively develop the network charges should be made for use such as to enable a financial return and not unfairly subsidise EV users in comparison to other vehicle users paying for their fuel and those using public transport who clearly have to pay their travel costs. Filling stations would continue to charge their customers, minimising 'free'

travel which inevitably stimulates excessive usage, congestion, parking pressures and other 'costs' to the wider public.

POLAR is the UK's largest public charging network, with charge points ranging from three-pin units to rapid chargers. Access is via smartphone app or RFID card, and there is both a pay-as-you-go or a subscription membership available.

Charge Your Car is the largest pay-as-you-go network in the UK, with more than 2,000 devices available nationwide. These are either free to use or charged on a pay-as-you-go basis. Access is via RFID card, and POLAR Plus customers can also use CYC points.

Ecotricity's Electric Highway network has charge points at just about every motorway service station in the UK. Rapid chargers are accessed via a smartphone app, though there are a few fast charge points which are free to use and used with an RFID card.

With an expansive network, Pod Point aims to offer an EV charge point 'everywhere you park for an hour or more'. With wide spread coverage of fast chargers, Pod Point units are accessed via the Open Charge smartphone app and are often free to use.

Tesla operates two nationwide networks – Supercharger and Destination. Supercharger points are typically on motorway and trunk roads, providing rapid charger capability. Destination chargers are normally at 'locations' such as hotels. No access app or RFID card needed.

GeniePoint runs a national network which has responsibility for a number of regional schemes, covering areas such as the Lake District, Cornwall, and Hampshire. Points are accessed with an RFID card or app and are used on a pay-as-you-go basis. GeniePoint is a Zap-Map dynamic network partner.

Zero Carbon World's ZeroNet network specialises in providing EV charge points for hospitality locations, such as hotels, restaurants, pubs, and B&Bs. All are pay-as-you-go units – though many are free – and there is no RFID card or app needed to access the point.

Those networks that have live data available on Zap-Map are indicated with an icon on their respective logos. Dynamic data shows a blue marker around charge point icons when it is in use. Further networks will be adding dynamic data to Zap-Map in the near future.

Other providers are available elsewhere in the UK and Ireland and in Europe.

New charging points in Herefordshire and Shropshire would clearly benefit from providing live data enabling EV users to identify in advance whether the charging points are already in use.

<https://www.zap-map.com/charge-points/public-charging-point-networks/>

National Grid is addressing the issue of national power supply and local distribution companies the availability of power at a local level.

There are consequently challenges to domestic charging at home on a greater scale than currently, how to cater for those without off-street parking needing to charge and the practicalities of particular locations regarding their suitability to host a charging point, for example with regard to the necessary power supply, local facilities and management of the equipment and the parking spaces.

## Useful websites

<https://www.chargedev.co.uk/>

Electric Vehicle Chargepoint Specialists

Based in the midlands but operating nationwide we consult, supply, install and maintain Electric Vehicle charge points in domestic, commercial and public space settings.

<http://www.chargeyourcar.org.uk/>

Charge Your Car is a network of EV charge points all over the UK. This includes Energise, GMEV, Source West and ChargePlace Scotland.

<https://www.ecotricity.co.uk/for-the-road/our-electric-highway>

Electric car charging stations

Ecotricity - a network of charging stations that covers almost the entire motorway network.

<https://www.goultralow.com/how-do-you-charge-an-electric-car/charging-point-map/>

Find your nearest charge point

Go Ultra Low

<https://pluggedinmidlands.co.uk/map>

Plugged in Midlands

<https://www.plugshare.com/location/100536>

Plugshare

<https://pod-point.com/find-electric-car-charging-stations>

Find Electric Car Charging Stations

<https://openchargemap.org/site/poi>

Open Charge Map

a non-commercial, non-profit service hosted and supported by a community of businesses, charities, developers and interested parties around the world.

<http://rapidchargenetwork.com/index.php>

The Rapid Charge Network project is the development of a multi-standard, rapid charge network for electric vehicles throughout the UK and Ireland. The results and strategy of the project will be shared with other towns, cities and countries to support the growth of networks across Europe.

<https://www.zap-map.com/charge-points/public-charging-point-networks/>

Public Charging Networks

covers the UK's main EV charging networks with links through to an in-depth network guide.

<http://zerocarbonworld.org/>

Zero Carbon World Ltd - a registered charity in England and Wales

Our charity donates free Charging Stations to \*businesses or organisations in the hotel, tourist and leisure industry. In doing so we have created ZeroNet, an unrestricted national charging network that is loved by drivers.

Excludes installation cost.

The Charging Station is then owned and maintained by the location venue owner.

<http://www.national-charge-point-registry.uk/>

How to charge

<http://www.energysavingtrust.org.uk/travel/electric-vehicles>

Electric cars and vehicles

Independent guidance on government grants, The Electric Vehicle Homecharge Scheme,

<https://www.goultralow.com/choosing/?gclid=CJDRw8Ge9c8CFcGfGwodELwHCQ>

Choosing an EV

Go Ultra Low