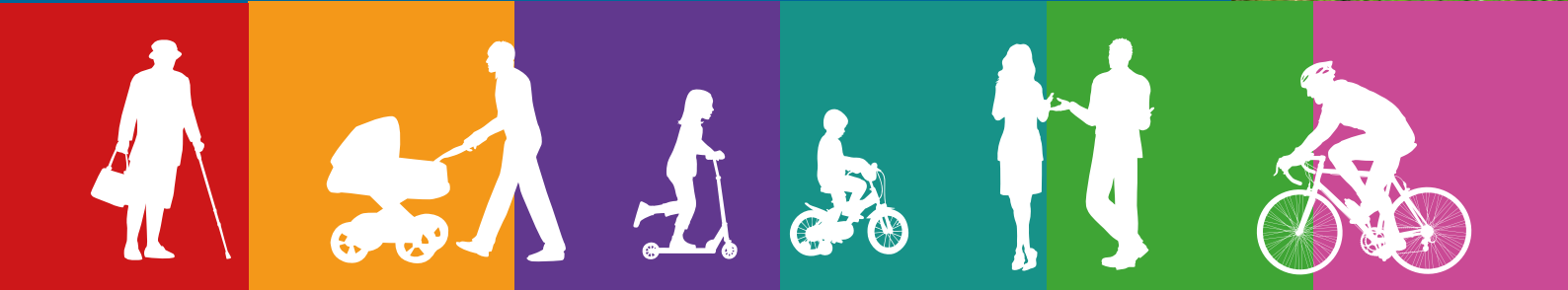


# Ultra Low Emission Vehicle Strategy



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## Disclaimer

All information contained in this Report is current as at the date of the Report, and may not reflect any events or circumstances which occur after the date of the Report.



## Foreword

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In July 2019 West Berkshire Council declared a climate emergency and it was agreed that the council would aim for net zero emissions for the district by 2030. The resulting Environment Strategy sets out how this ambition will be approached. Transport emissions make up a large part of the districts overall emissions, and must therefore be tackled urgently. The vast majority of vehicles may be passing through, however by taking steps such as providing electric vehicle charging infrastructure, all road users passing through the district can be assisted with the switch to cleaner fuels.

In July 2018, the government published the Road to Zero Strategy setting out the ambition that from 2040, new petrol and diesel vehicles will be banned. Since then, government has taken this further, consulting on bringing the ban forward to 2035, or earlier if possible, and also banning the sale of new hybrid vehicles. This will mean that all new vehicles will be zero emission, i.e. electric or hydrogen, in the not so distant future.

The council has an important role to play in the transition to low emission vehicles,

such as creating supportive policies, providing or working with partners to install infrastructure, encouraging infrastructure in new developments and providing advice and guidance for our communities and businesses. This Strategy seeks to set out how the council will support the uptake of low emission vehicles, and the actions it will take in the short to medium term to do so. Low emission technology is a rapidly developing area, with frequent new developments and changing user patterns. A result, what is right now, won't necessarily be right in two years' time. Therefore the Strategy and its Actions will be regularly reviewed and updated as new developments are made and uptake increases.

I look forward to working with our communities, parish councils, businesses, voluntary sector, suppliers and other partners necessary to achieve this Strategy.

***Cllr Richard Somner***

*Executive Portfolio Holder for Transport and Countryside*



# 1. Executive Summary

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1.1 The government's 2018 Road to Zero Strategy sets out the ambition that by 2040, no new petrol or diesel cars, or vans will be sold. Government then announced in February 2020, its intention to bring this forward to 2035, and sooner if possible. Hybrid vehicles would also be banned, and only new full electric or hydrogen vehicles would be sold from 2035. It is difficult to say with confidence which technology will lead this transition, however the current focus is on battery electric for cars and vans. Therefore, some kind of charging infrastructure network will be required for the growing numbers of electric vehicles on the roads.

1.2 Where they can, most will charge their vehicles at home, where it is cheaper and more convenient. However those without parking, and those making longer journeys, or visiting an area, will increasingly rely on publically-available

infrastructure. Over 90% of vehicles registered in West Berkshire are cars and light commercial vehicles, therefore the main focus will currently be on these types of vehicles, the same charging infrastructure can also be used by scooters and motorcycles.

1.3 Whilst councils will not be responsible for providing all charging infrastructure, WBC will provide opportunities to charge in its car parks for visitors, and in residential areas without off-street parking. Those without off-street parking should be able to consider plug-in vehicles and feel confident that there are locations where they can charge. This Ultra Low Emission Vehicle and Charging Infrastructure Strategy and Framework of Actions seeks to inform the current short term actions to help achieve this. The Strategy and Actions will be reviewed and updated at regular intervals to ensure they remain current.

## 2. Introduction

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- 2.1 The West Berkshire Ultra Low Emission Vehicle (ULEV) and Charging Infrastructure Strategy seeks to map out a programme for supporting ULEV uptake in the district. It is the intention that this document informs the general direction for West Berkshire, with more detailed policy or guidance documents produced where appropriate. We are at the start of the transition, there is much uncertainty still to come as a result of the technical advances we are seeing and the resulting changes to driver behaviour, therefore this Strategy will be regularly reviewed, at least biannually.
- 2.2 Whilst this is an ULEV Strategy, the current focus is on vehicles powered wholly or partly by electric. The market for other technology, such as hydrogen, is not currently sufficiently advanced for the mass market take up. Such technologies will be supported through measures aimed at full electric vehicles, where appropriate. This Strategy will be revised accordingly as the situation changes. For electrically powered vehicles there have already been a number of technological advances such as larger batteries, increases in range, and faster electric vehicle chargepoints (EVCPs). We believe that innovative solutions will continue at pace for some time, and the Strategy will need to evolve as these come to the market. Review points will therefore be included within the Framework of Actions.
- 2.3 An ULEV is currently classed as a vehicle that produces no more than 75g CO<sub>2</sub> per km from the tailpipe, although this is expected to be reduced to less than 50g in 2021. As previously mentioned, from 2035 it is likely that only new electric and hydrogen powered vehicles will be allowed, therefore the 'definition' is likely to change further. ULEVs currently mainly consist of hybrid or plug-in hybrid vehicles (PHEVs), battery electric vehicles (BEVs), with some hydrogen fuel cell vehicles (FCEVs). ULEVs currently represent a small, but rapidly growing percentage of vehicles on the roads, offering reduced environmental and noise pollution benefits.
- 2.4 The Strategy aims to:
- Take a proactive approach to installing vehicle charging infrastructure
  - Provide a Framework of Actions that the council will undertake both internally and externally to encourage vehicle uptake
  - Help inform the council's wider transport plans and planning policies
  - Encourage hackney carriage and private hire vehicles to consider going ULEV
  - Provide insights into vehicle developments, legislation and policies that may affect future ULEV take up

## 3. Why encourage ULEVs?

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- 3.1 Under the Climate Change Act 2008 the UK has a target to reduce greenhouse gas emissions to net zero by 2050, (below a 1990 baseline); the Act was amended in 2019 from achieving an 80% reduction, to net zero. The UK's emissions are dominated by carbon dioxide, which in 2017 made up 81 per cent of the UK's greenhouse gas emissions. Transport, and road transport in particular, is the largest contributor to greenhouse gases. Transport accounts for 27% of the UK's greenhouse gas emissions<sup>1</sup>, this is almost entirely emissions from carbon dioxide. Petrol and diesel vehicles on the roads account for the vast majority of these emissions.
- 3.2 In West Berkshire, road transport accounted for nearly 58% of the district's CO<sub>2</sub> emissions<sup>2</sup> in 2018. The M4 Motorway accounted for just under 31%, with other roads just over 27%. With WBC's Climate Emergency Declaration in July 2019, and its recently published Environment Strategy, it is clear the district ambition is to reduce emissions to net zero by 2030. In order to do this, reducing transport emissions both locally and those that pass through the district will be a priority.
- 3.3 In 2019, the vast majority of vehicles registered in West Berkshire, were cars (80.6%) and light goods vehicles (10.91%).<sup>3</sup> Cars are probably the most advanced and most useable BEV and FCEVs currently available, followed by BEV light commercial vehicles. The heavier vehicles are most likely to be suitable as FCEVs rather than BEVs and the district will likely need some hydrogen refuelling infrastructure to cater for these vehicles, and the vehicles passing through on our roads.
- 3.4 BEVs have much lower carbon dioxide emissions than internal combustion engine (ICE) vehicles. A BEV (when recharged using electricity from the National Grid) is estimated to have greenhouse gas emissions around 66% lower than that of a petrol car, and 60% lower than a diesel car. Between now and 2050, it is projected that electricity grid emissions will fall by around 90%, with total greenhouse gas emissions from the electric vehicles falling in parallel.<sup>4</sup>
- 3.5 In recent years, air quality has become a significant public health concern. In 2018, the Department of Health and Social Care's Advisory Committee on the Medical Effects of Air Pollutants (COMEAP) estimated that long-term exposure to air pollution in the UK attributed to human activity, has an annual impact on shortening lifespans, equivalent to between 28,000 to 36,000 deaths.<sup>5</sup> Government published its Clean Air Strategy in 2019, with a focus on reducing nitrogen dioxide (NO<sub>2</sub>) to below legal limits, as well as reducing Particulate Matter (PM). Whilst BEVs and FCEVs produce no emissions at the tailpipe and will therefore help to reduce air pollution at their point of use, they still produce some PM from braking and tyre wear.
- 3.6 "The major source of air quality pollutants in West Berkshire is road transport, and in particular the contribution from the A339 and A4 has been identified as significant. The main pollutant of concern is nitrogen dioxide (NO<sub>2</sub>) and two Air Quality Management Areas (AQMAs) have been declared. The Newbury AQMA was declared for exceedances of both the one-hour and annual mean NO<sub>2</sub> objective. The Thatcham AQMA was declared for the annual mean NO<sub>2</sub> objective."<sup>6</sup> Air quality is monitored by the Public Protection Partnership. The Partnership are also consulted on West Berkshire developments through the planning feedback process, this enables them to encourage measures such as the installation of EVCPs at premises.
- 3.7 EU Policy**
- 3.8 EU legislation sets mandatory emission reduction targets for new vehicles. These differ for cars/light commercial vehicles, light goods vehicles and heavy

goods vehicles.<sup>7</sup> It is the intention of government that the UK will transfer these requirements into UK law once the Transition Period ends. Any changes to these targets may have affected UK vehicle availability, particularly for BEVs.

- 3.9 For new cars and light commercial vehicles, the manufacturers' fleet-wide average emissions target phased in from 2013, for 2015, was 130g CO<sub>2</sub>/km, this was met two years ahead of schedule. The subsequent target is to be phased in between 2020 and 2021. From 2021 the target of 95g CO<sub>2</sub>/km will apply for a manufacturer's 95% least emitting new cars/light commercial vehicles.<sup>8</sup>
- 3.10 EU targets for new light goods vehicles, (designed and constructed primarily for the carriage of goods and with a maximum mass not exceeding 3.5 tonnes), between 2014 and 2016 were 175g CO<sub>2</sub>/km. From 2020, the target is 147g CO<sub>2</sub>/km. The targets set for manufacturers are based on the average mass of the vehicles, using a limit value curve. Manufacturers of heavier vans are therefore allowed higher emissions than those that manufacturer lighter vans.<sup>9</sup>
- 3.11 Manufacturers that fail to meet their targets will pay an excess emissions premium for each car/light commercial vehicle/light goods vehicle registered, the penalty will be €95 for each g/km of target exceedance. As a result of the EU emission reductions target, there is expected to be a significant number of new cars and vans coming to market in 2020. These include those that are likely to appeal to the mass market, such as the Vauxhall e-Corsa and VW ID.3 cars, and longer range van models.
- 3.12 Both the car and van EU fleet-wide average emission targets also allow manufacturers to earn 'credits'. These can be earned for eco-innovations, where it is not possible to demonstrate the CO<sub>2</sub> reduction effects during test procedures. The credit for eco-innovations is limited to 7g CO<sub>2</sub>/km per manufacturer. Additionally car and light commercial manufacturers

can also earn 'super credits'. These are earned for vehicles emitting less than 50g CO<sub>2</sub>/km, each vehicle qualifying will count as 2 vehicles in 2020, 1.67 vehicles in 2021 and 1.33 vehicles in 2022. The super-credits cap is set at 7.5g CO<sub>2</sub>/km over the three years.

- 3.13 The first EU standards, Regulation (EU) 2019/1242, for heavy-duty vehicles were adopted in 2019, setting targets for reducing average emissions for new lorries for 2025 and 2030. The targets are a percentage reduction of emissions compared to EU average during the reference period (1 July 2019 – 30 June 2020). From 2025 this is a 15% reduction and increases to 30% from 2030. The 2025 target can be achieved using technologies already available. Initially the targets will apply to large lorries, with a review in 2022 to assess whether to extend to others such as coaches, smaller lorries and trailers.<sup>10</sup>
- 3.14 A super-credits system will apply until 2024 for zero emission and low-emission vehicles. For zero emission a multiplier of 2 will apply, for low-emission the multiplier will be between 1 and 2 (dependant on CO<sub>2</sub> emissions). There will be an overall cap of 3%. From 2025 this will be replaced with a benchmark-based credit system, with a benchmark set at 2%. The 2030 level will be set within the 2022 review. The penalties for not meeting the targets are set to €4,250 per gCO<sub>2</sub>/tkm in 2025 and €6,800 per gCO<sub>2</sub>/tkm in 2030.

### 3.15 UK Government Policy

- 3.16 In 2017 the UK government's Clean Growth Strategy announced that all new cars and vans should be effectively zero emission by 2040. The 2018 Road to Zero Strategy set out the aspiration to achieve this, with an interim aim that 50-70% of all new cars, and 40% of new vans should be ULEV by 2030. Central Government would also lead the way with 25% of the fleet to be ULEV by 2022 and all new purchases to be ULEV by default, committing to 100% ULEV by 2030.

- 3.17 In July 2018, the Automated and Electric Vehicles Act was passed through Parliament. The Act is intended to instigate improvements to charging infrastructure and give government powers to act on this further, it also brings insurance policies in line to allow for the use of autonomous vehicles (AVs). The Act could ultimately reduce personal vehicle ownership in the future and completely transform our transport system.
- 3.18 More recently, in February 2020, government announced their intention that all new cars and vans will be electric or hydrogen powered by 2035, and earlier if possible. Whilst these changes are currently under consultation, under the new policy, new hybrid, petrol and diesel vehicles would all be banned.

### 3.19 Local Policy

- 3.20 A number of existing West Berkshire Council policies and plans now promote ULEVs, these include:
- **West Berkshire Air Quality Annual Status Report 2019 and associated Action Plan**
  - **Council Strategy 2019-23** – Priority to Maintain a green district - develop more transport solutions which protect the environment

- **The Local Transport Plan (2011 - 2026)** – LTP P2 Residential Parking and LTP SC3 New Technology Policies
- **Housing Site Allocations Development Plan Document (2006-2026, Adopted May 2017)** – Policy P1: Residential Parking for New Development
- **The Declaration of a Climate Emergency (2019)** with a 2030 target date and the resulting Environment Strategy (2020)
- **Economic Development Strategy 2019-2036** – Future proofing our infrastructure - Facilitating electric car technology/low emissions and intelligent transport systems
- **West Berkshire Vision 2036** – Work together to enable residents to take advantage of technological innovation in car use, prioritising the installation of the requisite charging points
- **West Berkshire Local Plan to 2036 Review** – The Local Plan is currently under review and therefore there is still opportunity to influence this further in the coming months.
- **West Berkshire Council's Parking Strategy** - Review and update, currently in progress



# 4. Overview of the Current Situation

## 4.1 ULEVS in West Berkshire

4.2 In 2018 West Berkshire had a population of 158,527.<sup>11</sup> There are currently 60,000 households, which are expected to increase 10% by 2036; with households becoming smaller. ‘One person’ and ‘couple with no other adults’ households, are set to increase by 16% each by 2036.<sup>12</sup>

4.3 Vehicle licensing data<sup>13</sup> from the Department for Transport (DfT) shows that there were 119,664 vehicles registered in the district in 2019. Of these, 1007 were ULEV, representing 0.84% of vehicles registered in West Berkshire. In 2019 for the UK as a whole, ULEVs represented 0.68% of the vehicles registered<sup>13</sup> suggesting West Berkshire has slightly above average ULEV uptake.

4.4 Figure 1 shows the total number of ULEVs registered in West Berkshire at the end of each quarter. The district saw

a rapid increase of ULEV registrations 2014 – 2016, then the total number registered significantly reduced in Q1 2017, and continued to decrease until Q3 2019, after which registrations began to increase. We cannot be sure of the reasons behind this, but increases in the Benefit in Kind (B.I.K.) tax for ULEV company cars, and large employers moving out of the area occurred around the time of the first decrease. Additionally in Q4 2018, the plug in car grant for hybrids was removed and the grant for BEVs was reduced to £3500. Further investigation has shown that private registrations in the district are increasing, but that company registrations have decreased. This could be linked to companies moving their headquarters i.e. the location where the vehicles are registered, the previous level of B.I.K being unattractive or simply that they have reduced company car numbers.

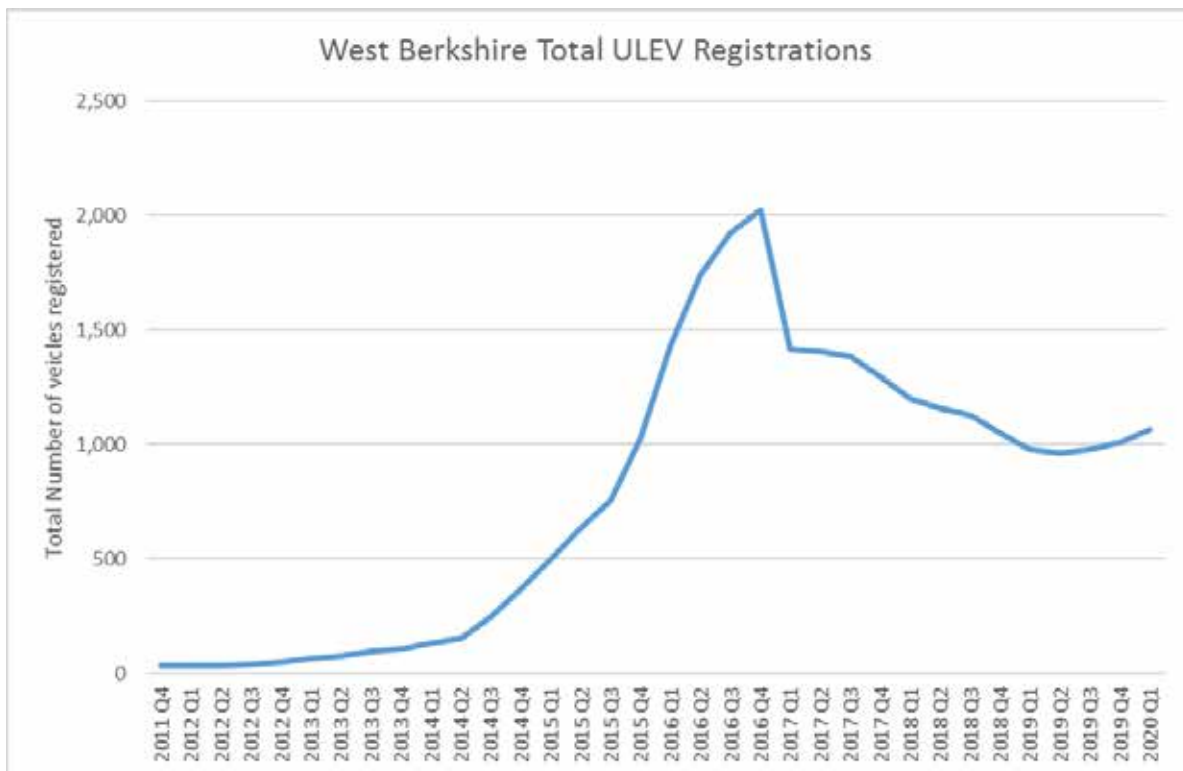


Figure 1: Total Number of ULEVs registered in West Berkshire

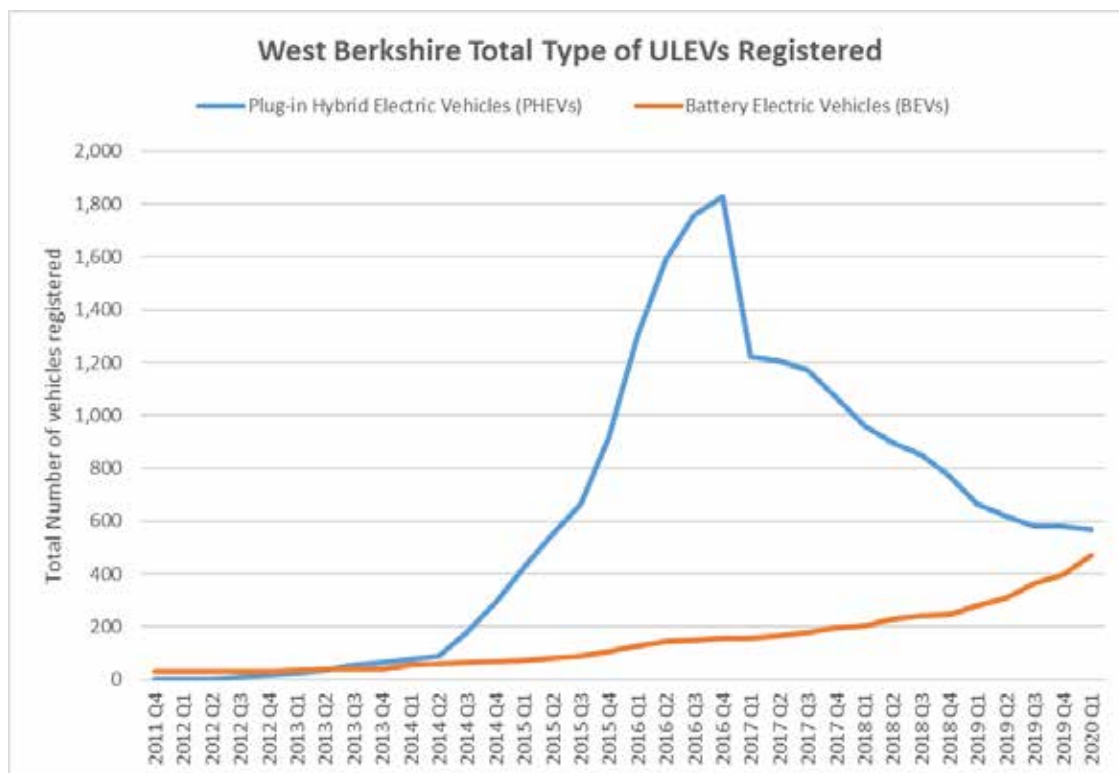


Figure 2: Type of ULEV registered in West Berkshire

- 4.5 From April 2020 much lower B.I.K. rates for BEVs and some hybrids were introduced, which may mean that purchases were delayed until then, however from Q2 2020 we would expect an increase in company registrations. There will also be many new models coming to market in 2020, including a number of more affordable mass market options, which are likely to further increase private ownership in the district.
- 4.6 According to DfT, at the end of Q1 2020, there were 1064 ULEVs registered in West Berkshire, of these 468 are BEVs. Figure 2 Shows that BEV registrations have mainly increased over time, whereas PHEVs have decreased since 2016. It is difficult to say with any certainty the reasons for this but reductions to B.I.K, grants and vehicle tax are likely to play some part in the decline. The majority of ULEVs currently registered in the district are also privately registered, 667, with only 397 company registered.<sup>14</sup>

#### 4.7 West Berkshire Chargepoints

- 4.8 Within West Berkshire there are 27.7 miles of motorways, 81.6 miles of

A-roads and 770.7 miles of minor roads.<sup>15</sup> There are now rapid charging stations at all motorway services within the district (Membury East and West, Chieveley and Reading East and West), and an increasing number of fast destination chargers at the district's hotels, businesses and car parks. The majority of these are provided by the market rather than any public body.

- 4.9 EVCPs are generally categorised by 'speed', using the terms slow, medium, fast, rapid or super chargers. **Appendix 2 – Charging Infrastructure** provides more detail on these different EVCPs, their power output and the locations where the differing options are suitable. The type of location usually informs the speed of charging available. However the power at which a vehicle can accept the charge will ultimately determine the speed it can be charged, regardless of the speed the EVCP is capable of. Therefore regardless of the perceived 'speed' of a charger, charging speed will always be limited by the power a vehicle can accept and therefore different vehicles will charge at different speeds.

- 4.10 Charging on the public network is known as either journey or grazing/destination charging:
- Journey charging is where the main reason for being at that location is to charge e.g. a direct current (DC) rapid charger at a car park or service station, it's likely the battery will need an 80% charge to complete the journey. Charging will be fairly quick but likely to be more expensive than at slower EVCPs.
  - Grazing/destination charging is where the user is at the location for another reason such as shopping, leisure, hotels etc and has a longer dwell time and generally uses a slow/fast alternating current (AC) EVCP just to top up rather than fully charge a battery. Charging will usually be either a short top up or full overnight charge.
- 4.11 The majority of public charging is grazing/destination charging and takes place on AC fast EVCPs rather than DC rapid EVCPs. Demand for grazing charging will be affected by the availability of home and workplace charging, whereas journey charging is unlikely to be affected in the same way.
- 4.12 The time taken to charge a vehicle's battery is dependent on:
- the power of the chargepoint
  - the charging lead
  - the power a vehicle can accept
  - the amount of power remaining in the battery
  - the outside temperature
- 4.13 For example, a 40kWh Nissan Leaf can charge 0-80% on a 50kW rapid charger in 40 minutes, 0-100% on a 22 kW fast charger in 6 hours or could take 18 hours charging 0-100% on a slow 3kW charger. It's worth noting that a vehicle's battery will rarely actually be completely empty.
- 4.14 Whilst BEVs can accept high powered EVCPs, most PHEVs can only draw at a rate of 3.5kW regardless of the speed of charger they use. They have small electric ranges and can only usually utilise pure electricity for a small number of miles on any journey e.g. 30 miles electric without further charging. Therefore the focus for public EVCPs is generally for BEVs rather than PHEVs, a PHEV generally takes a longer time to charge for an equivalent number of miles, does not need a charge in order to continue on a journey, whereas for a BEV, charging is critical and as previously mentioned sales of new PHEVs will now likely be banned from 2035.
- 4.15 As of 30th June 2020 in West Berkshire there are a total of 105 available charge points (or 110 sockets at any one time), across 63 locations, see [Appendix 1 – Publicly available chargepoints in West Berkshire](#) for location details:
- 15 Rapid chargers (43/50kW)
  - 14 Tesla Superchargers (120kW) – these are only available to Tesla vehicles
  - 4 Fast chargers (22kW) - 5 available sockets
  - 9 Tesla destination (fast) chargers (11kW) – these are sometimes also available to non-Tesla vehicles
  - 18 Medium chargers (7kW) – 22 available sockets
  - 45 Slow chargers (up to 3.5kW)



## 5. The Future and emerging trends

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5.1 BEVs have developed at pace over the last few years, these changes can significantly affect the way the vehicles and the EVCPs are used. As we make the change to ULEVs there are still many uncertainties as to how the future will look, making it difficult to predict and plan for. These changes and developments mainly affect BEVs and include:

- Larger batteries and increased vehicle range, changing driver behaviour = longer journeys and reduced public charging need generally, this could mean an increased demand of high speed EVCPs on longer journeys but it will also mean more users relying solely on home or workplace charging
- Increased choice of vehicles and options within ranges = more choice for consumers and increased uptake
- Decreasing vehicle pricing = increases in take up and near parity of cost with ICE vehicles for new vehicles
- Increasing charging speeds = Reduced time at EVCPs, and an increase in number of vehicles able to charge at these EVCPs
- Charging hubs, combining charging with services such as office space, food, retail = minimal downtime for business travellers whilst travelling/ charging
- Research and development – there are a number of projects in progress across the UK which may affect the vehicles themselves and the charging infrastructure in the future, such as: pop up EVCPs, wireless charging, vehicle to grid (V2G) commercial offerings, battery reuse schemes and reducing particulate matter from ULEVs i.e. from brake dust and tyres
- Battery life – manufacturers now offer battery guarantees of 5-8 years, however it is being found that batteries can potentially out last the vehicles themselves
- Batteries post-vehicle use – often seen as a ‘waste’ by-product,

batteries are valuable for a variety of second life usage post-vehicle use e.g. home storage systems for renewables, large scale commercial renewable storage, or for avoiding peak charges- charging when power is cheap and running a building when power is expensive. Once batteries no longer have a useful second life, manufacturers are looking at how the various components can be recycled

- Wireless charging = added convenience of not plugging in cables, the potential to charge as you drive along and essential for mass AV take up
- Managed vehicle and V2G charging = Potential revenue or savings on peak energy use for owners, reduced installation costs for hosts and reduced demand on the grid at peak times
- Increased confidence in battery life, range and vehicle capability = Increased value of BEVs for the used car market
- The introduction of mandatory vehicle 'noise' at low speeds to warn pedestrians and cyclists and the proposed green number plates – Increasing general awareness and reducing safety concerns
- Fleets switching to BEVs = decreased running costs, requirement for high charging speeds during duty cycles and managed charging for return to base charging
- Changes to government plug in grant funding – Grants are often based on uptake and limited by numbers of units qualifying
- AVs, Car Clubs and Mobility-as-a-Service (MaaS) = Potential for driverless services/combined transport options without physical vehicle ownership
- AVs could reduce vehicle ownership but increase vehicle in use time = likely to reduce the need for town centre/business parking but it is unknown how this will affect congestion

## 6. West Berkshire vehicle uptake and charging requirements

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- 6.1 WBC commissioned industry experts to look in more detail at potential charging requirements in the district. Using mapping data extracted from their analytical tool, which aggregates various data sets, it was estimated that 31% of residential buildings in the district have no off-street parking, meaning these residents will need to use on-street parking and public EVCPs. It is estimated that this would have a requirement of over 2000 daily charges for users without home charging facilities by 2030. The software has highlighted key areas where chargepoints will be required for households without off street parking as Lambourn, Hungerford, Newbury, Thatcham, Burghfield Common, Mortimer and Theale.
- 6.2 Industry experts predict that by 2030, 25% of residents would have moved to ULEVs, this is equivalent to around 31,500 vehicles. Around 31% of these may have little or no off-street parking and would rely on public charging infrastructure. This may be 2000 plus daily chargers (assuming 1.5 full charges per vehicle each week). Therefore the district may require the following public charging infrastructure by 2030:
- 6.3 33 rapid (22-150kW) EVCPs, accounting for 5% of users daily – locations such as taxi ranks, central surface car parks and arterial roads where visits are short e.g. main urban areas, Business Parks, M4 and A34 corridor
- 6.4 103 destination (7-22kW) EVCPs, accounting for 10% of users daily – Locations such as central car parks, visitor attractions, leisure and shopping centres e.g. community parking areas in villages, public car parks, business parks, shopping centres and attractions
- 6.5 1762 residential (7kW) EVCPs, accounting for 85% of users daily – Locations such as on street e.g. areas with high rates of houses without private parking
- 6.6 Another area where EVCP installations will also be required in the district is at hotels/accommodation locations. If for example, by 2030 25% of drivers have moved to ULEVs, a quarter of guests arriving by vehicle, may need charging facilities. Guests with BEVs will be strongly influenced by premises that have charging facilities to reduce time charging elsewhere and will want to charge overnight ready to continue their journeys or to make their return journey.

# 7. Vision

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*West Berkshire Council seeks to see the growth in ultra low emission vehicles and their use across the District. It will lead with ultra low emission vehicle growth within its own fleet, and by providing its share of appropriate charging infrastructure to enable everyday use of electric vehicles by its employees, residents, businesses and visitors, across the District.*

- 7.1 This strategy so far has provided lots of information about ultra low emission vehicles – what they are, the part they have to play in delivering national targets and the current situation in West Berkshire. The remainder of the strategy document will detail how the Council seeks to bring about progress in this area and the actions that will be taken to ensure we are playing our part in achieving Government targets and delivering against our own local Environment Strategy. This starts with our vision for ultra low emission vehicles:
- 7.2 In enabling the delivery of the vision, the Ultra Low Emission Vehicle and Charging Infrastructure Strategy will:
- Inform and be integrated into relevant WBC environment and transport policies
  - Take a proactive approach to installing electric vehicle charging infrastructure
  - Provide a framework for initial actions to support the uptake of ultra low emission vehicles, with a particular focus on full electric vehicles
  - Biannually review and update the Strategy and Framework, to stay current with the ever-changing technology and market developments
- 7.3 To develop this vision, West Berkshire Council will commit to:
- **Leading by example** – 25% of the council’s car and light-duty vehicles on the fleet to be ultra low emission by 2022, working towards 100% of the council’s car and light-duty vehicles on fleet by 2030
  - **Facilitate Electric vehicle ownership by improving the charging network across the district** – including council car parks, leisure sites and on-street locations, enabling visitors and residents without parking to feel confident they can charge their vehicles when needed
  - **Develop Guidance for residents without off-street parking** – guidance to explain what is possible and how residents who have, or are interested in a plug-in vehicle can go about requesting infrastructure in their area
  - **Ensure planning policies are supportive of measures to increase electric and hydrogen vehicle uptake** – include appropriate policies in the emerging local plan and explore where further planning conditions may need to be implemented
  - **Support our communities and businesses** – explore how WBC can encourage, share knowledge and support our parishes and businesses
  - **Trial new technologies** – assist innovation and development by being prepared to trial new technologies and innovations before they come to market where opportunities exist

# 8. How we will aid the increase in ULEV uptake

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8.1 ULEV take up is occurring at different rates across the country, whilst the vehicles make financial sense, there are also barriers to uptake. The main reported barriers to BEV take up are perceived as vehicle range, the availability of charging infrastructure and the higher upfront cost. Vehicle range is increasing, upfront costs are reducing for new vehicles, and there are now more EVCPs available than petrol stations in the UK, yet these are still the most common issues raised by potential purchasers. Another issue has been the concern over battery life and vehicle depreciation values; as batteries have lasted well and vehicle demand has increased, the value of BEVs on the used vehicle market has actually increased. Unfortunately this means for those that purchase used vehicles, prices are increasing and vehicles are less affordable than they were in recent years.

8.2 There is little that can be done about vehicle ranges and purchasing costs, however the council can look at where additional EVCPs can be installed in council car parks and residential areas to improve visibility and availability. As with many new technologies, there can be a lack of knowledge and myths about the vehicles and their use; sharing information and knowledge can assist with helping potential purchasers make an informed decision. These, along with other measures the council can introduce to aid uptake and ease of using a BEV, are discussed here.

## 8.3 Incentives

8.4 Whilst many are aware of the benefits of ULEVs such as the lower running costs, reduced air and noise pollution; the higher upfront cost can make vehicle ownership prohibitive for many. Offering

incentives, such as 'free' charging, to those that can afford the higher costs in the first place, further increases the inequality gap. There is also the issue, that whilst if we have to use a personal vehicle an ULEV is best, in preference we should be walking, cycling and using public transport where we can.

8.5 WBC will need to look at how incentives can be introduced, which do not encourage an increase in driving. For example if the council were to offer free parking/charging for ULEVs this can encourage vehicle use where a user would have normally charged at home and not driven to that location, in other locations, users have reported now driving instead of using public transport because of free charging/parking facilities. Encouraging more vehicles to come in and use free charging/parking creates additional congestion and by offering free charging, WBC would effectively be paying people to drive, increasing vehicle use and further increasing the ownership inequality gap.

8.6 As the obvious incentives will create additional issues, WBC will need to be creative in considering incentives. For example this could include free access to car parks overnight for residents with on-street parking permits (and a plug in vehicle), so that these residents' can charge easily and be encouraged to consider an ULEV. Other options could include discounted or free residents parking permits for BEV drivers and emissions-based parking in council car parks. Any BEV incentives that are appropriate would also apply to FCEVs to help promote the technology. A review and update of West Berkshire Council's Parking Strategy is in progress, incentives such as the above will be investigated as part of the update.





## 8.7 Council Fleet

- 8.8 The council must lead by example and will therefore commit to a 100% ULEV target for its car and light-duty vehicle fleet by 2030. In order to help achieve this, an interim target of 25% ULEVs for cars and light-duty vehicles on the fleet by 2022 has been set, as well as a requirement that all new or replacement car and light-duty vehicles onto the fleet should be ULEV unless there is no viable alternative available. In order to set out the requirements clearly to the council's various service areas, further detail on these policies and any exclusions will be included within the council's internal fleet purchasing guidance.
- 8.9 Through OLEV's ULEV Readiness Programme, the council already has full electric cars and vans on the fleet. Our experience of using these early low range BEVs has helped us understand

the benefits and frustrations of driving a BEV with a low range. When travelling longer distances a reliable, fast and accessible EVCP is perhaps the most important factor for drivers of lower range vehicles, for newer, higher range vehicles this is less of an issue.

- 8.10 The council fleet also currently consists of a number of larger vehicles including medium sized buses and larger vans, which contain specialist heavy and power consuming equipment such as chair lifts. There are currently no suitable ULEV options available to replace these vehicles. Any alternatives are much more expensive, do not yet have the required range and are also unsuitable for the duties to be performed. We will continue to monitor the market for new vehicles/developments and the council will use manufacturer demo opportunities to trial vehicles and identify any suitable alternatives that come to market.

- 8.11 Hackney carriages and private hire vehicles charging when they have 50% battery charge, or less, remaining
- 8.12 In West Berkshire there are around 320 licenced hackney carriage and private hire vehicles. The vast majority of these vehicles are diesel, with a small number that are petrol and hybrid vehicles, there are no BEVs currently licensed. Licensing requirements and charges are set by the licencing authority (WBC).
- Of those using public charging, most either used 11-22kW charging spending 2-4 hours at a site, or rapid chargers where they stayed 20-50 minutes
- 8.13 The Public Protection Partnership is responsible for the administration and enforcement of taxi and private hire licences in West Berkshire, Bracknell Forest and Wokingham Borough Councils. This presents potential opportunities in the future for the three local authorities to work together on promotional activities, funding bids etc.
- 8.14 There has been little engagement to date with drivers/operators around their choice of vehicles and the options available to them. Initial efforts will focus around driver/operator engagement and information sharing, additional requirements to licences or incentives for ULEV use will later be considered.

## 8.15 Charging Infrastructure

- 8.16 There is some debate over whether councils should be involved in installing electric vehicle infrastructure, however for the council's estate and the public highway, participation will be essential. Currently, the majority of charging happens at home and/or overnight, with a small amount at workplace, motorway services or destinations. This is partly due to convenience, lower costs and the lack of a public charging network in some areas.
- 8.17 The 2019 EV survey using data provided by Zap-Map<sup>16</sup> indicates that:
- 85% of users have access to home charging, the majority of these have private off street parking
  - 20% of users have access to workplace charging
  - 94% of users also use public charging networks, with most
- 8.18 Providing a number of EVCPs in a location provides more confidence for users that there will be availability at that site, which could drive more users to that location, and also allows for some cost reduction in the installation costs of connecting additional units. Other than the type, the operator and location of an EVCP there are other factors to be considered when installing, most notably the overall load of the building or local electricity network. There may be a need for upgrading cabling, switch boards or even the local substation, which can add significant costs and time delays to an installation.
- 8.19 Charging requirements for workplaces will differ, for example those with more staff commuting by car and longer distance will have different requirements to those in a town centre location with most staff walking to work or driving short distances. The number of available parking spaces at a workplace is likely to have some relevance to this. Charging during working hours will reduce the demand on the electricity grid during peak hours and encourage staff to switch to ULEVs. Certainty of access to charging is very important to BEV owners so access to workplace charging can be seen as a real advantage and both attract and retain staff.
- The council will concentrate on providing public chargepoints at:
- Council owned car parks, council buildings and staff parking
  - Locations where households do not have off-street parking
- 8.20 As previously discussed, there are many unknowns and rapidly changing technologies in the EV sector, including for example driver behaviour changes due to battery/range increases and

unknown rates of vehicle take up. This causes concern for local authorities in how they can avoid stranded assets and investment in the wrong technologies. One route to avoid this is to work with private partners to access investment funding to install and operate EVCPs. This can mean the installation and running costs are funded by a private investment company and the local authority may have the opportunity to receive a revenue share of profits or a rental fee for the land. WBC are currently exploring where such funded installations may be possible.

## 8.21 Planning

- 8.22 Within the Local Transport Plan there is guidance on the requirement for EVCPs in new developments. This will be strengthened within the update of the West Berkshire Local Development Plan during 2020.
- 8.23 There are government consultations (now closed and awaiting the outcome), that every new residential property with an associated car parking space should have an electric vehicle chargepoint (via Building Regulations) and requirements for non-domestic developments based on the number of parking spaces. There is also a proposed retrofit element for non-residential buildings.
- 8.24 Once the consultation outcomes have been published, the outcomes will be reviewed to determine if there is a need to go above these requirements. In the event that there are additional requirements, these will be integrated into local planning policy where appropriate. There may also be a need for WBC to communicate and guide existing non-residential properties that fall under the retrofit requirement to be aware of and fulfil their duties.

## 8.25 Knowledge sharing

- 8.26 WBC have previously taken advantage of grants from the Office for Low Emission Vehicles (OLEV) to install EVCPs and integrate BEVs into the council fleet, these learnings have helped to inform the council's future direction in ULEV uptake. We will look at how we can share these learnings with our communities and businesses, producing guides and relevant information, where appropriate.
- 8.27 As previously stated ULEVs are a fast moving technology, it is therefore extremely important that the council maintain its internal knowledge to keep up with the latest developments. As these changes may be critical to how user patterns are developing and how the charging infrastructure may be used in the future.



## 9. Conclusions

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- 9.1 The UK government have set out their ambitions to move to zero emission vehicles and end the sale of new petrol and diesel vehicles, including hybrids, by 2035. Making it easier to use full electric vehicles on a daily basis, is currently where local authorities can have most influence. The ULEV and Charging Infrastructure Strategy and the Framework of Actions are intended to introduce policy, guidance and infrastructure to make this transition more successful.
- 9.2 The Strategy and Actions will be reviewed and updated regularly to take into consideration the fast paced developments still to come in the industry. It is likely that at times, such developments will mean plans have to change drastically and the documents should be seen as the current direction rather than the final outcome for the district.
- 9.3 This strategy sits alongside and helps to deliver the Environment Strategy 2020-2030 for West Berkshire. The growth of ultra low emission vehicles and their use within the District will help to achieve carbon neutrality in West Berkshire by 2030 which is the primary target of the Environment Strategy.

# 10. Framework of Actions to increase ULEV Uptake in West Berkshire

	Measure	Timescale	Measure of success
Policy/Planning Guidance	<b>Policy/Planning Guidance which promotes ULEVs</b>		
	Investigate whether the current consultation/implementation of Building Regulation requirements for EVCPs in new developments is suitably robust, or whether WBC need to include additional requirements	Oct 2020	
	Create guidance for residents without off-street parking for EVCPs	Oct 2020	Guidance
	Consider introducing a minimum or percentage of EVCPs required, per number of parking spaces at non-residential developments	Mar 2021	New non-residential parking policy
	Investigate incentives WBC could introduce for BEVs/FCEVs via the Parking Strategy	Mar 2021	Measures within the WBC Parking Strategy
	Embed policy measures and incentives into other council Strategies and Policies	On-going	ULEV requirements embedded into relevant Strategies and Policies
	Investigate whether developer contributions towards public infrastructure could be required via Section 106/Section 75 Community Infrastructure Levies. These could be for both vehicle and electric bicycle charging	Jun 2021	
	Look at how travel plan policies can support businesses in developing and implementing travel plans that make provision for ULEVs	Jun 2021	
	Work with stakeholders to ensure ULEVs are included, and provided for, in the forthcoming West Berkshire Parking Strategy	Dec 2021	Consideration of ULEVs within the West Berkshire Parking Strategy
	Consider how WBC can assist tenants to install EVCPs in rental properties	Dec 2021	
Consider whether an ULEV specification can be included in procurement contracts/policies to encourage ULEVs for services such as refuse collection, street sweeping and other outsourced public services	Dec 2021		

<b>Infrastructure</b>	<b>Increase publicly accessible chargepoints</b>		
	Work with the council's highways contractor to install on-street chargepoints in residential areas where residents have no or limited off-street parking available	Ongoing	Additional on-street residential EVCPs installed
	Bid for government funding where appropriate to increase the number of chargepoints in West Berkshire	Ongoing	Number of EVCPs and locations installed
	EVCP Infrastructure feasibility surveys for council public car parks	Sep 2020	Internal feasibility Report
	EVCP Infrastructure feasibility surveys for some council leisure centres	Sep 2020	Internal feasibility Report
	EVCP Infrastructure feasibility surveys for some council buildings	Sep 2020	Internal feasibility Report
	Install EVCPs at agreed council sites for fleet/staff use, to enable increased fleet and greyfleet uptake	Dec 2020	Number of EVCPs and locations installed
	Install EVCPs in council car parks for public use	Dec 2020	Number of EVCPs and locations installed
	Identify potentially suitable locations for EV Hubs or hydrogen stations	Jun 2021	
	If any suitable sites are identified, work to secure partners/funding	Mar 2022	

<b>WBC Fleet and grey fleet</b>	<b>Leading by example</b>		
	Update the council's fleet procurement policy to include guidance on ULEV requirements	Oct 2020	Updated guidance
	All new/replacement cars and light-duty vehicles onto council fleet to be ULEV, where suitable vehicles exist and are compatible with the service's needs (to be led by the council's fleet purchasing guidance)	Ongoing	Number of ULEVs onto fleet, percentage of ULEVs on fleet
	Investigate whether a BEV only salary sacrifice lease scheme for staff is appropriate to encourage uptake and reduce staff vehicle emissions	April 2021	
	Promote the Car Club ULEVs as a pool fleet to enable a reduction of greyfleet business mileage	Dec 2021	Number of staff bookings
	Lobby government and industry to encourage technology improvements for medium sized passenger vehicles such as specially equipped mini buses	Ongoing	

	Interim target of 25% of cars and light-duty vehicles on the council fleet to be ULEV by 2022	Jan 2022	Percentage of ULEVs on fleet
	100% of cars and light-duty vehicles on the council fleet to be ULEV by 2030	2030	Percentage of ULEVs on fleet
<b>Community</b>	<b>Promoting and raising awareness of ULEVs</b>		
	Car Club: Consider expansion of the scheme and replacement BEVs for existing hybrid vehicles when they are replaced	As and when vehicles are due for replacement	Number of ULEV/ BEVs available for use
	Provide information, advice and guidance to residents on ULEVs and EVCPs, where appropriate	As required	Number of enquiries/advice provided
	Investigate whether ULEV Car Clubs can be introduced in rural areas	Mar 2021	
<b>Visitors</b>	Encourage hotels and B&Bs to install charging facilities	Ad-hoc	Number of EVCPs at such facilities
	Work with businesses such as hotels/ conference centres to promote the locations of EVCPs and other options such as the Car Club to guests	Mar 2021	Number of additional EVCPs installed
<b>Business</b>	Provide information, advice and guidance to business on ULEVs and EVCPs where appropriate	As required	Number of enquiries/advice provided
	Encourage businesses to consider infrastructure for their guests/visitors to charge and consider making facilities publicly available or alternatively at evenings/weekends	Ad-hoc	Number of publicly available business based EVCPs
	Produce online guidance for businesses on installing EVCPs and where they may obtain funding towards infrastructure	Dec 2020	Number of page impressions/ downloads online
	Promote the B.I.K. savings for lease car users to businesses	Mar 2021	
<b>Knowledge Sharing</b>	Maintain internal knowledge and engagement with the fast paced ULEV sector. Attending events and forming partnerships with a range of public and private sector stakeholders.	Ad-hoc	
	Use the knowledge within the council to identify and produce guides or information for parish councils, business charities etc. linking to appropriate grants/funding information	Ad-hoc	

<b>Taxis/Private Hire</b>	Investigate requirements of low emission zones locally e.g. towns, cities, airports with the intention of sharing information with drivers/operators on where requirements will affect them	Oct 2020	
	Engage with drivers to establish interest in ULEVs	Dec 2020	
	Investigate a multi-authority OLEV funding bid to provide support for drivers/operators to increase ULEVs amongst Taxis/Private Hire vehicles	Mar 2021	
	Infrastructure feasibility surveys for taxi ranks	Jun 2021	
	Review the regulatory framework to integrate emission considerations, including: licensing emission standards, low emission taxi ranks and procurement decisions	Dec 2021	
	Consider introducing reduced licence fees for taxi and private hire BEVs and FCEVs	Dec 2021	
	Consider introducing a requirement for a percentage of ULEVs in operators' fleets	Dec 2021	
	Investigate ULEV only taxi ranks	Mar 2022	

<b>Innovation</b>	<b>WBC Supporting Innovation</b>		
	Explore opportunities for involvement in trialling new technology and business models where appropriate	Ad-hoc	Number of innovation projects involved with
	WBC will facilitate local demonstration projects and trials where appropriate	Ad-hoc	
	WBC will promote opportunities for involvement to appropriate stakeholders	Ad-hoc	

<b>Review Points</b>	<b>Review Points</b>		
	At least biannual review of the ULEV Strategy to keep relevant	Next due by Sep 22	Refreshed Strategy where required due to major technological advances
	Annual Report to Environment Board on progress on the Framework of Actions	Sep 21	Progress Report and update Framework annually with progress



## ULEV Uptake Monitoring for overall success of actions

Target	Measurement	Baseline	Target
Expand EVCP network	Number of public EVCP locations/Number of available points	Locations: 63 (30/06/2020) Available points/sockets: 105/110 (30/07/2020)	50% increase by 2023
Increase ULEV use	Number of ULEVs registered in the district	1007 (Q4 2019)	10% increase by March 2023
Increase ULEV use	Percentage of overall West Berkshire registered vehicles that are ULEV	0.84% (at the end of 2019)	5% by 2030
WBC to lead by example	Number/percentage of WBC car and light-duty fleet ULEV/BEV	6 BEV Total fleet: 6/50 fleet = 12% BEV (Mar 2020)	25% of car and light-duty vehicles by 2022, 100% by 2030
Increase ULEV uptake amongst hackney carriage and private hire vehicles	Number of ULEVs currently licenced	Hackney carriage – 0 Private hire – 2 (2019)	
Expand ULEV Car Club	Number of vehicles/locations	5 Vehicles - 2 hybrid, 1 electric 5 Locations in Newbury (2019)	At least 60% electric cars by March 2022 Expand to at least 6 cars by March 2022

# Glossary

Abbreviation	Term	Explanation
AC	Alternating current	An electric current that sometimes reverses direction.
AQMA	Air Quality Management Area	A local authority declared area where the National Air Quality Objectives are unlikely to be achieved.
AV	Autonomous Vehicle	A self-driving or driverless vehicle that can guide itself without human interaction.
BEV/EV	Battery Electric Vehicle/Electric Vehicle	Vehicle powered by a battery only, can travel 100-300+ miles on a full charge depending on the vehicle and the battery size. Full electric vehicles are available as cars, light commercial vehicles, heavy goods vehicles, buses, motorcycles and scooters.
B.I.K.	Benefit in Kind	B.I.K. is a tax on employees who receive benefits on top of their salary e.g. company car.
CO <sub>2</sub>	Carbon dioxide	The most significant long-lived gas in the Earth's atmosphere. Whilst the gas occurs naturally, since the Industrial Revolution, its concentration has increased drastically leading to global warming.
COMEAP	Committee on the Medical Effects of Air Pollutants	Advises the government on all matters concerning the health effects of air pollutants.
DC	Direct current	An electric current that flows in one direction only.
EVCP	Electric Vehicle Chargepoint	A fixed charging point, used to charge BEVs and PHEVs.
FCEV	Hydrogen Fuel Cell Electric Vehicle	Vehicles can drive around 300 miles on a hydrogen fuel tank. Very limited infrastructure for refuelling, limits use to those areas with hydrogen production and refuelling sites.
	Greyfleet	Vehicles that are used for business travel but do not belong to the organisation e.g. vehicles leased by staff both via the council and privately, or privately owned vehicles.
ICE	Internal Combustion Engine	An engine generating movement by burning of a fuel such as petrol or diesel inside the engine.
MaaS	Mobility-as-a-Service	A shift away from traditional personal vehicle ownership to packaged and integrated transport services.

<b>NO<sub>2</sub></b>	<b>Nitrogen Dioxide</b>	One of a group of highly reactive gases, used as an indicator for the larger group of nitrogen oxides (NOx). NO <sub>2</sub> is mainly produced from the burning of fuel.
<b>OLEV</b>	<b>Office for Low Emission Vehicles</b>	Cross-departmental office of UK government.
<b>PHEV</b>	<b>Plug-in Hybrid Electric Vehicle</b>	Vehicle with a petrol/diesel engine alongside an electric motor. A small battery with electric range of 20-40 miles, and a conventional engine for longer journeys.
<b>PM</b>	<b>Particulate Matter</b>	The term covers a mixture of solid particles and liquid droplets in the air. Particle pollution of PM10 and PM2.5 are tiny inhalable particles that can be inhaled deep inside the lungs and can contribute to health issues.
<b>Range</b>		The distance a vehicle can travel on a fully charged battery.
<b>ULEV</b>	<b>Ultra Low Emission Vehicles</b>	Vehicles that produce no more than 75g CO2 per km from the tailpipe. These mainly consist of BEVs, PHEVs and FCEVs.
<b>V2G</b>	<b>Vehicle to Grid</b>	Allows for bio-directional charging of a vehicles battery, both charging from, and discharging to the grid.

# Appendices

## Appendix 1 – Publicly available chargepoints in West Berkshire

Location (* indicates restricted access)	Type	Number of chargepoints/ sockets available at one time for charging)	Location Type	Network
Membury, M4 East	Rapid (43/50kW)	2	Services	Ecotricity
Membury, M4 East	Tesla Supercharger (120kW)	6	Services	Tesla
Membury, M4 West	Rapid (43/50kW)	2	Services	Ecotricity
Membury, M4 West	Tesla Supercharger (120kW)	8	Services	Tesla
Membury, M4 West	Fast (22kW)	1	Services	Ecotricity
Chieveley , M4/A34	Rapid (43/50kW)	2	Services	Ecotricity
Two Watermills, Newbury	Rapid (50kW)	1	Pub	Engenie
Burghfield, M4 East	Rapid (43/50kW)	2	Services	Ecotricity
Burghfield, M4 West	Rapid (43/50kW)	2	Services	Ecotricity
IKEA, Calcot	Rapid (43/50kW)	3	Retail	Ecotricity
Grange Hotel, Midgham	Rapid (43/50kW)	1	Pub/Hotel	Polar
Grange Hotel, Midgham	Medium (7kW)	2	Pub/Hotel	Polar
Grange Hotel, Midgham	Slow (3.5kW)	2	Pub/Hotel	Polar
Sheepdrove, Lambourn	Fast (22kW)	1 (2 sockets)	Business	Pod
Pure Green Energy, Hamstead Marshall	Tesla Destination 11kW)	2	Business	Tesla
Crab and Boar, Chieveley	Tesla Destination 11kW)	2	Pub/Hotel	Tesla
Royal Oak, Yattendon	Tesla Destination 11kW)	1	Pub/Hotel	Tesla
Vineyard, Stockcross	Tesla Destination 11kW)	1	Pub/Hotel	Tesla
Deanwood Golf Club, Stockcross	Tesla Destination 11kW)	1	Business	Tesla
Donnington Valley Golf Club, Stockcross	Tesla Destination 11kW)	2	Pub/Hotel	Tesla
Bottomline Technologies	Medium (7kW)	4	Workplace	VendElectric
Elephant, Pangbourne	Medium (7kW)	1 (2 sockets)	Pub/Hotel	Pod
Anesco, Padworth	Medium (7kW)	1	Business	EV.Charge online

The Base, Greenham	Medium (7kW)	2	Attraction	Unknown
David Lloyd, Newbury*	Medium (7kW)	1 (2 sockets)	Business	Pod
Nissan, Newbury*	Medium (7kW)	1 (2 sockets)	Motor Dealership	Nissan
Kia, Newbury*	Medium (7kW)	1 (2 sockets)	Motor Dealership	Zap-Work
Parkway Car Park	Medium (7kW)	4	Car Park	N/A
Kennet Multi-storey Car Park	Fast (22kW)	1	Car Park	Polar
Cirrus Logic, Newbury	Slow (3kW)	6	Workplace	Unknown
Briars Dental Care, Newbury	Fast (22kW)	1	Business	Zero Net
Briars Dental Care, Newbury	Medium (7kW)	1	Business	Zero Net
Walt Motor Company, Newbury*	Slow (3kW)	1	Business	Zap-Work
West Fields, Newbury	Slow (3.7kW)	15	On street	Ubitricity
East Fields, Newbury2				
Slow (3.7kW)	13	On street	Ubitricity	
Hungerford2				
Slow (3.7kW)	8	On Street	Ubitricity	
Table 1: Current charge points publicly available in West Berkshire (correct as of 30/06/2020)				

## Appendix 2 – Charging Infrastructure

Charger type	Power	Charging unit	Use/location
Slow/trickle	3kW AC	A 3-pin plug, wall/post mounted or a street lamp	At or close to a domestic property, often used overnight or for workplace charging during the day. Can support up to 2 full charges in a 24 hour period.
Medium (7kW)/ Fast (11-22kW)	7-22kW AC	A wall or ground mounted unit either with a tethered cable or requiring a connecting cable	Domestic properties (generally 7kW), on street/public car park, supermarket or business (7kW with some 22 kW). 22kW requires a 3-phase electricity connection. 7 kW can support up to 4 full charges in a 24 hour period and 22kW up to 6 full charges.
Tesla Destination	11kW	A wall or ground mounted unit either with a tethered cable for charging Tesla vehicles	Hosted by hotels, pubs and restaurants, funded by Tesla. The tethered cable will only fit a Tesla vehicle. Some EVCPs will have an additional socket to allow other vehicles to also charge.
Rapid	43kW AC/50kW DC	High powered EVCP with fixed cable connectors, usually used to charge vehicles to 80%	Used to quickly charge during long journeys or for business/commercial use during operation e.g. taxis/delivery vans. Can support 36-48 charges in a 24 hour period but will more likely be 12-15 uses, as overnight usage will be limited.
Tesla Supercharger	120kW	High powered EVCP with fixed cable connectors for Tesla vehicles	Used to quickly charge Tesla vehicles, funded by Tesla and cannot be used by other vehicles.
Supercharger/ Ultra-fast	120-500kW DC	High powered EVCP with fixed cable connectors, usually used to charge vehicles to 80%	Similar to a rapid charger, but even faster; Tesla have their own supercharger network and there are some taxi only points. Likely to be shortly available for other vehicles but may not be suitable for all vehicles
Hub	Up to 500kW DC	A number of rapid or superchargers at one location	Similar to a fuel station with a number of high speed chargepoints, may have a shop, toilets, café, meeting rooms and wifi

**Table 2: Chargepoint types**

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