



Buckinghamshire Electric Vehicle Action Plan 2022-2027



Buckinghamshire Electric Vehicle Action Plan

Introduction

This document represents Buckinghamshire Council's first 5-year Action Plan to support the transition to Electric Vehicles (EVs). The aim of this is to reduce carbon emissions and improve air quality as set out in the Council's Climate Change and Air Quality Strategy (2021). This Plan has been developed with advice from the Energy Saving Trust¹ and following feedback from EV users and infrastructure providers. It is accompanied by an in-depth Electric Vehicle Study looking into the challenges facing EV infrastructure provision in Buckinghamshire.

Globally, we are facing a climate emergency and the UK is committed to reducing Greenhouse Gas emissions to net zero by 2050. Part of this includes phasing out internal combustion engine (petrol and diesel) vehicles. Fully petrol- or diesel vehicles will no longer be sold in the UK after 2030². To support the transition to electric vehicles the Government has recently published their Electric Vehicle Infrastructure Strategy, which aims to increase the number of public charging points by 10-fold, equating to a minimum of 300,000 electric vehicle charge points by 2030³. For Buckinghamshire this would generate a minimum requirement for 2430 chargers (1 point for every 223 residents) by 2030. £1.6 billion funding for new electric vehicle charge points was announced in March 2022 in support of this ambition.

Within the Buckinghamshire Climate Change and Air Quality Strategy we have committed to **achieve net zero carbon emissions for Buckinghamshire by 2050**⁴. Transportation currently contributes 51% of those emissions in Buckinghamshire, with 65% of these generated by car use⁵ (see Figure 1). Our aim is for residents to move towards being less dependent on vehicles for their daily lives, especially for shorter journeys, and to take up more sustainable and active modes of travel. However, EVs provide a good alternative to combustion engine vehicles as they generate zero 'tailpipe' emissions and have a lower whole-life carbon footprint.

¹ <https://energysavingtrust.org.uk/service/local-government-support-programme/>

² New petrol/diesel hybrids will be phased out after 2035, and petrol/diesel HGVs by 2040.

³ DfT – Taking charge: the electric vehicle infrastructure strategy:

<https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy>

⁴ Buckinghamshire Council Climate Change and Air Quality Strategy:

<https://www.buckinghamshire.gov.uk/environment/energy-and-climate-change/the-climate-change-and-air-quality-strategy/climate-change-and-air-quality-strategy/>

⁵ <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019>

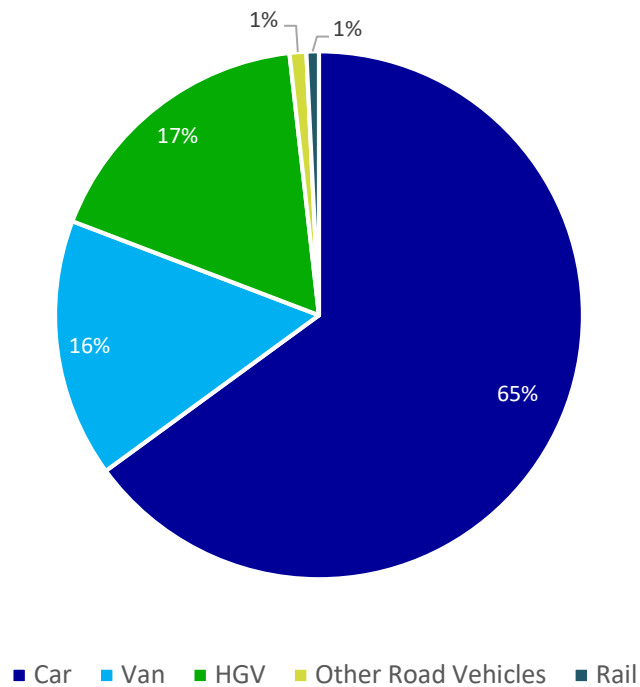


Figure 1: Carbon sources from transportation in Buckinghamshire, 2019

The transition to EVs will be influenced by factors outside the control of Buckinghamshire Council, and in some cases beyond that of the UK Government. Overcoming challenges regarding the global supply of batteries and vehicles, the purchase cost of EVs currently being comparatively more expensive than petrol/diesel vehicles, as well as difficulties meeting power demand and the prohibitive cost of new electricity grid connections in certain areas, are outside the influence of the Council. However, Buckinghamshire Council can help to ensure infrastructure is in place to help residents transition to EVs.

Buckinghamshire Council is not the only facilitator of EV charge points, and the Action Plan also addresses the need to increase commercially provided EV chargers to provide a comprehensive charging ‘network’ across the area. New regulations also now mandate the installation of EV chargepoints in new housing developments⁶. It should be noted that EV charging provision is a relatively new and rapidly evolving market, and in general income from charge points does not currently cover costs of installing, operating and maintaining them.

There are currently 175 public chargers in Buckinghamshire⁷ and for the purpose of this document, these are grouped into 3 main categories (more information can be found in Appendix 2):

- **Slow (3-6kW)**
- **Fast (7-22KW)**
- **Rapid (25-99kW)**

⁶ Approved Document S: infrastructure for charging electric vehicles, DLUHC 2021:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1046250/consultation-response-electric-vehicle-charging-in-residential-and-non-residential-buildings.pdf

⁷ <https://www.gov.uk/government/statistics/electric-vehicle-charging-device-statistics-january-2022>

We recognise an increasing demand for faster ‘rapid’ and ‘ultra-rapid’ (100kW+) chargers, to increase convenience for EV users and the attractiveness of EVs to replace petrol and diesel vehicles. However, installation of rapid charge points requires more robust connections to the power network, and this is constrained in some parts of the County. Distribution Network Operators (DNOs) are aware of this and are seeking to increase power connectivity to meet this new demand. The national Electric Vehicle Infrastructure Strategy aims to focus ‘rapid’ charge point provision on the strategic road network (i.e., motorway) service stations, at least in the short term.

Electric Vehicle Action Plan Vision

As well as our work to increase the number of trips made by walking, cycling and public transport, we will continue to monitor the reduction in carbon emissions in 5-year periods. The Buckinghamshire Climate and Air Quality Strategy includes transport focused actions that will help us do this. This document outlines specific actions focused on EV uptake and is supported by our vision statement.

“To expand the electric vehicle infrastructure network in Buckinghamshire to ensure that electric vehicles are a convenient and affordable option for vehicle owners, as part of a holistic and sustainable transport network”

We will support the national ambition for EV charging provision and we want to continue to facilitate and fund public charging points where we can. **We aim to have increased the number of publicly available charging spaces in Buckinghamshire by 10-fold, to 1000 spaces, within the lifetime of this plan.**

Action Plan Objectives

Action Plan objectives to support this vision have been developed and identified as part of the EV Study:

1. Support the uptake of EVs within Buckinghamshire through the provision of a comprehensive network of EV charging infrastructure
2. Contribute to reducing carbon and air pollutant emissions from transport by supporting the UK-wide transition to EVs
3. Ensure that the EV infrastructure network is future-proofed, to allow for new technologies and trial innovative solutions
4. Provide a range of publicly funded charging infrastructure to support different charging requirements, including for those without off-street charging at their home
5. Support Buckinghamshire Council staff to transition to EVs through salary sacrifice and vehicle leasing schemes
6. Increase the council’s EV fleet capacity and provide any necessary charging infrastructure
7. Work with developers, local businesses, parish and town councils to encourage provision of privately funded charge points

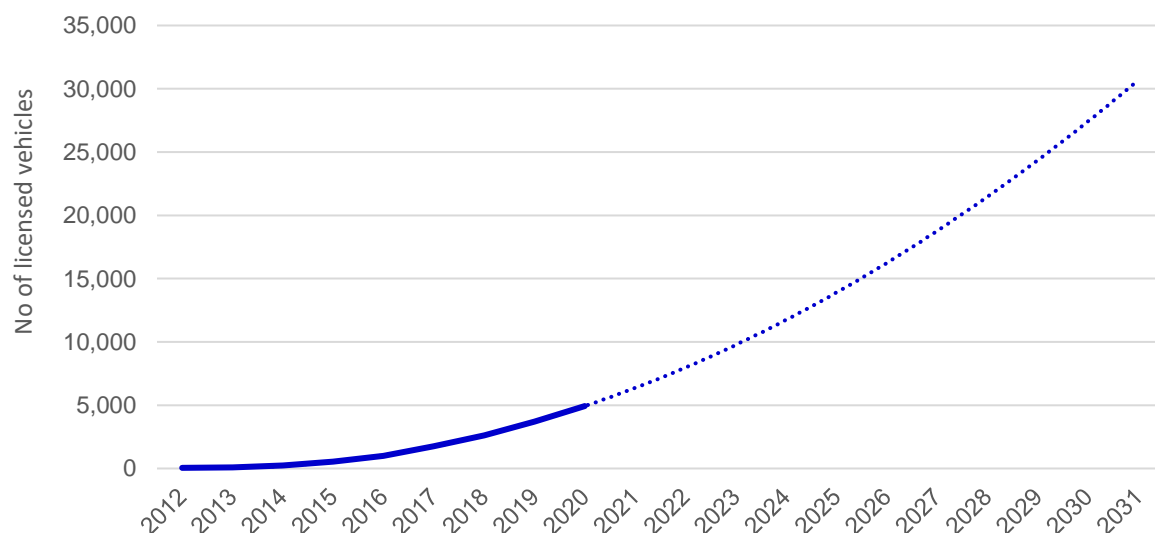
8. Work with local public transport and taxi- and private hire companies to facilitate charging infrastructure and support the transition to zero emission vehicles
9. Encourage use of EVs as part of a sustainable transport network, including active travel and public transport, whilst reducing the need to travel overall

Uptake of EVs in Buckinghamshire

The uptake of EVs in Buckinghamshire is higher than the UK and South-East of England average. This can be attributed in part to Buckinghamshire having relatively affluent residents and the trend of early uptake in EVs being from people with higher incomes. This is expected to increase in the future as the price of EVs reach parity with petrol/diesel vehicles. However, the overall uptake rate in Buckinghamshire and the UK as a whole remains slow when compared to what is needed to achieve transport decarbonisation.

Figure 2 shows the number of licensed EVs in Buckinghamshire with a projection to 2030⁸. A projected growth curve to 2030 for registered EVs in Buckinghamshire based on recent sales results in a total of approximately 30,000 vehicles. This is significantly below the figure that would be required if the UK is to hit the forecasts produced by the UK's Committee on Climate Change (CCC), which equates to approximately 110,000 vehicles in Buckinghamshire alone. It is therefore clear that a significant acceleration in the uptake of EVs is required through the remainder of the 2020s to meet the CCC target.

Figure 2: Number of registered EVs in Buckinghamshire up to Q2 of 2021 and forward projection



There are a number of barriers and constraints to transitioning to EVs that have been considered in the development of this Action Plan:

Range – One common barrier to driving an EV is concern over the range or distance that an EV can travel before recharging is required. However, new battery technology means that recent EVs have much greater ranges. Ranges have increased from less than 100 miles to

⁸ Buckinghamshire EV Study (Jacobs) 2021

200+ miles, which is more than adequate for the vast majority of UK drivers' daily driving requirements. The average commute in Buckinghamshire is 25 miles per day, meaning daily charging would likely be unnecessary. Even company car users which average of 17,500 miles a year do not typically exceed 70 miles per day.

Disparity of charging types – One of the most often cited barriers is the lack of charging infrastructure at destinations. However, availability is increasing, and charger compatibility has improved significantly in recent years, with all manufacturers (apart from Tesla) working towards the Open Smart Charging Protocol, to further standardise charging types and connectors.

Rapidly evolving EV charging technology – Prior to 2016 most EVs charged at 3kW alternating current (called 'slow' charging), which was adequate to fully recharge most batteries (typically up to 24 kWh) overnight. EV charging technology has evolved and a limited number of compatible vehicles can now recharge from 0% to 80% in 15-30 minutes. However, installation and therefore availability of 'fast' and 'rapid' charge points is constrained by the power supply itself which requires more robust connections to the local grid.

Choice of vehicles is expanding – in Autumn 2021 there were over 100 different EV models available on the UK market with a good degree of choice across the various classes of cars and, increasingly, vans. Some manufacturers have also announced an intention to produce only 100% battery electric vehicles from the mid-2020s (e.g., Jaguar, Alfa Romeo).

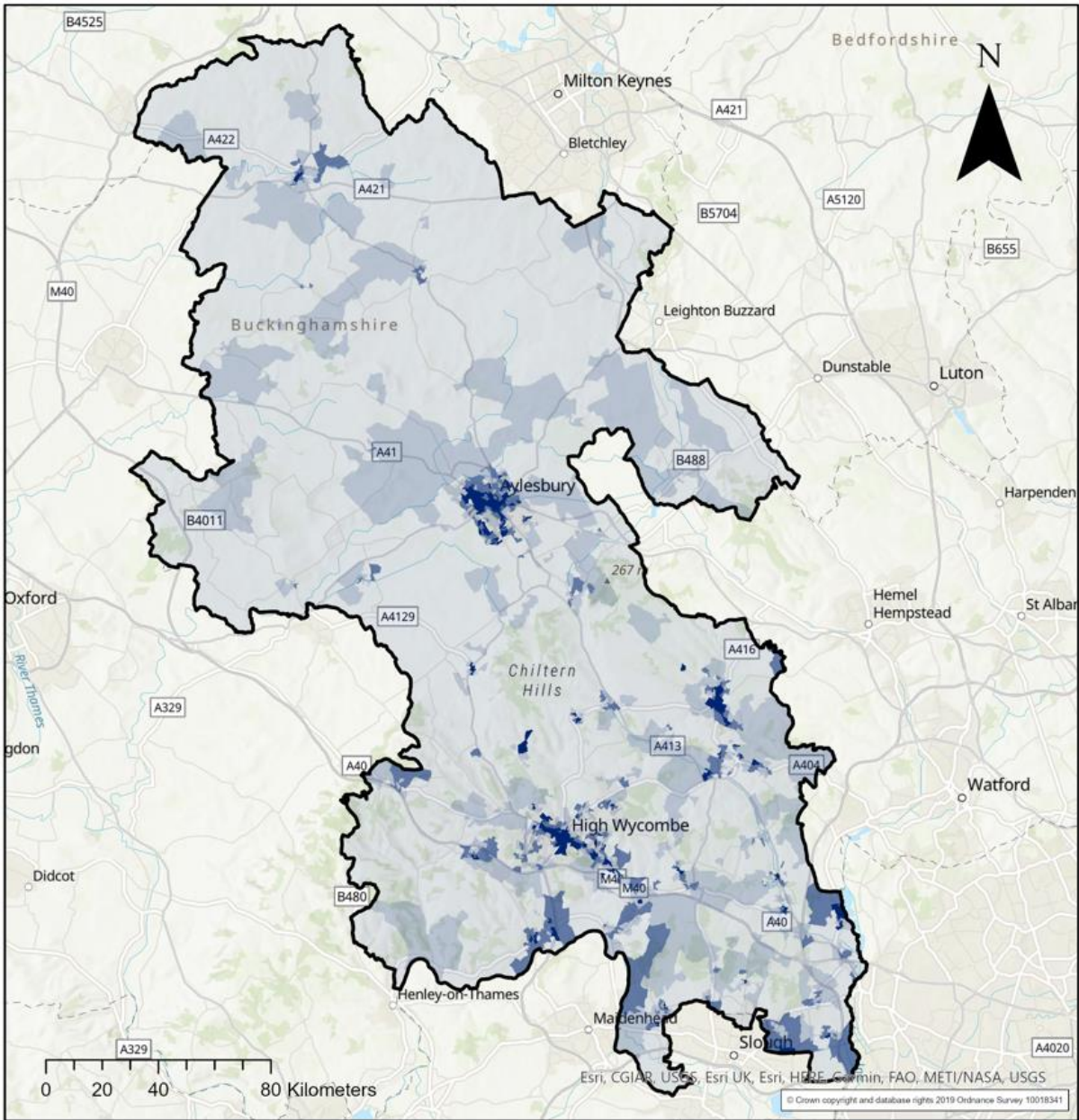
Price of vehicles – EV prices generally remain high, although a few models came to the market in 2021 priced under £40,000. However, the second-hand EV market is still small. Due to the falling price of batteries and increasing maturity of vehicle production techniques, it is estimated that price parity between EVs and petrol/diesel vehicles will occur in the mid to late 2020s.

Supply of vehicles – Consumers currently report relatively long waiting times for EVs, and there have been instances of models being removed from sale for periods in the UK due to an excess of demand over supply. Instability in vehicle supply impacts the usage of charge points, leading to challenges for sustaining and planning a cohesive public charging network. The lack of production capacity is a global issue and further expansion of capacity is needed in the coming years.

On-street charging – Whilst there are existing government schemes to support the installation of charge points for homes with access to off-street parking under permitted development rights, there are limited options to install charging infrastructure where there is no access to off-street private parking space. Residents without access to off-street parking might therefore be discouraged to shift to EVs for this reason. Some local authorities have begun trialling systems to allow charging across pavements, however, there remain several technical and regulatory difficulties with these.

We have reviewed data on parking provision across Buckinghamshire. Figure 3 shows the density of dwellings with limited off-street parking. From this research we have identified several key areas where we would like to support more on street charging provision. These are concentrated in denser urban areas, including Aylesbury, High Wycombe, Amersham, Chesham, Gerards Cross, Wendover, and the outskirts of Slough and Maidenhead.

Figure 3 - Areas with limited off-street parking availability (February 2022)⁹



⁹ Buckinghamshire EV Study (Jacobs) 2021

Current EV charging provision in Buckinghamshire

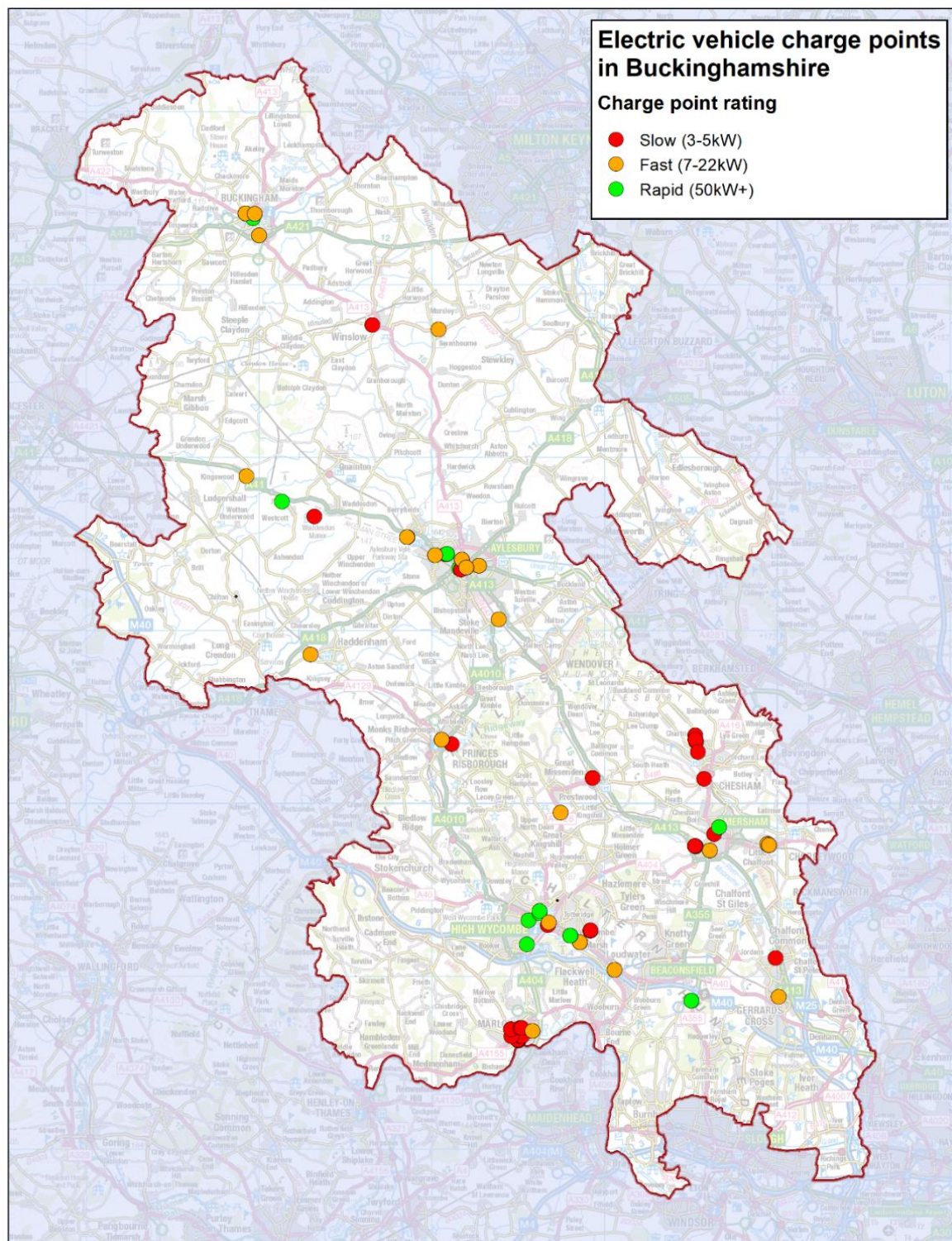
At the time of writing there are 175 public chargers in Buckinghamshire (35 of these are classed as 'rapid' chargers)¹⁰. In addition to this, charge point operators and businesses are also investing commercially in the network. These tend to be in areas where demand for EV charging is already high such as larger towns and along major traffic routes.

Current EV charging provision is outlined in Figure 4 below and is primarily concentrated within the main towns of Buckinghamshire namely Aylesbury, Chesham, Amersham, Buckingham, High Wycombe, and Marlow. Rural areas of Buckinghamshire currently have much less coverage and this is something we want to address. Where we cannot facilitate the provision of charging points in these locations ourselves, we will be working with charge point operators, parish and town councils, and businesses to encourage their installation.

At present, we do not enforce maximum stay times at any of our charge points. However, we have been made aware of some users 'over-staying' at charge points (parking vehicles at charge points for longer than is necessary to charge them). At present this is discouraged through the parking charges within our car parks, but we will investigate options to maximise turnover and the continued availability of charge points for multiple users.

¹⁰ Numbers of charge points based on DfT statistics: charging speeds as published on Zap Map: <https://www.zap-map.com/live/>

Figure 4: Existing charging infrastructure in Buckinghamshire (February 2022)



Action plan outcomes

To achieve the objectives of the Action Plan, this section explains the actions we will be taking and the expected outcomes, over both the short and medium term. These are outlined in more detail in Table 1 below.

Short term (to 2024/5)

- Double the number of EV charging spaces across Buckinghamshire, compared to February 2022 (this equates to 175 new parking bays) by 2023/4, focusing on coverage in areas currently without access to a charge point.
- Work with a medium-term strategic EV supply partner to help facilitate EV charger provision and provide data on EV use in Buckinghamshire. This arrangement will be reviewed at the end of the contract period.
- Investigate opportunities for income generation for the Council via publicly funded charging points, recognising that although currently the income from charge points does not generally cover costs of installing, operating and maintaining them, this situation may change over time as usage rates increase.
- Maximise opportunities to secure grant funding from Government via the Office for Zero Emission Vehicles (OZEV). Within the restrictions placed on the use of this funding, we will:
 - Increase the number of EV charge points in council-owned car parks near residential areas, focusing initially on areas where there is a higher uptake in EVs (under the On-Street Residential Charge point Scheme (ORCS)¹¹), and provide technical support for town and parish councils wishing to secure funding via ORCS.
 - Using the new Local Electric Vehicle Infrastructure (LEVI) fund¹², we will increase the number of on-street EV charge points, prioritising areas where there is limited off street parking and public support.
- Work with EV charge point suppliers in the roll out of their networks of chargepoints on a commercial (100% privately funded) basis across Buckinghamshire.
- Work with EV charge point suppliers and DNOs to future proof the technology and power supplies to support Buckinghamshire's developing EV charging network.
- Take a strategic view to provision, ensuring there is a spread of EV charging points of different types across Buckinghamshire. Develop a system for recording and prioritising residents' requests for on-street EV chargers.
- Trial innovative charge point technologies and on street charging solutions (including induction charging, cable channels, solar canopies).
- Work with England's Economic Heartland, the DNOs and EV charge point suppliers to investigate the feasibility of installing ultra-rapid charge point hubs on strategic road links, including through the government's new Rapid Charging Fund.

¹¹ [On-Street Residential Chargepoint Scheme guidance for local authorities - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/guidance/on-street-residential-chargepoint-scheme-guidance-for-local-authorities)

¹² [Apply for local electric vehicle infrastructure \(LEVI\) pilot funding - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/apply-for-local-electric-vehicle-infrastructure-levi-pilot-funding)

- Install EV charging points at Buckinghamshire Council offices and depots to support staff to take up EVs and transition the council's fleet to EVs. Collaborate with other public agencies to provide greater charging provision for public service fleet vehicles.
- Review and update Buckinghamshire's parking standards for new developments, in line with new building regulations requirements for new developments¹³.
- Undertake promotional activities targeting residents and local businesses to dispel commonly held myths about EVs and highlight price comparison to running costs of a petrol/diesel vehicle.
- Ensure the accessibility of charge points, in terms of both physical usage and payment methods.
- Work with suppliers to improve charge point reliability and investigate mechanisms to discourage 'over-staying' at charge points longer than necessary to complete a full charge.

Medium Term (2025-27)

- Continue to provide and extend a high quality, efficient and comprehensive publicly available EV charging network across the council area. Support the delivery of 1000 charging spaces across Buckinghamshire by 2027.
- Ensure the proper maintenance and continued operation of all charge points installed in partnership with Buckinghamshire Council and at Buckinghamshire Council facilities.
- Investigate options for providing on-street charge points in areas with high levels of properties without access to private home chargers (see Figure 2). Install chargers in consultation with ward members, Community Boards and residents.
- Continuously monitor utilisation of publicly funded charging infrastructure and engage with the commercial sector to identify when further charging infrastructure should be installed to meet demand.
- Continue to work with developers, local businesses, town and parish councils to increase the number of publicly available EV chargers.
- Encourage EV transition within the council's supply chain through our contract procurement processes.
- Look at ways to integrate, promote, and secure funding for zero emission vehicles within the wider transport network (e.g., buses¹⁴, rail and freight) alongside other decarbonisation measures within the development of the council's next Local Transport Plan (Buckinghamshire LTP5).
- Work with DNOs to understand options to bring fast- or rapid EV charging to locations with limited electricity supply, to ensure EV charging supply is spread evenly across Buckinghamshire.
- Promote options for increasing the uptake of EVs by staff through salary sacrifice options, the Council's Vehicle Leasing Scheme, or other Government supported schemes.

¹³ [Infrastructure for charging electric vehicles: Approved Document S - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/infrastructure-for-charging-electric-vehicles)

¹⁴ <https://www.gov.uk/government/publications/apply-for-zero-emission-bus-funding>

- Consider the introduction of emissions-based parking schemes as part of the forthcoming work on the Buckinghamshire Parking Strategy.
- Monitor technological development and maturity of solutions to transition HGVs to EV. This should include monitoring of developments for other fuel solutions such as hydrogen.

These actions were derived from the findings of the accompanying EV study and are outlined in more detail in Table 1 below.

Table 1: Electric Vehicle Action Plan Recommendations for Key Actions

Recommendation	Rationale	Timescales	Responsible organisation (s)
1a. Increase the number of publicly available EV charge points at Buckinghamshire Council-operated facilities to give residents, visitors, and fleet operators the confidence to transition to EV.	<p>Public opinion surveys consistently show the opportunity to charge at publicly available charge points is highly valued. It is increasingly important as charging trends move away from home charging to address range anxiety and support residents without the ability to charge at home.</p> <p>As the supply of vehicles increases, it will be important to give users confidence that facilities exist to support their journeys, particularly within a rural county such as Buckinghamshire where there are higher than average commuting distances.</p> <p>Residents who do not have access to off-street parking will require public facilities.</p>	<p>Double the number of public charging facilities to 2023/24, with aim to support the provision of 1000 publicly available charging spaces by 2027.</p> <p>Initial ORCS bid to be undertaken with EV supply partner.</p>	<p>Buckinghamshire Council hire Council Council EV supply partner OZEV funding grants</p>

Recommendation	Rationale	Timescales	Responsible organisation (s)
1b. To keep pace with the uptake in EVs, deliver more ‘fast’ and ‘rapid’ chargers in co-ordination with the private sector.	A high-level assessment on the potential number of future rapid charge points has been undertaken as part of the accompanying EV Study. This suggests that between 310 and 887 rapid chargers are likely to be required in Buckinghamshire by 2025 based on forecast EV uptake. Due to the uncertainties explained in this document, it is difficult to predict the precise number of rapid charge points required. Monitoring of charge point usage will be undertaken to inform future charging provision. We will also work with DNOs to identify suitable locations for rapid and ultra-rapid charge points hubs.	Provision of additional fast charge points in the short term to 2024, and rapid charge points in the medium term to 2027.	Private sector landowners EVCP Suppliers Buckinghamshire Council England’s Economic Heartland DNOs x 3
1c. Engage with the EV charge point industry on an ongoing basis to facilitate commercial roll out of chargers, increasing the number of publicly available EV chargers and workplace chargers	It will be important to continue providing sufficient charging infrastructure to give users confidence that facilities exist to support their journeys.	Monitoring of utilisation and engagement with sector to determine further phases of infrastructure delivery over the medium to long term (2023+)	EVCP Suppliers Businesses Buckinghamshire Council
2a. Undertake trials to facilitate charging in residential areas where residents do not have off-street parking.	Most areas without off-street parking are concentrated in denser urban areas. We are already trialing new on-street induction charging in Marlow and will investigate the introduction of other solutions for at home on-street charging.	Medium term to 2023+	Buckinghamshire Council Trial EV supplier partners

Recommendation	Rationale	Timescales	Responsible organisation (s)
2b. Look at opportunities for implementing further on-street charge points including a means of recording and prioritising residents' requests for on-street EVCPs.	Several challenges exist to the provision of on street chargers, as noted within the accompanying EV Study. Using lessons learnt from the early introductions of on street chargers in Buckinghamshire, future on street charging points should be supported with EV only bay markings and accompanying Traffic Regulation Order.	Medium term (2023+)	Buckinghamshire Council In conjunction with Community Boards and Parish and Town Councils
2c. Seek external funding from forthcoming sources, including but not limited to the Government's ORCS, LEVI, and Rapid Charging Fund.	<p>In support of the national EV Infrastructure Strategy £1.6 billion funding for new electric vehicle charge points was announced.</p> <p>This is comprised of two main funding streams: the £450 million Local Electric Vehicle Infrastructure (LEVI) fund which aims to improve on-street charge point provision; and the £950 million Rapid Charging Fund (RCF) which aims to install rapid charge points at motorway- and major A-road service stations. Alongside ORCS, these offer significant opportunities to improve charge point coverage, but have not yet come fully on-stream. We will submit a bid for the £10m LEVI trial fund in the first instance.</p> <p>This will help to fund trials in Recommendation 2a and assist with developing a new service offer to provide on-street charge points (Recommendation 2b).</p>	Short term to 2023	Buckinghamshire Council

Recommendation	Rationale	Timescales	Responsible organisation (s)
3a. Procure a strategic commercial partner to help deliver the Council's EV-charging ambitions in off-street areas.	<p>A coordinated and consolidated procurement exercise maximising the scale of the opportunity is likely to realise best value and leverage investment.</p> <p>Buckinghamshire Council has recently completed this exercise. The arrangement will be reviewed at the end of the current contract period (2027).</p>	Short term to 2027	Buckinghamshire Council
3b. Where possible, establish a coordinated approach to setting tariffs for usage of charge points commissioned by Buckinghamshire Council in partnership with commercial operators.	<p>Each charge point type (ultra-rapid, rapid, fast, and slow) will have different tariffs to reflect the fact that they are different products (e.g., a rapid charger will cost more to use than a slow charger).</p> <p>However, this recommendation will seek to ensure that tariffs are consistent for each charge point type that is commissioned by Buckinghamshire Council.</p>	Medium term to 2026	Buckinghamshire Council EVCP suppliers
3c. Understand the potential for other procurement approaches or partnership working with England Economic Heartland (EEH)	<p>This could help to provide a region-wide EV network that operates with consistent infrastructure. This approach would be most effective when planning a network of ultra-rapid and rapid charging hubs.</p>	Short term to 2023	Buckinghamshire Council England's Economic Heartland Neighbouring local authorities DNOs x3
3d. Conduct procurement of a strategic commercial partner to help deliver on-street charge points.	<p>The same rationale for Recommendation 3a will apply once a preferred approach to on-street charging has been defined through our trials.</p>	Medium term to 2027	Buckinghamshire Council

Recommendation	Rationale	Timescales	Responsible organisation (s)
4. In partnership with an EV supplier, continue to maximise available Government funding to increase the number of EV charge points in Buckinghamshire (including OZEV's ORCS and LEVI schemes; Charging Infrastructure Investment Fund; Ofgem funding; and forthcoming funding referenced in Recommendation 2c.	The Council is dependent on external funding to expand its network of EV charge points. This agreement needs to be adaptable to changes in bid criteria and funding sources and is dependent on staff resources.	Ongoing through the length of the plan	Buckinghamshire Council hire Council EV supply partner
5a. Where possible future proof technology and the infrastructure deployed in future phases of charge point rollout.	The demand for ultra-rapid charging is currently limited by the low number of vehicle models with this capability. Additionally, the technological solutions for vehicle to grid and inductive charging are relatively immature. However, these technologies are likely to play a key role in the future.	Integrate requirements for keeping pace with innovations into contracts with commercial partners - ongoing through the length of the plan	Buckinghamshire Council hire Council EV charger supply partners
6a. To implement measures to support the transition of the Council's fleet to EV where possible.	The Council is already progressing a programme of fleet transition to EV. This includes purchasing chargepoints for the fleet.	Medium term (2026)	Buckinghamshire Council Term Contractors

Recommendation	Rationale	Timescales	Responsible organisation (s)
6b. Review options to increase the uptake in EVs for staff through increased workplace chargers and EV purchasing support through salary sacrifice schemes.	<p>Increasing charging infrastructure at Council workplace destinations could encourage greater EV uptake from Council employees and contractors.</p> <p>Collaborating with other public agencies within the County will provide greater charging provision for all public service fleet vehicles.</p>	Short term to 2023	Buckinghamshire Council Car Leasing Partners
6c. Encourage EV transition through contract procurement. Building on existing and new contracts, the Council would be able to influence providers of services.	<p>Ensuring that the Council is encouraging change and use of new technology through the supply chain.</p> <p>This is consistent with Buckinghamshire Council's Climate Change and Air Quality Strategy (Action 32): Work with key suppliers to identify opportunities to reduce emissions from their products/services.</p>	Ongoing through the length of the plan	Buckinghamshire Council Contractors
7a. Implement promotional measures to dispel commonly held myths regarding EVs. This would involve using existing communications channels available to the Council to engage residents and local businesses.	EVs are often perceived as impracticable and more complicated to use. Due to higher than average commuting distances in Buckinghamshire, many residents have range anxiety, which is contributing to their slow uptake.	Short term to 2023	Buckinghamshire Council Private car manufacturers Government
7b. Investigate measures to discourage 'over-staying' at charge points	EV charge point use may increase to the point where demand outstrips the availability of charge points. Individuals parking for longer than needed to charge their vehicle reduce availability for others. At present this is a relatively rare occurrence but may become more common as EVs become more widespread.	Medium term to 2027	Buckinghamshire Council EVCP suppliers

Recommendation	Rationale	Timescales	Responsible organisation (s)
8. Within the development of the new Local Transport Plan ensure integration of zero emission vehicles within the wider transport network, seeking to reduce car use through buses, e-car clubs, e-bikes, taxis, shared and micro-mobility, and potentially Mobility as a Service in the longer term.	Electrification of cars will play a key role in decarbonisation. However, this on its own will not achieve CO ₂ reduction targets or tackle other issues such as congestion on roads, improving health/ wellbeing, and placemaking within communities.	Ongoing through to 2025 (expected adoption of LTP5)	Buckinghamshire Council Car Club Suppliers E-Bike / E-Scooter Suppliers
9. Supporting the transition of local buses and public passenger transport services to EV and/or hydrogen, including seeking grants from central government.	<p>The Council proposed trialing the use of electric buses as part of its 2021 Bus Service Improvement Plan (BSIP). However, no BSIP funding was received by the Council in 2022.</p> <p>Securing funding through grants from central government is required to support the transition of buses and other forms of local passenger transport to zero emission vehicles. We will consider applying for any future rounds of the Zero Emission Bus Regional Areas (ZEBRA) scheme, should these become available.</p> <p>The Council has already committed to only issue new taxi licenses to ultra-low or zero emission vehicles by 2030¹⁵.</p>	Medium term to 2027	Buckinghamshire Council Public Transport Operators Government

¹⁵ <https://www.buckinghamshire.gov.uk/parking-roads-and-transport/taxis-and-private-hire/taxi-licence-applications/hackney-carriage-and-private-hire-licensing-policy/about-this-policy/>

Recommendation	Rationale	Timescales	Responsible organisation (s)
10. Reviewing and updating current parking standards for new developments to include EV charging infrastructure in line with new Building Regulations requirements	The UK Government has announced that new homes and buildings in England will be required by law to install EV charging infrastructure. We already have EV charging requirements as part of our planning processes, and this will need to be included within the new Buckinghamshire Local Plan.	Medium term to 2027	Buckinghamshire Council Developers
11. Consider the introduction of emissions-based parking schemes, which would incentivise the uptake of EVs, as part of the Council's forthcoming Parking Strategy review.	Emissions-based parking schemes have been successfully implemented by several other local authorities. They help to promote EVs and other lower emitting vehicles (Euro 6 or later) by charging them less for parking than more polluting vehicles. These schemes do not have to be implemented in every car park and could be used to target specific sites in Air Quality Management Areas. In addition to incentivising EVs this would also contribute to improved air quality.	Medium term to 2025	Buckinghamshire Council
12. Monitoring technological development and maturity of solutions to transition vehicle types such as HGVs to EV and/or hydrogen.	Although the preferred solution for fueling HGVs in the future has not been identified, in the long-term CO ₂ reductions are still required. This should include monitoring of technological developments for other solutions (e.g., hydrogen, noting there is a hydrogen hub in south of Buckinghamshire).	Monitoring over short to long term and look for opportunities to run trials	Buckinghamshire Council Commercial suppliers and operators

Recommendation	Rationale	Timescales	Responsible organisation (s)
13. Continuous engagement with local Distribution Network Operators (DNOs) including: UK Power Networks (UKPN), Western Power Distribution (WPD) and Scottish & Southern Electricity Networks (SSEN) to address key points of weakness in the power network in Buckinghamshire.	Provision of cost-effective and affordable power connections is fundamental to the delivery of charging infrastructure as these are often prohibitively expensive to the installation of new charging points.	Ongoing through the length of the plan	Buckinghamshire Council DNOs Government

Buckinghamshire Council-owned car parks: prioritisation for EV charging infrastructure

One of our first actions in this plan is to increase the number of EV charge points in council-owned car parks near residential areas, maximising use of the funding available via the On-Street Residential Charge point Scheme (ORCS) and focusing initially on areas where there is currently limited coverage.

Figure 5 shows a map of Buckinghamshire Council-owned public car parks and current EV charge point installation within these car parks. Table 2 then outlines a list of priority locations in these car parks for future EV charge point installation under the ORCS scheme application criteria¹⁶.

¹⁶ [On-Street Residential Chargepoint Scheme guidance for local authorities - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/guidance/on-street-residential-chargepoint-scheme-guidance-for-local-authorities)

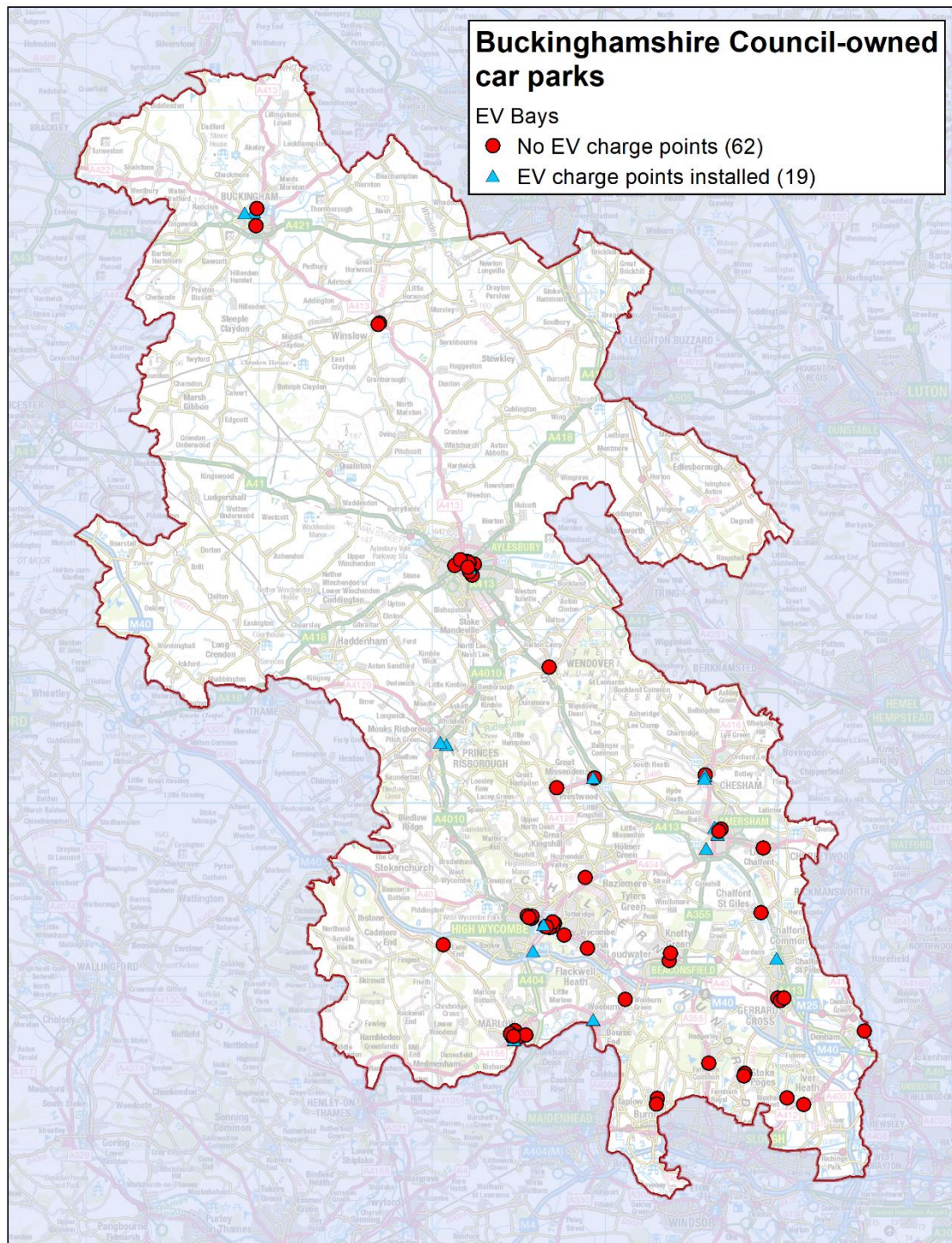


Figure 5: Buckinghamshire Council-owned car parks, highlighting those with existing EV charge points.

ORCS has specific criteria for EV charger locations and so these locations were determined based on the following criteria:

- Car park must be fully owned and directly operated by Buckinghamshire Council;
- Must be located in residential areas, as determined within the Buckinghamshire EV Study and a requirement of ORCS;

- A maximum stay time of more than 4 hours, to allow time to fully charge vehicles;
- Accessible and does not charge for parking between 6pm and 8am, to allow residents to charge overnight;
- Must not serve only a specific destination (such as a library or leisure centre), as this does not meet the criteria for ORCS;
- Must not already have EV charge points installed as our aim is to increase coverage across Buckinghamshire;
- Must have at least 40 parking spaces to lessen impact of reducing overall parking availability due to new EV charging bays;
- Not a multi-storey car park, as installation costs may be prohibitive, but to be considered where this would serve a large number of residents; and
- Should have access to sufficient power supplies to support multiple 'fast' (7-22kW) charge points.

Table 2: Priority car park locations for future electric vehicle charge point installation

Site	Town	Postcode	Capacity	Priority level
Chiltern Avenue	Amersham	HP6 5AH	119	High
Chiltern Pools	Amersham	HP6 5AH	61	High
Penncroft	Beaconsfield	HP9 1PB	101	High
Warwick Road	Beaconsfield	HP9 2PE	49	High
Railway Place	High Wycombe	HP11 1XS	184	High
Snells Wood	Little Chalfont	HP7 9QA	47	High
Institute Road	Marlow	SL7 1BN	61	High
Liston Road	Marlow	SL7 2NJ	167	High
Central	Marlow	SL7 2NJ	184	High
Council Offices (KGVH)	Amersham	HP6 5AW	173	Medium
Aqua Vale	Aylesbury	HP20 1RJ	128	Medium
Exchange Street	Aylesbury	HP20 1UR	278	Medium
Hampden House (multi-storey)	Aylesbury	HP20 1QX	364	Medium
Upper Hundreds (multi-storey)	Aylesbury	HP20 1AG	305	Medium
Walton Street (multi-storey)	Aylesbury	HP21 7QX	525	Medium
Catlings	Chesham	HP5 1DS	55	Medium
Duke Street	High Wycombe	HP11 2DJ	169	Medium
WDC Offices - Rear	High Wycombe	HP11 1BB	109	Medium
West Street	Marlow	SL7 2BS	61	Medium

These sites are currently undergoing a feasibility study to assess access to power supplies, any physical constraints, and to understand installation costs. Working with our strategic EV supply partner and the 3 local DNOs the aim is to install new 'fast' charge points at as many of these locations as possible over the next 2 years. Further detail on the rationale for selecting these points can be provided on request.

Appendix 1: Recommendations for EV charge point provision in car parks, by settlement

Table 3 provides recommendations for EV charging provision in council-owned car parks for each main settlement in Buckinghamshire. The number of chargers suggested is based on a high level assessment of the power availability (this is not necessarily the same as the connectivity costs). It is important to note that settlements without Buckinghamshire Council owned car parks are, by necessity, currently excluded from the table.

Table 3: Recommendations for individual settlements (listed in order of settlement hierarchy).

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
High Wycombe	Provision of rapid chargers to help build a strategic base charging network.	<p>Railway Place Car Park - 2 x 43+ kWh rapid chargers</p> <p>To accommodate terraced housing within the vicinity of the car park to the east. This car park is also located in an area that is forecast to have the highest EV uptake in High Wycombe, which is why the residential use case has been prioritised.</p> <p>Swan Multi-Storey Car Park - 2 x 43+ kWh rapid chargers</p> <p>Due to its high residential potential and to supplement the existing fast charging provision.</p> <p>Easton Street Car Park - 2 x 43+ kWh rapid chargers</p> <p>Due to high residential potential and to supplement the existing fast charging provision.</p>	Base network to be implemented in the short term to 2023.
Aylesbury	Provision of rapid chargers to help build a strategic base charging network.	<p>Waterside Car Park (classed as Waitrose & Partners on Google Maps) - 2 x 43+ kWh rapid chargers</p> <p>To complement existing fast charging provision and to provide for terraced housing to the south of the site. It is also located near to</p>	Base network to be implemented in the short term to 2023. Prioritisation of sites may be necessary with remaining sites delivered post 2023.

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
		<p>the A413, which is the most direct road from the south and would provide good on-route charging potential for fleet vehicles.</p> <p>Waterside North (Managed On-Street) - 2 x 43+ kWh rapid chargers</p> <p>To complement the approved provision (8 fast chargers) and to provide some provision for terraced housing to the south of the site. It is also located near to the A413, which is the most direct road from the south and would provide good on-route charging potential for fleet vehicles.</p> <p>Whitehall Street Car Park - 2 x 43+ kWh rapid chargers</p> <p>To accommodate nearby terraced housing and to encourage turnover due to its smaller capacity.</p>	
Amersham	No immediate improvements are required because there are already two council car parks and some commercial sites with EV charging infrastructure. The recommended site for delivery is a medium to long term timescale based on the outcome of monitoring and EV uptake in the area.	<p>Chiltern Avenue - 4 x 22 kWh fast chargers and 2 x 7 kWh fast chargers</p> <p>To accommodate users of the Chiltern Lifestyle Centre and due to forecast increase in EV uptake.</p>	By 2025.

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
Chesham	Provision of rapid chargers to help build a strategic base charging network. However, the EV uptake in Chesham is forecast to be low, so this can be brought forward in the medium term.	<p>Albany Place Car Park - 2 x 43 kWh rapid chargers</p> <p>To accommodate potential EV ownership in terraced houses to the east in the medium to long term.</p> <p>Water Meadow Car Park - 2 x 43+ kWh rapid chargers</p> <p>To accommodate potential EV ownership in terraced houses to the south in the medium to long term.</p>	By 2025.
Gerrards Cross	<p>Create a network of EV charging infrastructure in the town.</p> <p>Strengthening of the connection into Station Road Car Park is required. This should be undertaken through liaison with the DNO provider for the area.</p>	<p>Bulstrode Way Car Park - 4 x 22 kWh fast chargers</p> <p>To facilitate users that want to use the centre of Gerrards Cross.</p>	<p>Installation of EV Charging Points should be completed by 2025.</p> <p>Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.</p>
Marlow	Increased provision of EV charging infrastructure in Marlow.	<p>Institute Road Car Park - 4 x 22 kWh fast chargers and 2 x 7 kWh slow chargers</p> <p>Due to its proximity to the library and High Street.</p> <p>Marlow Central Car Park - 4 x 22 kWh fast chargers and 2 x 7 kWh slow chargers</p> <p>Due to its proximity to Riley Park as well as shops along High Street and Marlow Road.</p>	By 2023.

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
Beaconsfield	Create a network of EV charging infrastructure in the town. EV uptake is not forecast to be as high as other areas of Buckinghamshire, which is why this is a medium term timescale.	Warwick Road Car Park - 4 x 22 kWh fast chargers Due to its proximity to shops on Station Road. Penncroft Car Park - 4 x 22 kWh fast chargers Due to its proximity to shops on Station Road.	By 2025.
Buckingham	Provision of rapid chargers to help build a strategic base charging network.	Western Avenue Car Park - 2 x 43+ kWh rapid chargers Due to its high on-route charging potential	By 2023.
Chalfont St Peter	EV uptake is forecast to be lower than other areas of Buckinghamshire, which is why this is focused on a medium term timescale.	Church Lane Car Park - 4 x 22 kWh fast chargers Due to its proximity to the town centre.	By 2025.
Burnham	Strengthening of the connection into Burnham is required to ensure that EV charging infrastructure can be provided in Council Car Parks. This should be undertaken through liaison with the DNO provider for the area.	None.	Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.
Iver	Strengthening of the connection into Langley Park Country Park is required to ensure that EV charging	None.	Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
	infrastructure can be provided. This should be undertaken through liaison with the DNO provider for the area.		
Hazlemere	Monitor the uptake and usage of EVs in the area and liaise with Shell to understand whether they are planning to install EV charging infrastructure at their forecourt in the next three years.	Beaumont Way Car Park – 4 x 22 kWh fast chargers Depending on the outcome of the liaison with Shell, there is the potential to install these chargers to support local businesses.	Decision to be made by 2025.
Princes Risborough	Monitor the uptake and usage of existing infrastructure across both car parks to understand whether further provision is required in the short term.	Horns Lane Car Park – 4 x 22 kWh fast chargers In the medium term, there is the potential to install these chargers to serve the High Street depending on the outcome of monitoring existing infrastructure.	Monitoring to be undertaken until 2023 and decision on whether to install more infrastructure should come forward to be taken by 2025.
Bourne End and Wooburn	Monitor the uptake and usage of existing infrastructure in Bourne End to understand whether further provision is required in the short term. Liaise with the DNO to improve the power connection into Wooburn.	Wakeman Road Car Park – 4 x 22 kWh fast chargers In the medium term, there is the potential to install these chargers to serve the library, Community Centre and businesses along The Parade depending on the outcome of monitoring existing infrastructure.	Monitoring to be undertaken until 2023 and decision on whether to install more infrastructure should come forward to be taken by 2025. Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.
Little Chalfont	Create a network of EV charging	Snells Wood Car Park - 2 x 22 kWh fast chargers	Infrastructure to be installed by 2025.

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
	<p>infrastructure in the town.</p> <p>Monitoring of the network to understand usage and plan future provision.</p>	To serve local businesses along A404 Chalfont Station Road and the Village Hall.	Monitoring to be undertaken until 2023 and decision on whether to install more infrastructure should come forward to be taken by 2025.
Prestwood	Strengthening of the connection into Prestwood is required to ensure that EV charging infrastructure can be provided in Council Car Parks. This should be undertaken through liaison with the DNO provider for the area.	None.	Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.
Farnham Royal / Common	Strengthening of the connection into Farnham Royal/ Common is required to ensure that EV charging infrastructure can be provided in Council Car Parks. This should be undertaken through liaison with the DNO provider for the area.	None.	Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.
Chalfont St Giles	Strengthening of the connection into Chalfont St Giles is required to ensure that EV charging infrastructure can be provided in Council Car Parks. This should be	None.	Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
	undertaken through liaison with the DNO provider for the area.		
Winslow	Strengthening of the connection into Winslow is required to ensure that EV charging infrastructure can be provided in Council Car Parks. This should be undertaken through liaison with the DNO provider for the area.	None.	Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded. This should be prioritised because it would form a key part of the strategic network and provide additional provision in the north of Buckinghamshire.
Lane End	Strengthening of the connection into Lane End is required to ensure that EV charging infrastructure can be provided in Council Car Parks. This should be undertaken through liaison with the DNO provider for the area.	None.	Liaison with the DNO should be completed by the end of 2022, with clear indication of when the network will be upgraded.
Wexham	Monitor the number of EVs using Black Park Country Park to understand whether further provision is required in the short term. In the medium term, review whether EV infrastructure is required based on the number of EVs	Black Park Country Park would be suited to fast charging infrastructure. However, the number of chargers installed will depend on monitoring data.	Monitoring to be undertaken until 2025 and decision on whether to install more infrastructure should come forward to be taken.

Settlement	Improvement Requirements	Recommended Sites for Delivery	Timescales
	visiting the Country Park.		
Great Missenden	Monitor the uptake and usage of existing infrastructure in Link Road Car Park to understand whether further provision is required in the short term.	None.	Monitoring to be undertaken until 2023 and decision on whether to install more infrastructure should come forward to be taken by 2025.

Appendix 2: Explaining charging infrastructure speeds and applications¹⁷

Wired chargepoints are normally classified according to their power rating. Each charger type has an associated set of connectors that are designed for low- or high-power use, and for either AC or DC charging.

1. Slow (3-6kW)

The most common type of slow charger is 3.6 kW (16A). They typically take between 6 to 21 hours to fully charge an electric car, depending on the battery size. For this reason, they are often used to charge overnight, in workplaces and in long stay car parks, where vehicles can be left for longer periods of time.

Charging on a three-pin plug will typically see the car draw 2.3 kW (10A), while the majority of on street lamp-post style chargers are rated at 5.5 kW.

2. Fast (7-22KW)

Fast chargers are typically rated at either 7kW or up to 22kW (single or three phase 32A). A 7kW single phase charger will typically take between 3-7 hours to recharge depending on battery size. 7kW chargers are popular at workplaces and home and also tend to be installed in destinations such as car parks, supermarkets and leisure centres where you are likely be parked at for an hour or more.

Charging rates when using a fast charger will depend on the car's on-board charger, with not all models able to accept 7 kW or more. These models can still be plugged in to the charge point but will only draw the maximum power accepted by the vehicle.

3. Rapid (25-99kW)

There is more variation in the rapid charger types currently installed. These are commonly used at short stay locations such as motorway services, fast food restaurants and some supermarkets. Commonly installed types include:

- Rapid AC three phase chargers are typically rated from 43kW (63 A) and capable of charging vehicles to 80% in 20—40 minutes car depending the model's battery capacity and starting state of charge.
- Rapid DC chargers provide a power output at 50 kW (125 A) using either the CHAdeMO or CCS charging connectors. Both types can charge an EV to 80% of capacity in 20 minutes to two hours depending on battery capacity and starting state of charge.

4. Ultra-rapid (100kW+)

¹⁷ Adapted from <https://www.zap-map.com/charge-points/connectors-speeds/>

Ultra-rapid chargers are the fastest way to charge an EV, often found at motorway services or locations close to main routes. Rapid devices supply high power direct or alternating current – DC or AC – to recharge a car as fast as possible.

Ultra-rapid DC chargers provide power at 100 kW or more. These are typically either 100 kW, 150 kW, or 350 kW – though other maximum speeds between these figures are possible. These are the next-generation of rapid charge point, able to keep recharging times down despite battery capacities increasing in newer EVs.

For those EVs capable of accepting 100 kW or more, charging times are kept down to 20-30 minutes for a typical charge, even for models with a large battery capacity. Even if an EV is only able to accept a maximum of 50 kW DC, they can still use ultra-rapid charge points, as the power will be restricted to whatever the vehicle can deal with.

All rapid devices have charging cables tethered to the unit, and rapid charging can only be used on vehicles with rapid-charging capability.

There are also wireless chargers, which are available with speeds of 3.3kW, 6.6kW and 20kW.