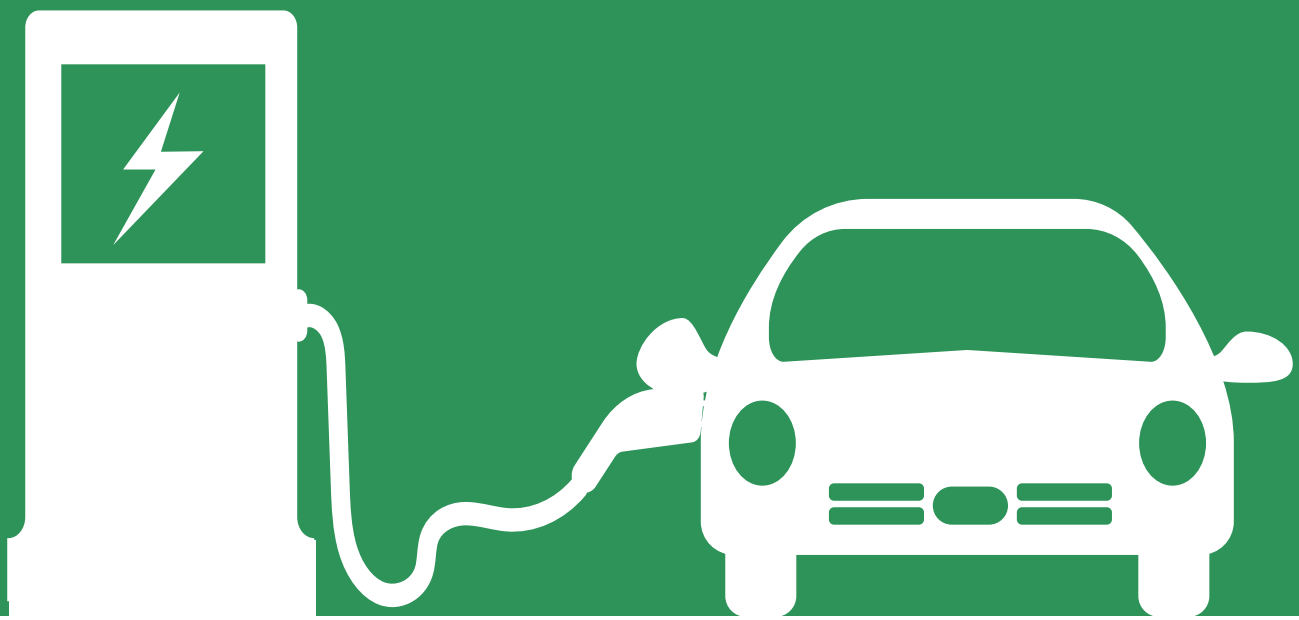
Worcestershire Electric Vehicle Charging Infrastructure (EVCI) Strategy



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worcestershire county council

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01. Introduction

1.1. Background

Worcestershire County Council (WCC) declared a climate emergency in July 2021, and we have set a target to be carbon neutral by 2050. At a national level, the Government is banning the sale of new petrol, diesel and plug in hybrid cars from 2035 as part of its commitment to reach Net Zero by 2050. It is recognised that the transition to Electric Vehicles (EVs) is a crucial element to achieving these targets.

This first Electric Vehicle Charging Infrastructure (EVCI) Strategy for Worcestershire[1], sets out how we and our partners intend to support the transition to electric vehicles and help to coordinate the development of accessible chargepoints across the County.

1.2. A Strategy for Worcestershire

The transition to EVs is essential in assisting with the UKs Net Zero target, as well as delivering many other co-benefits. The strategy is underpinned by the WCC Corporate Plan 'Shaping Worcestershire's Future' which focusses on the following four priorities:

Championing...
Open for Business

Promoting...
Health and Wellbeing

Protecting...
The Environment

Supporting...
Children and Families

1 As per WCC policy, this strategy has been through the Joint Impact Assessment process whereby all considerations regarding equalities, environmental sustainability, public health and data protection have been evaluated and assessed and mitigations have been put in place as required. This encompasses minority & key stake holder groups that could be impacted by this strategy.

This strategy aims to support the delivery of these key priorities and the wide range of co-benefits that a transition to electric vehicles brings.

It is intended that this strategy will form part of Worcestershire's refreshed Local Transport Plan (LTP5). At the time of writing, final guidance on the development of LTP5 is awaited but it is expected that this EVCI strategy along with Local Cycling and Walking Infrastructure Plans (LCWIPs) and the Bus Service Improvement Plan (BSIP) will be key documents for LTP5.

In addition to above, it is expected that the majority of drivers will be able to address their charging needs at home, using private chargers, overnight on a driveway (See Figure 5.1). Provision of EVCI is however, essential to encourage and support the EV transition and to:

- Enable long distance journeys;
- Support those without off-street parking;
- Support household with multiple EVs and limited home charging provision; and
- Provide 'top up' destination charging.

At most locations, the private sector will be pivotal in provision of EVCI. However, we recognise that we also have an important role to play, particularly around providing charging infrastructure that is accessible and equitable. We are well placed to access funding, identify opportunity, work in partnership and attract private investment for the required infrastructure, and assist with wider enablement.

As we move towards net zero, we will work towards equitable EV charging provision in Worcestershire to make sure our residents do not get left behind the national transition.

1.3. Purpose of this strategy

The transition to EV transport is accelerating at pace and in recognition of this, the strategy is Phase 1 and has been developed with the next 5 years in mind (2025-2030). It will ensure integration with other local transport services and support EV mobility in our county as the EV transition develops.

This strategy is a high-level document which identifies the scope and current direction of travel for EVCI in our county. Its primary focus is on delivering EVCI in the county for communities and in particular, deployment of EV infrastructure using the LEVI Capital Fund[2].

Through LEVI, we intend to deliver a step-change in the deployment of local, primarily low powered, on-street EVCI across the county. It is expected that the external funding will accelerate the commercialisation of, and investment in, local EVCI.

Whilst this EV strategy's focus is primarily intended for those without dedicated off-street parking, the resulting EVCI may also be utilised by other EV drivers such as visitors, tourists, non-residential commuters, taxi & private hire and commercial car and Light Goods Vehicles (LGVs).

In relation to this EVCI, there will also be common ground in how we approach privately owned residential chargepoints e.g., on a person's drive and what is and is not acceptable from the perspective of WCC as a Highways Authority. As an example, we would not support trailing cables over footways whether under public or private ownership (See Appendix 1).

We will use this strategy to communicate our role in EVCI with partners and communities and identify our intentions to partners, the community and Government.

We have consulted with our partners and communities on this strategy to ensure our vision, objectives and overall direction is reflective of the growing needs for EV drivers.

Subsequent strategy will also be developed to represent development in legislation, funding, policy, technology, market forces and growing demand and to cater for different EV demands in our county.

1.4. The Challenges

The key challenges include:

- Meeting Net Zero Targets and achieving improved air quality in Worcestershire;
- Enabling households without off-street parking to have access to EV charging, particularly where this issue prevents the transition to EVs;
- Ensuring equitable opportunity to charge EVs in a largely rural county;
- Financing EVCI and attracting appropriate private investment to do this at locations considered to be less commercially attractive; and
- Addressing blockages with landownership, electrical capacity, on-street parking, EV anxieties etc.

2 A Central Government fund supporting local authorities in England to work with the chargepoint industry to improve rollout and commercialisation of public chargepoint for residents that don't have off-street parking.

1.5. Our Vision for Worcestershire

By the end of the term of this strategy we envisage a positive change for EV charging infrastructure in our county. A right charger right place philosophy will be used to justify the selection of sites and type of charger allowing the best fit for location, drivers needs and the surrounding area.

A robust EV charging infrastructure for residents, businesses, and visitors. Charging solutions are equitable, accessible, and reliable giving confidence to drivers to drive EVs. Charging infrastructure integrates with local transport services, supports EV mobility and has positive decarbonisation impacts in our county.

02. Worcestershire EVCI Strategy Objectives

2.1. Introduction

In order to deliver our vision, we will focus on the following five areas to make sure EVCI in our county is:

Environmentally Sustainable

Reliable

Equitable

Accessible

Integrated

2.2. Objectives

To deliver against our objectives we have produced a set of priorities to assist us in implementation of this strategy and in engagement and planning.

Objective 1: Environmentally Sustainable:

To contribute towards Net Zero by assisting with reduced emissions through decarbonisation of transport in and around our county and assist with delivering improved air quality.

Objective 2: Reliable

To facilitate charging solutions that are dependable and which drivers are confident in using.

Objective 3: Equitable

To enable access to charging facilities for residents for those that require it regardless of social, economic or rural landscape.

Objective 4: Accessible

To facilitate charging solutions that can be used easily regardless of age or disability, and they will be located close to homes that rely on on-street parking.

Objective 5: Integrated

To provide opportunity for integration with wider local transport services, active transport, and to widen travel choice.

2.3. Limitations of this Strategy

This primary focus of the strategy is around delivery of lower powered EVCI and specifically utilisation of current available LEVI funding.

This Phase 1 strategy is not concerned with specific locations for EVCI; these will be detailed in project implementation plans.

Whilst we will always work with all stakeholders in our community, this strategy is not specifically concerned with EVCI provided to support:

- Private workplace charging;
- Motorway and non-residential A-road Ultra rapid and rapid chargepoints (On route charging);
- Private chargepoints for buses;
- Chargepoints for blue light services;
- Chargepoints to support heavy goods vehicles; and
- Hydrogen and other alternative power solutions.

The above will be monitored and assessed for inclusion in future strategies.

03. The Transition to EVs

3.1. Introduction

This strategy will set the agenda for how WCC engage with EVCI delivery and aims to give confidence to drivers to make the transition and ensure infrastructure is installed using the right charger in the right place approach. The need to deliver this strategy is driven by six key themes that are outlined below:

- Environmental;
- Social;
- Economic;
- Political;
- Technological; and
- Legislation and Guidance.

3.2. Environmental

The clear impact of Greenhouse gases (also known as GHGs) being released into the atmosphere can now be clearly evidenced from the weather extremes we witness in Worcestershire and nationally. 2022 was a record year for high temperatures in the UK, made more likely by climate change[i] and the five warmest recorded years since 1884 include 2020, 2022 and 2023[ii]. As a result of the changing conditions, we, along with the rest of the world, have experienced the impact of severe storms, floods, wildfires, and extreme temperatures accompanied by the often devastating financial and social impacts this has on our communities.

Contributing to EV transition will play a considerable role in reducing GHG emissions and reducing Worcestershire's impact on global and local climate change.

Air pollution is associated with a number of adverse health impacts affecting people throughout their lives, including before birth, and reducing life expectancy. It is recognised as a contributing factor in the onset of heart disease, stroke and respiratory illnesses and can cause lung cancer[3]. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions.

3 According to the Chief Medical Officers report 2022

Nitrogen dioxide (NO_2) has well established impacts on health. At higher concentrations it can cause irritation of the lungs and can exacerbate existing lung conditions including asthma. Additionally, NO_2 exposure is linked to dementia, lung cancer, low birthweight and diabetes. Internal Combustion Engine (ICE) vehicles are the largest contributor to NO_2 pollution at local roadsides, contributing 80% of the total[4] (on average).

The most important air pollutant in terms of health effects are tiny particles known as Particulate Matter (PM), PM_{10} and $PM_{2.5}$[5]. PM is associated with combustion processes, for example diesel engines, biomass and domestic solid fuel burning, as well as through processes such as tyre and brake wear on road vehicles[6]. $PM_{2.5}$ is small enough to pass through the lungs into the bloodstream and into other organs. Long-term exposure to PM is associated with premature death, especially from heart and lung conditions. The World Health Organization (WHO) advises there is no safe exposure level to PM.

Although measures outlined within AQAPs are focussed on reducing NO_2 across Worcestershire, Defra advise actions taken will also result in linked improvements in other pollutants such as particulate matter.

Poor air quality is now the largest environmental risk to UK public health[iii]. EVs will play a significant role in reducing air pollution and improving air quality.

The delivery of the EVCI Strategy and Capital Infrastructure from LEVI is an essential part of improving air quality for Worcestershire.

3.3. Social

Planning of EVCI and adopting a right charger in the right place philosophy is essential to ensure access to EVs and provide confidence for the take up of EVs within all communities. Equity and accessibility are key to enabling both rural and urban communities can make the transition to EVs.

Air pollution often affects the most vulnerable in our society due to socio geographic factors and acknowledging and addressing this trend is essential in the location of charging infrastructure.

This strategy further supports Public Health measures via the Worcestershire County Council's Public Health's Health Protection Strategy 2024-2029[7].

4 4 UK plan for tackling roadside nitrogen dioxide concentrations, 2017
5 The subscript refers to the maximum mean aerodynamic diameter, in microns
6 There are also natural sources of PM such as Saharan Dust and sea salt
7 Priority 4, Objective 9: Build community resilience through improvements in local Air Quality.

3.4. Economic

Uptake of EVs in our community can assist with business growth, help to grow our low carbon economy, and deliver inward investment opportunities. Attracting Chargepoint Operators (CPOs) to our area can enable free movement of people and goods in out and around our county to assist with businesses adapting to EV technology. Adapting to EVs at a household level can also assist residents directly via specialist EV energy tariffs, use of household battery storage or solar PV panels to support charging. This can also have the added benefit to free up money that can then contribute to the local economy.

In 2018, Public Health England (PHE) estimated that the total cost to the NHS and social care due to NO_2 for where there is robust evidence for an association, is estimated to be £60.8 million by 2025, and £230 million by 2035. This increases to £2.7 billion and £9.2 billion respectively when diseases with less robust evidence are included.

3.5. Political

In response to the changing needs and demands of drivers, UK legislation, Central Government and our own WCC net zero targets, we are establishing the strategic approach to the electrification of transport. This strategy identifies our commitment to support the transition to Electric Vehicles (EVs) and outlines our role in this transition. This not only addresses targets and legislation but also The Corporate Plan's 2022-27 core priorities and needs of our communities.

Local policy from Worcestershire district partners, the Worcestershire Local Enterprise Partnership (WLEP) and Midlands Connect (Appendix 2), identify the need to deliver EVCI locally to support communities. WCC as the Local Highways Authority and Transport Authority, is a critical partner that is needed to deliver EVCI. Partnership working is, therefore, required for successful outcomes.

One of the Worcestershire Energy Strategy's four themes is Promotion of Low Carbon Transport and particularly recognising the use of electric vehicles as an opportunity for rapid decarbonisation and this strategy therefore directly supports this aim.

Midlands Connect (the sub-regional transport body for the Midlands area) is working to transform regional and UK gateways, bringing the Midlands closer together to drive the scale of electric vehicle charging points to support the accelerated growth of EVs in the region. Midlands Connect are supporting us working together with 13 other Transport Authorities from the Midlands region to support this aim.

3.6. Technological

Advancement in EV technology has accelerated in recent years and there is now a wide offering of EVs to cater for most motorists driving range, needs and requirements. Initial outlay of vehicles remains an issue for some but again, advances are seeing more competitive models from all standard Original Equipment Manufacturers (OEMs). In the automotive industry, OEMs are responsible for designing and producing vehicles, including EVs. By providing EVs to the market, OEMs are driving the growth of the EV financing market. Technology in charging infrastructure is becoming more intelligent which in turn assists with accessibility and choice leading to increasing solutions for most situations.

3.7. Legislation and Guidance

Due consideration has also been given to:

- The UK Electric Vehicle Infrastructure Strategy (2022)[iv] and the Transport decarbonisation plan (2021)[v] set out Government aims on transport decarbonisation and the transition to EVs;
- Local Transport Plans, as derived from the Transport Act (2000)[vi], are required to set the vision for net zero in transport and in the future, updates to Local Transport Plans will include the area's EV charging strategy.
- It will also be essential to integrate the Strategy with Local Area Energy Planning (LAEP) as this evolves[8];
- The Road to Zero (2018)[vii]: Outlines the ambition that every new car and van sold in the UK should be zero emission by 2040, and that the entire UK road fleet should be effectively decarbonised by 2050. This target was further strengthened in November 2020 to end new Internal Combustion Engine (ICE) and Plug-in Hybrid Electric Vehicle (PHEV) car sales in 2035;
- The Carbon Plan (2011)[viii], Clean Growth Strategy (2017)[ix] & Industrial Strategy (2017)[x] Identify the role that transport plays in addressing the Climate Change Act (2008)[xi];
- Air Quality Plan for Nitrogen Dioxide (2017)[xii]: The Government plans to reduce NO2 at roadside locations kickstarted the phase out of new sale petrol and diesel vehicles;
- Automated Electric Vehicles Bill (2018)[xiii]: Industrial Strategy boosted by investments into zero emission vehicle technology. Government are requiring motorway service area and large petrol stations to install EVCI; and
- United Nations Paris Agreement on Climate Change (2015)[xiv]: Government addressed this agreement by committing to limit global warming to below 2°C.

8 New guidance on development of plans is imminent and is expected to include provision for a low traffic future including electric vehicles.

04. Worcestershire County Council's Role

4.1. Introduction

The long-term vision for EVCI in the UK is for it to be driven by private sector investment and become a self-sustaining network. Like any other utility, with time, EVCI will be driven by the demand of its users. Whilst EVCI provision is in its elementary stages, Government has recognised local authorities have a pivotal role to play. It is providing LEVI funding for local authorities to:

- Deliver a step-change in the deployment of local, primarily low power, on-street charging infrastructure across England; and
- Accelerate the commercialisation of, and investment in, the local charging infrastructure sector.

We welcome this challenge and look forward to supporting this short-term transition stage. Some of the key roles for us are outlined below:

- **Inspire and Influence** by our own actions and provide vision for the county.
- **Leverage Opportunity** to deliver EVCI for locations to audiences that may not otherwise offer a commercial opportunity for the private sector.
- **Engage** with business, residents, partners and private investors to deliver the best outcomes. We will particularly seek opportunities to strengthen delivery of projects such as partnering with bodies such as Midland Connect for EVCI technical support.
- **Enable EVCI through timely** approval of highway permissions, access of Government funding.
- **Overcome issues** like time delays, landownership issues, grid connectivity and wayleaves etc. and seeking solutions.

4.2. Alignment with WCC Strategic Priorities

The WCC corporate Plan contains 4 pillars that govern the way that we do business. This Strategy supports each of the 4 pillars and will assist in achieving the overall purpose of the Council and its wider work within the County. The transition to EVs fully supports each of the 4 pillars either directly or indirectly through the many and wide-reaching co-benefits.

- Open for business;
- Children and families;
- The environment; and
- Health and wellbeing.

Reducing air pollution and improving air quality and reducing reliance on fossil fuels will enable communities to benefit economically, and socially as well as assisting towards Net Zero goals.

WCC has a long history of action on climate change delivering on both internal and wider area projects. In 2019 we declared a climate emergency as further commitment towards our sustainability goals. For our own fleet an Ultra Low Emission Vehicle (ULEV) first policy has already been adopted, and we are working towards a fleet replacement schedule compliant with Gov-ernment's decarbonisation plans. We are also planning EVCI in our own car parks to support staff commuting, contractors and business travel for our work force.

4.3. WCC Supporting Businesses

Our extensive Net Zero Business Programmes have promoted electric transport to businesses for several years and we continue to identify EV transition opportunities in existing business support programmes.

4.4. WCC Supporting Partners

Where we can identify opportunities to partner with other organisations for electric fleet opportunities we will endeavour to do so. We facilitate a Worcestershire Public Sector Sustainability Group where we meet with other public sector partners to discuss plans such as the delivery of EVCI. This group includes representatives of Bromsgrove District Council, Malvern Hills District Council, Redditch Borough Council, Worcester City Council, Wyre Forest District Council, Wychavon District Council, NHS, Fire Service, Education Providers, and the Police.

Due to a shared depot, we are working with Worcester City to evaluate the options for electrification of the depot. This arrangement will help to support the transition for our own fleet but also for Worcester City's street cleansing, and waste collection functions.

05. Current EV charging in Worcestershire

5.1. Introduction

Driving a Battery Electric Vehicle (BEV) or a Plug-in Hybrid Electric Vehicle (PHEV) requires a reliable source of charging. Where drivers have their own driveway to park their vehicle off street, they will usually install their own home charger for private use. This method of charging at home allows access to specialist tariffs which make EV driving even more affordable. They can also choose to make their private home charger accessible to other EV drivers although this is by exception.

Along with the rest of the nation, our county is in the early stages of adoption of EV uptake and the number of EV drivers and EV chargepoints is rapidly increasing. Coverage of chargepoints ranges from district to district from 3% of residents living within a 5–10-minute walking distance of a chargepoint to nearly 12%. Whilst access to off street parking ranges from 26% to 37%.

5.2. At a Glance

Key highlights include:

- 16,558 Fully or partially electric vehicles are registered in Worcestershire in 2023;[xv]
- 280 chargepoints in Worcestershire registered for public use;
- 30% of households have no access to off-street parking, equating to nearly 80,000 households;[xvi]
- Of those households 92% are not within a 5 mins walk of a publicly accessible chargepoint; and
- During 2023, 1,012,360 tonnes of GHG emissions were from cars and LGVs on our county's roads.

5.3. Number of Registered EVs

Nearly 4% of the total cars and LGVs registered in Worcestershire are EVs, this equates to 16,558 vehicles out of 435,589 standard engine vehicles[xvii]. Table 5.1 identifies 4,437 domestic charger grants that had been accessed by the end of 2022 and were applied for by private households in Worcestershire.

5.4. Current Chargepoints

Using latest data available for Q1 in 2025, Worcestershire had 536 public EV chargepoints, (See Appendix 3) with 202 being able to deliver a fast high-powered charge (over 25kW) and 334 delivering a slower powered charge (up to 25kW). Table 5.1 gives the total number of available chargers within Worcestershire, note that several chargepoints may be installed at single site.

Whilst it is not possible to quantify the total number of privately installed residential charge-points the number of grants that were provided to install domestic chargers can been seen in Table 5.1. This grant, however, was withdrawn in 2023 and is no longer applicable for residential chargers. It is important to note that other residential chargers were also installed without this grant scheme.

Table 5.1: Number of Domestic Charger Grants processed and Public Charging Sites per District

District	Domestic Car Charger Grants[9] [xviii]	Publicly Available Charging Sites (Quarter 1 2025)[xix]
Bromsgrove	1,084	126
Malvern	612	51
Redditch	486	25
Worcester City	510	159
Wychavon	1,222	135
Wyre Forest	523	43
Total Worcestershire	4,437	536

Source: CENEX, National EV Insight and Support-NEVIS and Government Statistics, 2023

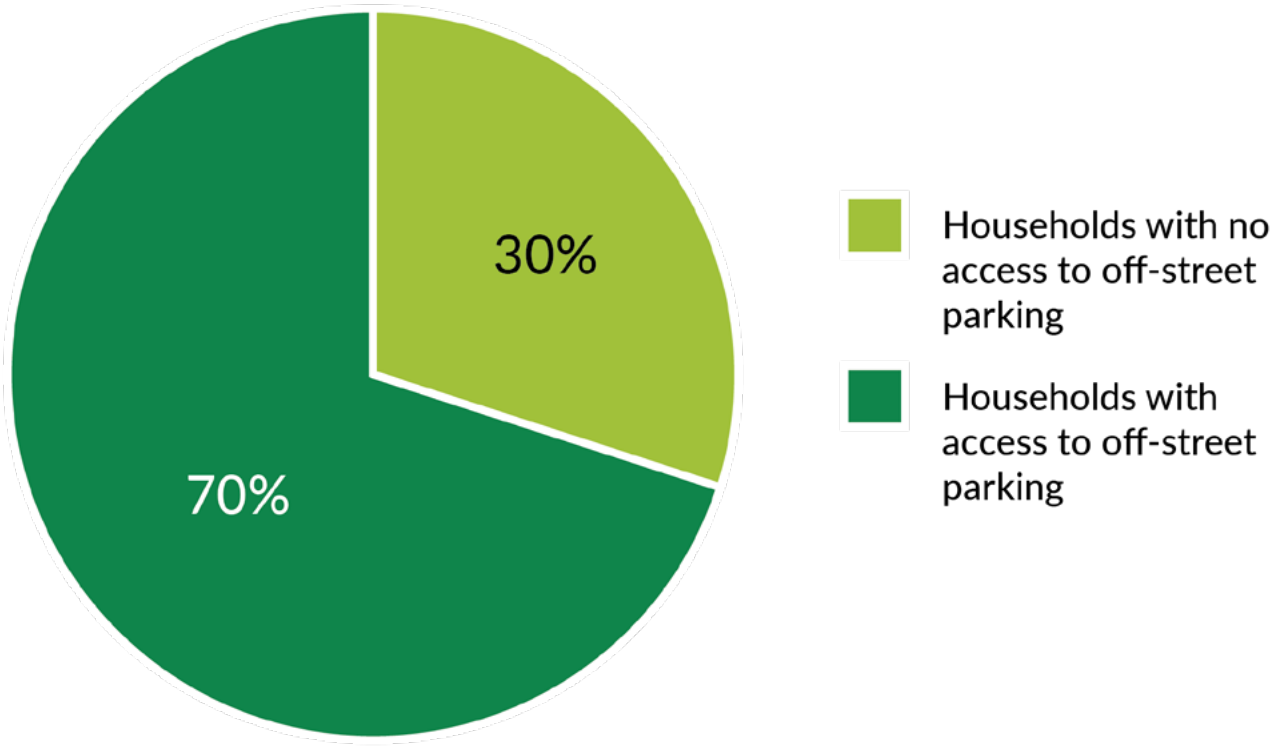
5.5. Access to Charging

Having access to off-street parking can make the transition to EV ownership easier. It is estimated that 30% of homes in our county have no access to off-street parking (Figure 5.1) This amounts to nearly 80,000 households in total. This figure is in line with the UK national average, although it ranges from 26% to 37% depending on district.

For those residents that do park on-street, only 8% are within 5-minutes walking distance of a public charger although this ranges from 3% to 12% (Figure 5.2) dependant on district.

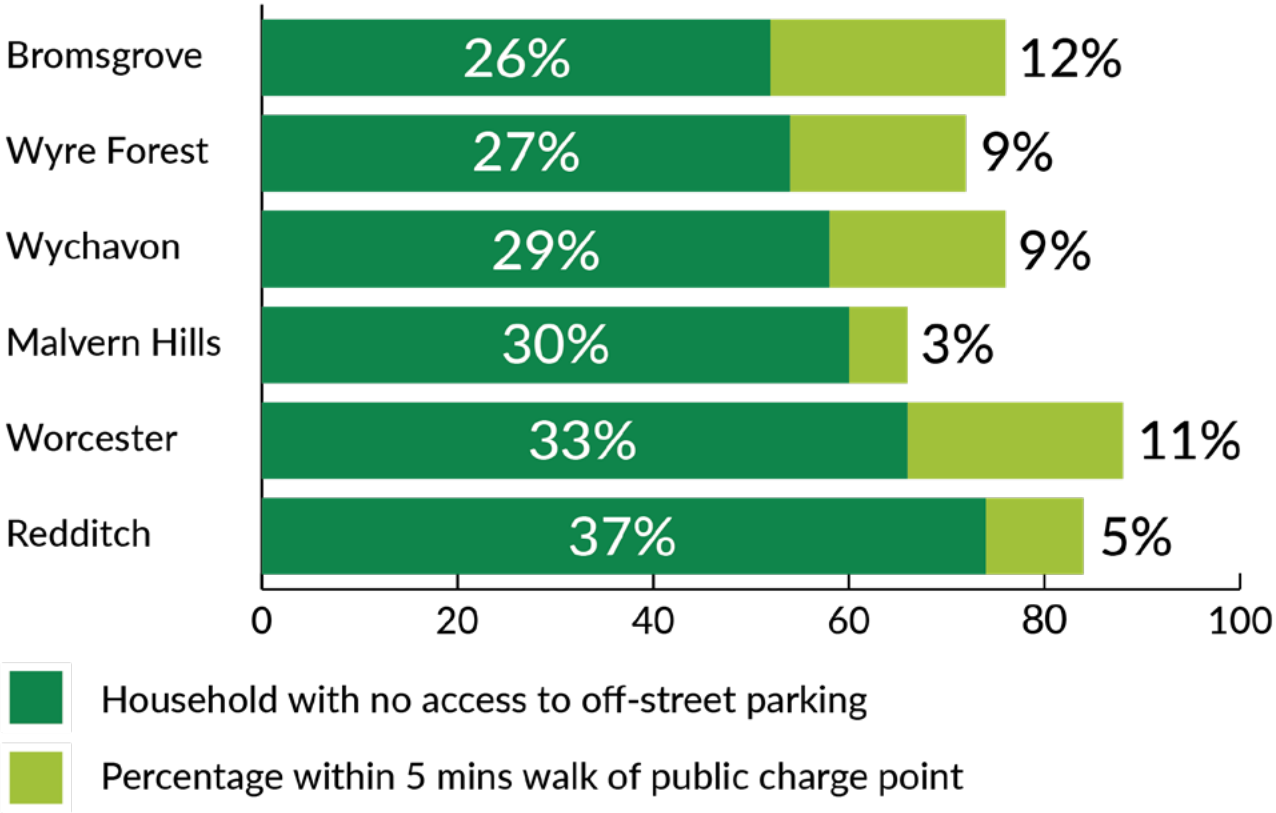
9 Note, grant no longer applicable for residential chargers. Chargers were also installed without this grant scheme.

Figure 5.1: Indicative Proportion of Worcestershire Households with Access to Off-street Parking



Source: Accelerated Insights Platform, 2022

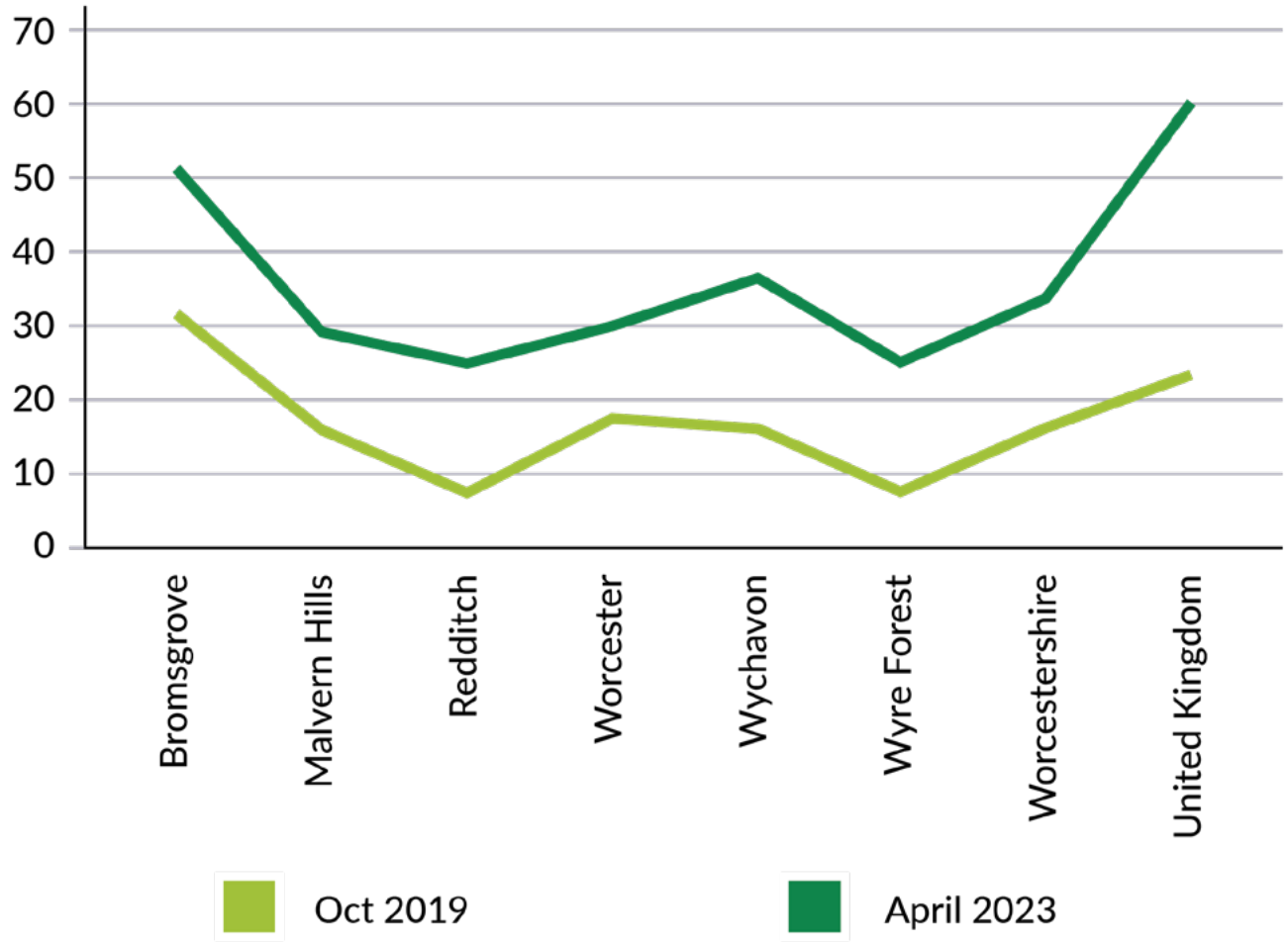
Figure 5.2: Percentage of On-Street Households within 5 mins walk of a Public Chargepoint



Source: Accelerated Insights Platform, 2022

For homes without access to off-street parking, reliance on public charging provision is essential for EV charging. Provision in Worcestershire is below the national average (Figure 5.3). To compare charging provision, a ratio for public chargers per 100,000 of the population is used. The national average for the UK stands at 60 and for Worcestershire this figure is 33 chargers per 100,000. The range depending on district is 24 to 51 per 100,000.

Figure 5.3: Charger Ratio for Worcestershire and UK Comparison



Source: DfT, 2019 and Zap Map, 2023

5.6. GHG Emissions

The latest data (2022) indicates the domestic transport sector accounted for 28% of GHG emissions in the UK[xx]. Worcestershire's Green Infrastructure Strategy (2023-2028) states that transport emissions are one of the biggest contributors to CO_2 emissions in Worcestershire due to the greater use of private cars in the more rural areas.

5.7. Air Quality

The Local Air quality Management Framework[10], places an obligation upon all local authorities to regularly review and assess air quality in their areas, and to determine whether relevant concentration limits are being achieved. If exceedances of national air quality standards and objectives[xxi] are identified, or considered likely, the local authority must declare an Air Quality Management Area (AQMA).

Where an AQMA is designated, the local authority must prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in to improve local air quality and achieve compliance with the national objectives.

From 2023, local authorities that do not have any AQMAs in their areas are required to produce an Air Quality Strategy outlining how air quality will be maintained.

At the time of writing this strategy, 4 of the 6 district authorities in Worcestershire have AQMAs, all for exceedances of the annual average objective for nitrogen dioxide (NO_2), within their administrative boundaries:

- Bromsgrove District Council
- Worcester City Council
- Wychavon District Council
- Wyre Forest District Council

There are three current published AQAPs:

- Bromsgrove District Council Air Quality Action Plan (2025-2030)
- Worcester City Council Air Quality Action plan (2024-2029)
- Wyre Forest District Council Air Quality Action Plan (2025-2030)

All relevant action plans and annual status reports can be found on Worcestershire Regulatory Services Local Air Quality Reporting pages[xxii].

At this time there is no published AQAP for Wychavon District Council as the local authority are undertaking an assessment to determine if the only AQMA in the district is still required.

Work will begin to produce air quality strategies for Malvern Hills District, Redditch Borough Council and Wychavon District (or AQAP depending on outcomes of assessment) in latter part of 2025.

The published AQAPs detail the measures the local authorities and air quality partners are enacting to reduce concentrations and emissions of NO2 to achieve compliance with national objectives within their areas and specifically known areas of poor air quality (AQMAs). Common measures in all the AQAPs include installing electric vehicle charging points, public transport and local authority fleet improvements, and encouraging active travel modal shift.

Worcestershire's Green Infrastructure Strategy (2023-2028)[xxiii] also states that air quality is generally good in the county but is poorer around urban areas and major road infrastructure.

10 Underpinned by Part IV of the Environment Act 1995

5.8. Integration of EV infrastructure

There are several opportunities to integrate EV charging into active travel and passenger transport provision in Worcestershire. We will identify opportunities to link up with active travel options where the opportunity presents. Some recent and current schemes are outlined below:

- Demand Responsive Transport (DRT) – working in partnership with local bus operators, buses pick up residents on request, adapting routes to allow all passengers to get to where they need to go. Currently operational in the North Worcestershire Zone and the Malvern Zone.
- Many of the railway stations in Worcestershire have EV chargers for public use to satisfy commuters needs and we look to support commuters further using EVs moving forward.
- Beryl bike share scheme – based within the Worcester City boundary the scheme will support active transport using publicly accessible bikes within the local area. Riders will be able to hire one of the 225 bikes (including e-bikes) that will be located in strategically selected parking bays from where the rider will collect and deposit the bikes.
- Community Car Clubs – offering a range of cars including EV options currently available to residents of Malvern Hills and Worcester City.
- E-Scooters – As part of the Government approved trials, an E Scooter trial ran in Redditch from 2020-2023. The trials' objective was to assist with informing future travel policy drawing on both qualitative and quantitative data. On average 258 users a week access the e-scooters travelling a total of 121,000 journeys during the trial period which saved 4.2TCO2e. The trial is now closed whilst the Government decide on its approach to e-scooters.
- Other EVCI projects – District Councils have been involved with developing EVCI on a local level where opportunities and funding has allowed. We will collaborate with districts and aim to complement existing[11] EVCI where possible.

11 WCC do not operate any EVCI currently, integration would be with district and privately owned networks

The Future of EV charging in Worcestershire

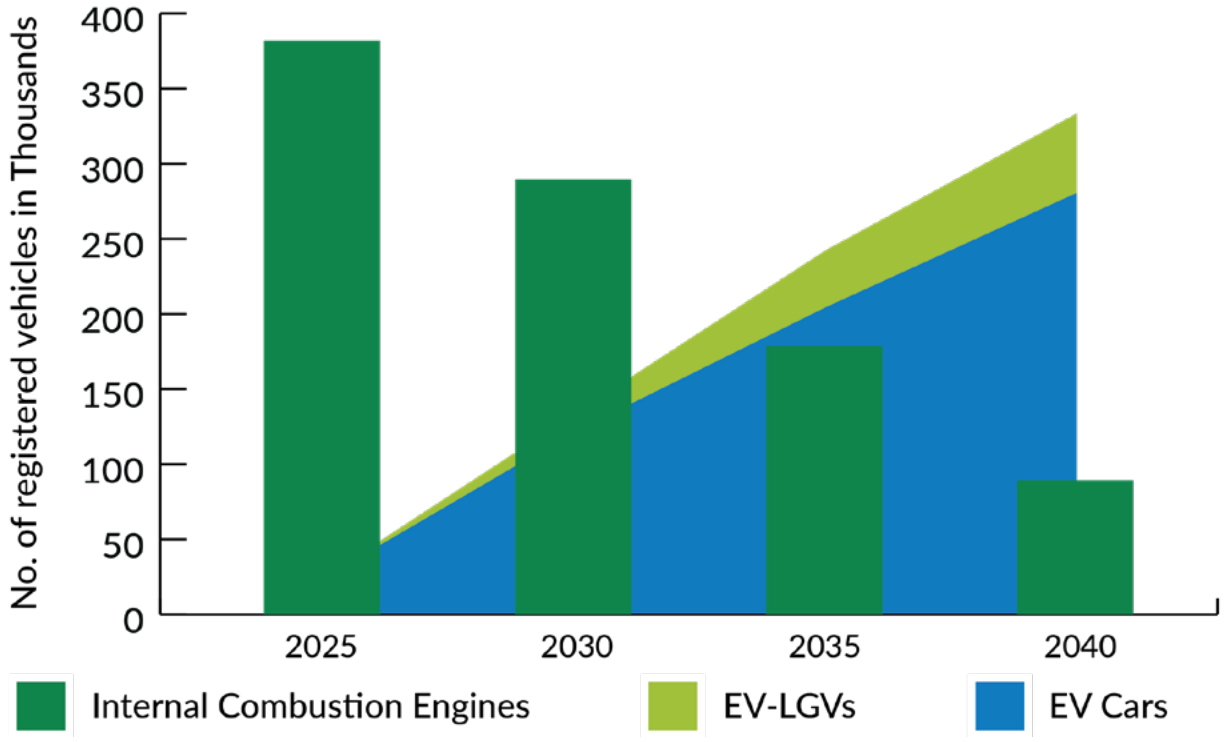
6.1. Future at a Glance

- By 2035 58%[xxiv] of all registered cars and LGVs on the road in Worcestershire will be electric;
- Around 4,000[xxv] public chargepoint sockets will be required to meet EV driver demand by 2030;
- The majority of these (circa 1,402) will be low powered and located near to residential properties; and
- Emissions from cars and LGVs will reduce to 45% by 2035 and 85% by 2040[xxvi].

6.2. Predicted number of EVs

Government predictions estimate increasing sales for EVs will rise quickly from 2025 with a 10% to a 32% market share in 2030. By 2040 only 21% of registered vehicles on Worcestershire streets are predicted to be internal combustion engine vehicles, see Figure 6.1 below.

Figure: 6.1: Predicted rate of EV & ICE Registrations for Worcestershire 2025-2040



Source: CENEX, National EV Insight and Support-NEVIS

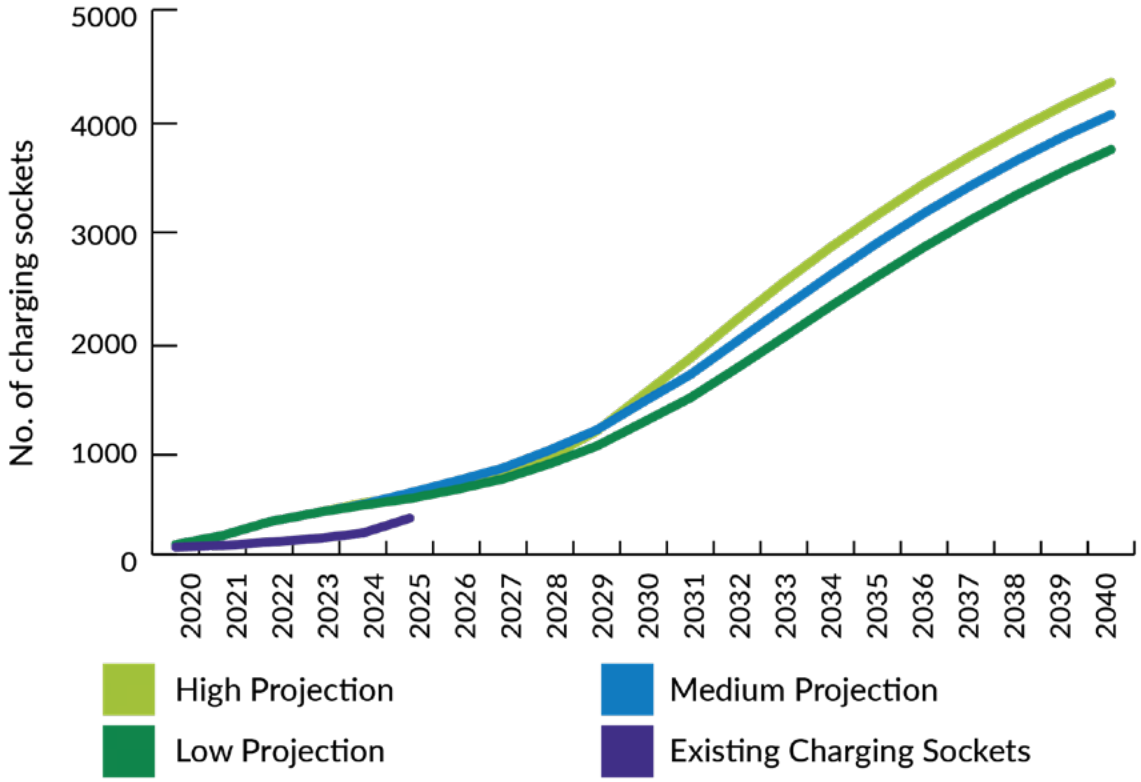
It should be recognised that data relating to chargepoints is based on predicted EV registration in each location. This data can therefore be affected by the location of dealerships, large company car schemes or car rental agencies.

6.3. Meeting the Demand

To satisfy the charging needs for Worcestershire residents charging on street, it is important to ensure EVCI provision grows at the rate required to support travel and transition to EVs. We recognise that a mixture of approaches will be required in providing EVCI and therefore a blended approach to EVCI is being used in our estimated provision with a medium take up on EVs. This will account for both residential on street charging along with some hub-based car park-based type infrastructure.

Figure 6.2 gives an illustration of the gap in EVCI provision by showing an indication of the rate of deployment required up to 2040. It should be noted that following the medium projection, an estimated 1,402 on street low powered[12] residential charging sockets are required to meet the predicted demand in EV growth in Worcestershire by 2030. These low powered 'slow charging sockets' will be required to be located near homes to satisfy the needs of residents without off-street parking. In addition, there is also a need for an estimated 402 additional high-powered[13] charger sockets in the County. See Figure 6.3.

Figure 6.2: Projected EVI Requirement and Gap analysis of Low Powered on street Charging Sockets.

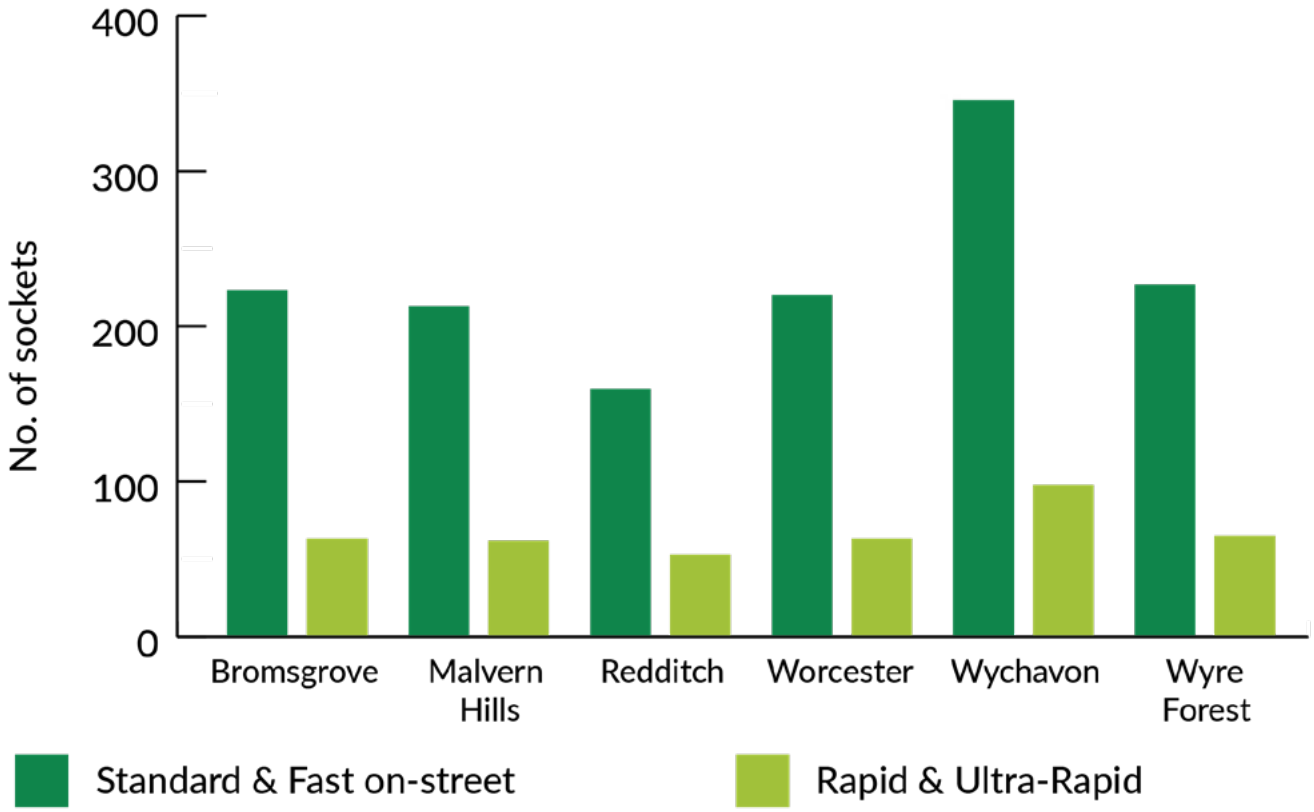


Source: CENEX, National EV Insight and Support-NEVIS V6 May 2025[14]

12 Includes both projected standard and fast on-street sockets
13 Includes both projected rapid and ultra-rapid sockets
14 Data as per EVI tables Future projection. This has been updated by CENEX to account for the additional flexibilities in the ZEV mandate where manufacturers are allowed increased thresholds to borrow allow-ances from future years to meet EV sales targets.

To give an indication of how the 1,402 slow charging sockets and 402 high powered charging sockets need to be distributed throughout the county by 2030, Figure 6.3 gives a breakdown by district of where these sockets are likely to be needed to meet demand. For context, the chart gives an indication broken down by lower powered and higher powered charging sockets.

Figure 6.3: Indicative Projected Sockets Required to Meet Demand in 2030 Split by District



Source: CENEX, National EV Insight and Support-NEVIS V6 May 2025[15]

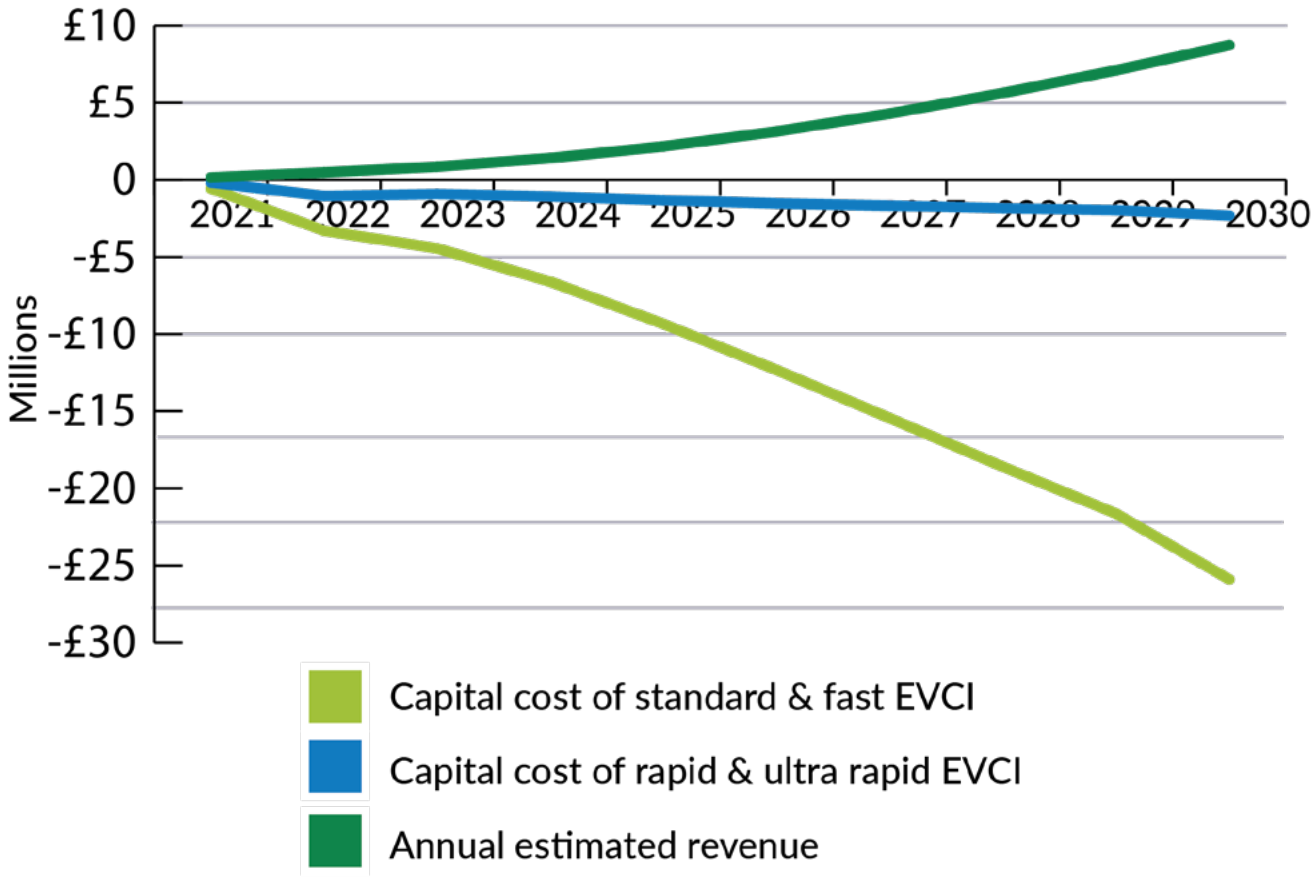
Whilst there may be a significant gap in funding the infrastructure required compared with existing provision WCC will apply for all relevant funding to assist with meeting the desired outcomes whilst at the same time seeking opportunities to leverage private finance. The need to keep up to date with developments in the industry will also be key to identification of innovative and new technology that may assist in meeting the level of EVCI required.

There are several operating models available for EVCI and careful consideration of commercial arrangements is needed to determine the best outcomes for the county (See Section 9, Commercial Arrangements). Figure 6.4 shows that projected capital costs for the EVCI required is high, estimated at over £25m by 2030 whilst potential total annual revenue at this point is estimated in excess of £8m.

15 Data as per EVI tables Future projection. This has been updated by CENEX to account for the additional flexibilities in the ZEV mandate where manufacturers are allowed increased thresholds to borrow allowances from future years to meet EV sales targets.

To finance the EVCI required, WCC have identified a public-private commercial partnership offers the most flexible approach using a concession model (See Section 10, Implementation). WCC will seek opportunity to utilise Government grant funding as capital investment and re-tain some control over deliverables whilst transferring the risks from supply, installation, opera-tion, and maintenance to the service provider. To ensure social equity, We will ensure less commercially favourable sites are supported and additionally safeguard any potential revenue share is fed back into the network to ensure a self-sustaining model in the long term.

Figure 6.4: Projected Cumulative Capital Costs and Annual Revenue for EVCI in Worcestershire 2021 -2030



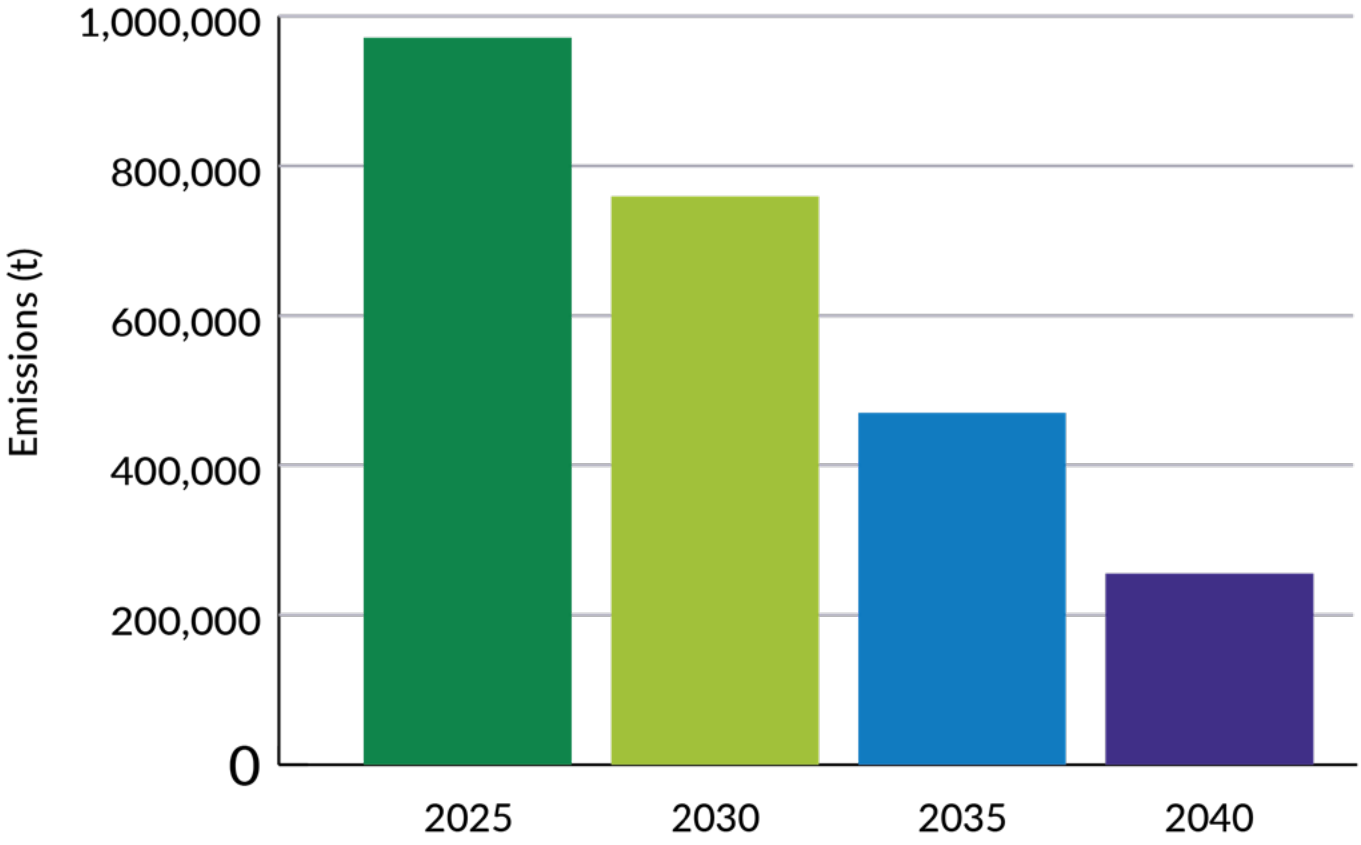
Source: CENEX, National EV Insight and Support-NEVIS

07. Wider Benefits of EV transition

7.1. Improved GHG Emissions

Projected uptake of EVs in our County could result in reducing annual tailpipe emissions from cars and LGVs by over 73% by 2040 as seen in Figure 7.1.

Figure 7.1: Reducing Emissions Predicted from EV Adoption in Worcestershire



Source: CENEX, National EV Insight and Support-NEVIS

Whilst significantly reducing GHG emissions as there are no tailpipe gases, EVs do not fully address the issues of carbon neutrality as emissions can also be attributed to the energy supply and in the manufacturing process.

It should also be noted that increasing the overall number of journeys undertaken by EV is not the intention, however facilitating the replacement of petrol and diesel vehicles with EVs where a journey needs to be made is the focus. Much work has also been undertaken by WCC in recent years through delivery of successful active travel schemes and contributions to walking wheeling and cycling provision. These schemes will also be supporting the shift by providing high quality walking, wheeling and cycling routes for short journeys.

7.2. Quieter Vehicles

Whilst electric motors are quieter than petrol or diesel engines, meaning less noise pollution from our streets, there will still be audible road noise from tyres, but the absence of an engine allows for much quieter roads which will be particularly evident at junctions and other locations where vehicles would normally be idling. Whilst beneficial, reduced road noise is also cause for concern for pedestrians, particularly those who are visually impaired or have low vision. Vehicle manufactures are overcoming this with use of audible alerts to signify movement at low speeds.

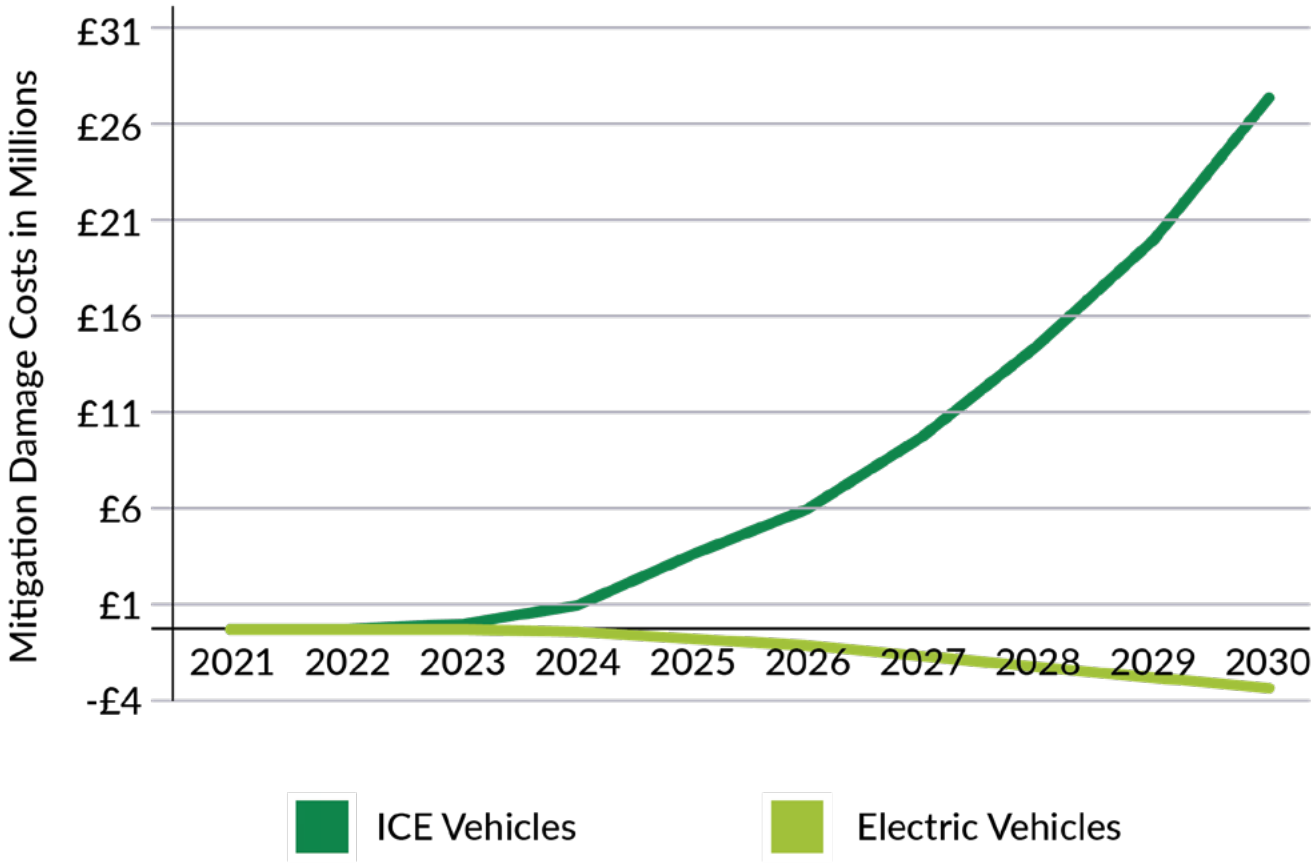
7.3. Mitigated Costs

There are associated costs that can be attributed to the use of traditional combustion engine vehicles for example NHS spending on illnesses related to poor air quality from pollutants like NO_2 and $PM_{2.5}$[16]. In replacing combustion engine vehicles with EVs some of these associated costs can be avoided, (although EVs do contribute to particulate[17] matter through tyre wear); these are referred to as mitigated costs. For $C0_2$ emissions, the mitigated damages are slightly different as they are based on the cost associated with meeting carbon reduction targets. An estimation of predicted mitigated cost is expressed in Figure 7.2. This identifies that the level of spending that is being directed towards dealing with the negative impacts of ICE vehicles. By 2030 this runs in excess of £150m. This is in stark contrast to the benefits or savings in monetary terms with the transition to EVs where saving of nearly £30m are predicted for 2030 (Figure 7.2).

16 Nitrogen Oxides and fine Particulate Matter are known contributors to lung and respiratory tract illnesses. Between 2017 and 2025 the combined total cost of air pollution to the NHS and social care is estimated to be £1.6 billion for PM2.5 and NO2 combined Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report (publishing.service.gov.uk)

17 Fine particles of solid or liquid suspended in the air, some of which can be harmful particularly to the vulnerable such as young or elderly.

Figure 7.2: Projected Indicative Mitigated Damage Costs Attributed to ICE and Electric Vehicles to 2030



Source: CENEX, National EV Insight and Support-NEVIS[18]

7.4. More Cost-Effective Motoring

Despite the initial outlay, EV drivers can find driving EVs a more cost-effective experience and saving on repairs and maintenance due to fewer moving parts can assist drivers with cost of living and or be spent within the local community. Depending on where and how an EV is charged, they can also be cheaper to run[19] than a traditional petrol/diesel vehicle. However, the greatest financial savings will be achieved from home charging as opposed to a public charger. Home charging costs can be on average 8p per mile, compared with diesel at 13p and petrol at 17p per mile (Jan 2024 DfT figures).

18 The mitigated damages analysis uses a baseline year of 2021 and the lowest EV uptake scenario
19 Depending on the cost of electricity compared with petrol or diesel at the time

08. The Worcestershire EVCI Strategy

8.1. Introduction

As set out in Section 1 of this Strategy, this will span from 2025-2030 after which subsequent updates may be required to represent changes in funding, technology, market forces and growing demand. Overall, the intention is to deliver the right charger at the right location.

8.2. Environmental Benefits

With emissions from road transport being the second largest contributor to GHGs in the county, We are committed to facilitating the transition to EVs which will support Governments National Transport Decarbonisation Plan and Net Zero ambitions.

One of the key objectives of the Worcestershire EVCI strategy is to reduce emissions and deliver improved air quality by enabling transport decarbonisation in and around our county. This will be achieved by increasing the number of chargepoints and locating them in the right place to assist drivers to move from ICE vehicles into EVs.

To help minimise the CO_2e emissions associated with EV and EV charging, we require EVCI to be powered by energy from 100% renewable energy sources[20]. In addition, we welcome innovation offered by a CPO to assist with energy supply and energy management on the sites (solar, battery storage or demand management etc) although this will not be specifically requested.

We will continue working with districts to address outcomes of their Air Quality Action Plans to ensure EV transport is contributing towards the desired improvements in air quality.

We will promote benefits of EVs and other sustainable travel options where opportunities arise to support the transition to EVs. This will involve dispelling myths and confusion over the environmental benefits of EVs.

We are looking to work with CPOs to ensure that environmental messaging is a key part of their deliverables and that this is done with clarity and accuracy.

20 For example, solar or wind generation.

Provision of EVCI near to locations of high reliance of on street parking may also serve to discourage residents from paving over front gardens in order to install and access their own home chargepoint. The associated loss of habitat from paving gardens can play a significant role in the streetscape and have wider negative impacts for the community.

8.3. Reliability

The Worcestershire EVCI strategy focuses on charging solutions that give users confidence to transition to EV and continue to drive EV. Clear ownership and resourcing in planning, delivery and maintenance of EVCI will be required.

Functional and well- maintained chargepoints that consistently deliver the service required at the point it is needed. Maintenance and servicing are important to keep EVCI active and available. Deterioration of associated elements to the EVCI, cables, signage, out of date information, damaged chargers etc lends to a poor perception of the EVCI and will ultimately lead to loss of confidence by users. Simplicity of user experience is important to ensure confidence amongst drivers that need to use them and for those looking to make the move to an EV.

Safety is paramount for users whilst charging their car, all efforts must be taken to make chargepoint locations well lit, overlooked and close to other amenities. This can also include the grouping together of chargepoints to allow safety in numbers and associated user activity at a given location.

Each chargepoint location should have more than one socket or connection point allowing for contingency measures and for more than one user to plug in and access a charge concurrently. Smart charging and load balancing would be welcomed as part of the solution for EVCI's as this will help to ensure the network is future proofed and reliable.

Futureproofing EVCI is required to ensure that investment in equipment does not lead to obsolescence. We will look for operators to make sure equipment is updated and kept up to speed with advancement in technology during the term of any contract.

WCC is developing its local Area Energy Plan and consider EV charging and the related infrastructure a key element of this process. Contribution towards the developing plan from partners including local chargepoint operators in the region will be expected.

8.4. Accessibility

The EVCI strategy also focuses on increasing provision of inclusively designed charging solutions that are located conveniently for homes with on-street parking. Charging solutions will support those without off-street parking and enable them to make the transition to EV. They will be conveniently located and should not hinder other footway or highway users in the process.

8.4.1. Site Selection and location of EVCI

As per the objectives of the LEVI scheme, chargepoints will be installed on-street and therefore will be installed on WCC land.

Our preference (See Appendix 4) is to enable homes without off-street parking to be able to access charging within 5-10 min walk of their homes, if this is not achievable, we aim to utilise safe locations for charging hubs. As the procuring body, EV charger locations will be required to be under our ownership.

The use of charging hubs (groups of chargers co-located) on appropriate highway land may be utilised where this has a lower impact on the street scape and existing parking pressures.

We will work with districts, and the Distribution Network Operator (DNO) to establish with suitable grid capacity for EVCI installation, particularly in relation to rural locations. Depending on site constraints, we will aim to make all EVCI inclusive and accessible for those with diverse accessibility needs. PAS 1899[21] will be used as the specification to plan for accessible sites; this will include the physical location, placement, information provision and design of the chargepoint to ensure inclusivity for all[22].

When installing EVCI, WCC will seek to ensure the least disruption to the footway keeping it free from cables and structural charging components as possible. As such, nose to kerb on street parking locations are favoured although it is appreciated these are not commonplace. As an alternative, build-outs from the footway will be considered on a site by site basis.

As part of this strategy, it is the responsibility of the person charging the vehicle to adhere to any parking restrictions that may be in place and to avoid obstructing the footway or any accesses.

For avoidance of doubt, Lamppost charging is not a viable option as lampposts in the county are in the main located to the rear edge of the footway. These would give rise to cables crossing the footway[23].

When selecting suitable sites for chargers, consideration will be given for other future potential charging technology/ solutions.

Futureproofing chargepoint locations is encouraged and the use of passive provision alongside active chargers is sought where there is opportunity.

21 The standard that sets out good practice in delivering inclusive and accessible public chargepoints
22 Accessibility will be reviewed on a site-by-site basis.
23 Significant upgrading of lamppost infrastructure would therefore be required for this option.

8.4.2. Cross Pavement charging solutions

Government guidance on cross pavement charging[24] is now available and we are now reviewing this to fully understand the implications for the user, the authority and users of the footway[25]. Issues such as the structural integrity of the footway, maintenance, electrical safety and liabilities must be resolved in the first instance. Until all issues have been fully considered and a formal decision made, WCC will only allow a cable to be placed within a suitable cable protector to temporarily cross the footway and verge whilst charging. A guidance note has been set out for residents (see Appendix 5). We do not permit the breaking or any damage to the highway to install an EV charger connection or the crossing of the footway or verge or hanging overhead cables.

Charging cables may be used across footways **only** if they are housed in appropriate cable protectors (for example using a cable protection mat). It is important to consider public safety and existing legislation when placing the cable from the power supply in your home to your vehicle. It is the responsibility of the person charging the vehicle to avoid putting themselves and others at risk when trailing a cable across a footway or an area people may cross.

The person charging the vehicle must ensure the cable protector is suitable for use on a public footway, does not create a trip hazard or obstacle for any user including those with mobility difficulties e.g. sight loss, users of wheelchairs and other walking aids, is suitable for outdoor use and durable.

Any legal liability arising from the placement of the cable or protector is the responsibility of the person charging the vehicle. Any form of trailing cable not suitably protected that is involved in a charging solution (temporary or otherwise) is not supported by this strategy due to issues with access and risks to highway users.

We welcome CPOs to use overstay charging and any other technological developments in discouraging blocking or 'ICEing'[26] of charging bays. Any on street charging solution will be developed in line with the Highways Act 1980 and the Equalities Act 2010.

8.4.3. Finically accessible

Securing funding is key to our role in facilitating EVCI in our county. In addition to securing LEVI funding, we will identify and bid for other suitable available Government funding to support the installation of publicly accessible EVCI. This will assist in giving EVCI a balance between value for money for the user and viability as a self-sustaining network.

By establishing a Public – Private commercial partnership on a concession basis, WCC is ensuring all operation costs and risks are transferred to the CPO for the period of the contract. Where a CPO offers a revenue share, this will be utilised to ensure a self-sustaining model in the long term. This approach will ensure the best charging outcome for the county protecting public finance and securing a committed CPO.

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24 Cross-pavement solutions for charging electric vehicles - GOV.UK These being solutions which relate specifically to embedded channels and permanent under pavement cables for residents to charge from a residential electricity supply

25 We will also review outcomes of trials in other locations for cross pavement charging solutions (for example gullies). We will also identify opportunities from developing technology to assist with innovative and developing charging solutions.

26 ICEing refers to where an internal combustion engine vehicle blocks the access to an EV charger.

Ensuring value for money as part of our work will be central to this project, this is demonstrated in the approach of joining the Midlands Connect consortium to assist with the procurement process therefore making the most of public funding.

Fair pricing is key to the success of any EVCI. Users must not be forced out of using chargepoints due to excessive unit prices and excessive price increases. WCC support charging solutions that do not require prior registration or 'priority membership' to access preferential rates.

The use of connection fees is not supported as this can unfairly disadvantage users that may require several small charges as opposed to a single longer charging session.

We welcome CPOs employing technology to provide time of use tariffs and preferential rates to EV drivers without off-street parking.

8.5. Equitability

Worcestershire's EVCI Strategy will enable access to charging facilities for residents particularly in locations that address inequalities in social, economic and ruralism.

Our community consists of a diverse group of drivers, who will all be affected by the ban on petrol and diesel vehicles in 2035. Planning EVCI that allows access to charging despite differences in needs will be a priority for us.

30% of households have no access to dedicated off-street parking and the benefits that this can bring. Often these are the same properties where other issues including poor air quality and social inequalities are prevalent.

85% of Worcestershire is classed as rural and this can often result in in unequal travel opportunities. We will use Government funding to leverage opportunities with CPOs and attract private funding to assist with coverage of EVCI.

As a Highway Authority, our plan is to utilise the LEVI funding to support the needs of our communities that do not have access to off-street parking. We will also improve the rollout and commercialisation of local charging using our influence to ensure less financially attractive locations can be built into the overall charging network.

The cost of charging an EV can vary greatly depending on the speed of the charge and the time of day of the charge. As with other electrical supplies, it is often cheaper to charge when there is less demand at nighttime. We will therefore support more lower powered chargers and welcome CPOs to employ technology solutions to provide preferential rates to EV drivers without off-street parking making use of available time of use tariffs.

When identifying locations for EVCI, careful consideration will be given to locations that have compromised parking and or conflicting demands over limited space.

8.6. Integration

The EVCI strategy will encourage integration with wider local transport services, active transport, and to widen travel choice.

To support this strategy, we will liaise with public sector partners and local businesses and explore their options to install workplace charging to allow staff to confidently charge at the workplace through the Government Workplace Charging Scheme.

Identifying opportunities to link with other travel options is a priority. locating chargepoints to integrate with EV car clubs and train stations etc will assist in easier, low carbon travel.

As a predominantly rural county, well connected transport and easy transport solutions are even more important to those that live, work, and play in our county. Decarbonisation of transport is one of the Governments priorities[xxvii] and this theme will be strengthened in future WCC Local Transport Plans.

Whilst preparing for the use of EVs in our county we will also be identifying opportunity to move people from vehicles to sustainable modes of travel such as, cycling, walking, public transport.

In support of cycling, any changes or restrictions to footways that are required should align with Local Transport Note 1/20 and Manual for Streets whilst being considerate of any shared use paths.

Application of 20-minute neighbourhoods as a future neighbourhood concept to locate services within easy reach of residents will also enable a reducing reliance on vehicles for transport as will making use of future technologies and increasing opportunities to adopt shared transport, and active travel.

We will look to utilise chargepoints as multifunctional pieces of infrastructure in the future, integrating with additional technologies such as public Wi-Fi connections, Internet of Things[27] (IoT), delivery services environmental services, powering other Zero Emission Powered Light Vehicles (ZEPLVs such as scooters and micro cars) etc. In this way we can deliver efficiency and joined up working with other delivery services.

27 The use of embedding physical assets with software technologies to allow them to communicate using the internet. This enables the exchange of data and linkage of devices to support services and systems

09. Commercial Arrangements

9.1. Potential Commercial Arrangements

There are several options available for the operation of chargepoints and each brings its own level of risk and control associated with it (Table 9.1).In selecting the most appropriate commercial arrangement it is possible to influence outcomes including affordability, equity in provision and an integrated charging network.

Table 9.1: Commercial Arrangement Options for Chargepoints

Category	Definition
Own and Operate	WCC to pay for all capital costs, operational costs and retain all ownership, control, responsibility, risk, and revenue. WCC will have full ownership of the charge-points and have the autonomy to select the charge-point location, type and number and set charging tariffs, while receiving one hundred percent of the revenue from usage charges.
Public Private Commercial Partnership (PPCP)	This will include a number of varying commercial arrangements between WCC and a service provider. However, the key strength of a PPCP arrangement is that it allows for a more flexible arrangement between the Council and the service provider. It can unlock private investment by more evenly sharing risk and revenue. The arrangement can be of two types: • External Operator – All capital costs are paid for by the LA. The maintenance costs will be shared by the LA and the CPO. • Concession approach - Funded by the public sector or part funded by the public and private sector and operated by a Charge Point Operator (CPO) for an agreed period under a profit share arrangement.
Joint Venture (JV)	Setting up a JV comes with its own range of risks, which WCC will be needed to be considered carefully. A potential good alternative option for deploying EV infrastructure but dependent on contractual agreement with a service provider.
Land Lease	This approach is a low-risk low revenue commercial arrangement. However, WCC will retain little control over the resulting service by leasing land it owns to a service provider.

Source: WCC

Appendix 6 presents potential risk appetite, strengths and weakness of the categories set out in Table 9.1 above.

10. Implementation

10.1. Implementation Plans

We are partnering with Midlands Connect and utilising a consortium approach to procure a CPO to pool resources and bring about the most appropriate solution for the provision of off-street charging facilities covered by this strategy phase 1. As a result of using a consortium approach we are making use of shared resources.

Subject to securing government funding, we intend to appoint two Chargepoint Operators (CPOs) with one for the estate of lower powered EVCI and one for the estate of higher powered EVCI. Each will be appointed through a concession contract[28] (see also Table 9.1). The procurement of this will utilise capital LEVI funding allocated for Worcestershire totalling £3.48m.

These CPOs will manage the process end to end from design, supply and installation through to operation and maintenance. Chargepoints will therefore be funded through a combination of private finance from the CPO and Government funding.

Overall, we want to see that the right charger is in the right place to service the needs of our community and therefore we require a CPO to be hardware agnostic. It is expected that this CPO will be the provider of this service for a 15-year period. The appointed operator will be required to finance all servicing and maintenance.

For the purpose of addressing EVCI to address properties without off-street parking, We will be requiring EVCI provision to be funded with a combination of Government grant and private CPO investment. We will not be allocating any funding to the installation of publicly accessible chargepoints. CPOs will also be required to assume all associated revenue risk with their associated EVCI.

Social Value and Environmental factors have been considered essential elements of this strategy and WCC will be looking to positively benefit the local community as part of these contracts.

28 After reviewing the strengths and weaknesses of commercial arrangements as explained in appendix 6

The project will be overseen internally by the LEVI Project Board where the progress of designated subgroups will be monitored and managed. The multi-skilled project team consists of WCC employees supported by consultants for expertise and guidance as required.

Prior to implementation of this strategy there will be a stakeholder consultation and appointing a CPO to deliver our vision in our county as per Table 10.1.

Table 10.1: Five-Year Action Plan

Ref	Theme	Action	Deadline
1	Project Management	Establish suitably qualified project management team understanding that specific takes will require additional input at given times and that external support may be required for certain elements	2024
2	Scoping	Engage with CPOs through soft market testing to understand commercial capabilities and to shape our procurement requirements	Spring 2024
3	Strategy	Develop a strategy to deliver on charging provision for communities (Phase 1 with a focus on residents without access to off-street parking) Ensuring EVCI is Environmentally Sustainable, Accessible, Reliable, Equitable & Integrated,	Summer 2024
4	Strategy Consultation	Engage with stakeholder and local community to ensure vision and overall strategic direction will deliver the outcomes in line with need	Summer / Autumn 2024 (publication Summer 2025)
5	Site Engagement	Gather input from local communities to assist with site identification	Summer 2025
6	Procurement and Enablement	Identify a procurement route to secure CPOs working with Midlands Connect and consortium partners to deliver sockets funded through Government's LEVI Capital Grant funding. Award CPOs and work with them to understand the required specification and requirements	Autumn 2025
7	Procurement and Enablement	Award a contract	Autumn 2025
8	Final Site selection	Work with the CPOs to establish the correct site location for EVCI Includes engagement with community to ensure the success of each specific location	Winter 2025
9	Delivery	Installation phase of EVCI	2025-2030

Ref	Theme	Action	Deadline
10	Communications and Engagement	The CPOs will develop a Local Engagement, communication and Marketing Plan which will be reviewed and updated at least annually during the duration of the Contract; This support is envisaged for the first 5 years to help support the EV barriers. The CPOs will also be asked to ensure promotion of the EVCI and are registered to allow visibility and integration with relevant charging maps and tools Current webpage: Electric Vehicle charge points | Worcestershire County Council will be developed to include updates of the LEVI funded project and in time hold link with details on the infrastructure such as usage, reliability KPIs etc. Also to be used to signpost to other relevant information including Government grant funding etc. Work with CPOs to ensure that environmental messaging is a key part of their deliverables and that this is done with clarity and accuracy.	Duration of contract 2025 - ongoing
11	Future WCC plans	In the development of a Local Area Energy Plan (LAEP) consider EV charging and the related infrastructure a key element of this process	Mid to Long term
12	Strategy Review	Review and update strategy to reflect changing landscape and national guidance and to remain relevant. Also look to widen scope and include for e.g., incentivising taxis to transition, private fleets etc.	Spring 2030
13	Monitoring & Review	Monitoring contract through KPIs to ensure deliverables	Ongoing from contract initiation
14	Other Miscellaneous	Explore future opportunities to access suitable funding to support or expand planned EVCI	Ongoing
15	Industry and legislative developments	Keep abreast of developing technologies, policy changes and trial outcomes in other locations for charging solutions including cable gullies, wireless charging, V2G and V2X. We will identify opportunities from developing technology to assist with innovative and developing charging solutions	Ongoing

Source: WCC

11. EVCI Strategy Risks

11.1. Key Risks

With any large-scale venture, there are associated risks. WCC will work to mitigate these risks as far as possible and identify solutions where they present. Table 11.1 sets out key risks that may arise when implementing the EVCI strategy.

Table 11.1: Key Risks

Risk	Mitigation
Grid connection costs could be significant rendering some locations unviable within the allocated budget	• Engagement with DNO and scoping of sites in initial stages to gauge and understand constraints • Potential clustering of chargepoints to reduce civil works (e.g. mini-charging hub) • The impact of grid connection costs is now mitigated by Significant Code Review (April 2023). This review reduced the cost of making or upgrading connections to the electricity network, but in some cases, and particularly for high powered EVCPs, these costs may still be significant
Suitable site availability	• Rigorous site selection process • Engagement with partners
Residents not happy with the charging solution offered for their area	• Engagement and consultation • Use of right charger right place logic • Ensure CPO is hardware agnostic • Clear communications to residents about limitations of funding

Risk	Mitigation
Insufficient funding	• Rigorous site selection process • Negotiations with CPO • Clear communications to residents about limitations of funding
Impacts of technological advancements	• Procurement of strong provider with ability to reflect and implement advances in technology during the contract.
Impacts of increases in electricity pricing	• Agree strategy of pricing for EV drivers with no home charging provision
Less viable locations could get left behind without sufficient public funding	• Use government funding and leverage to identify key locations in less viable locations.

Source: WCC

12. Engagement

12.1. Introduction

Effective Communication and engagement will be fundamental to the success of an EV charger network, from the planning stages thorough to drivers charging their EV's.

A communications plan will be developed which will include our methods and frequency of engagement with the various stakeholders both in the development of this strategy and longer term.

Using the existing WCC website, residents will be signposted to trusted information sources to assist with EV knowledge, myths etc.

12.2. Key Partners

We are working with Midlands Connect and a consortium of Midlands local authorities to collaborate on delivery of our LEVI funded projects. We believe this strengthens the opportunity for us to establish the best solution for our requirements whilst learning from each other and sharing knowledge and best practice methods.

Our District authorities are key allies in delivering this strategy and will be engaged with at every given opportunity. Particularly in the identification of suitable charging locations and integration with existing and planned EVCI. This is fundamental in planning any network and will be key to the success of all parties involved.

12.3. Public & Stakeholders

We have already consulted on this strategy and will consult on any future versions. Continuous feedback will help to inform the next phase of strategy development. We are keen that the views and thoughts of our community are taken into account and reflected in this document and in its delivery.

12.4. Industry

As a new and fast developing industry, we will keep up to date with developments through liaising with technology providers, Government policy and pilot studies. We are working with other local authorities through LA forums and delivery bodies of the Government to make the best use of shared knowledge in this sector.

We will continue to engage with CPOs to monitor the changes in technology and keep up to date with industry advancements to understand new and innovative technologies that could be integrated into our existing or planned infrastructure.

Soft market testing early in our procurement process will be used to make sure we are delivering the ideal solution at any given point in time, and we are willing to learn and adapt our approach to deliver the best outcome possible.

13. Monitoring Progress and Outcomes

13.1. Progress of the Strategy

We will monitor the delivery of infrastructure against the contract and strategy objectives in line with LEVI funding requirements to ensure the key objectives are being delivered (Appendix 7). We will require as part of any contract held that data is provide to us to identify recurrent issues, and guide plans for future network expansion and chargepoint speed decisions. We will also monitor the progress of EV take up and EVI utilisation to ensure that provision is meeting demand.

Any future opportunities to access suitable funding to support or expand existing and planned EVCI will be explored and discussed with partners and existing operators to ensure collaboration on future infrastructure.

13.2. Chargepoint Operators

Good contract management is essential for a well delivered service. Regular meetings will be held from the outset with the contracted CPO/CPOs and we will monitor both the infrastructure and the service provided. Quantitative and qualitative outputs will be used in this process and feedback will be used to improve the service and shape future provision.

14. Future Development of EV Strategy

14.1. The EVCI Strategy Review

With EV adoption still in early stages it is important to recognise we will need to reassess and develop our approach to reflect UK government direction, changes in technology, services offered by the CPO/CPOs and opportunities this will bring and new legislation and guidance.

This Strategy will be reviewed to ensure it continues to reflect the changing landscape and requirements of EV drivers in our community. It is envisaged we will produce subsequent strategy to account for other related EV scenarios and reflect this with the emerging Worcestershire LTP5.

Appendix 1

WCC's Approach to Residential and Non-residential Chargepoints

As per the 2022 Buildings Regulations, developers of new homes and renovated homes are required to install associated EV charging infrastructure.

Residential Chargepoints[29]

Worcestershire County Council are supportive of home charging for electric vehicles where vehicles are parked on a private driveway or in a garage.

Residents looking to install an electric vehicle charge point at a private residence, should consider the following points:

- Charging cables should not cross the road;
- Charging cables may be placed across footways only if they are housed in appropriate cable protectors (See Appendix 5);
- Chargepoints must only be installed by a qualified person and comply with part P of Building Regulations;
- The installer should ensure there is a suitable electricity supply to accept the charge point;
- If the property is a listed building or located in a conservation area, contact your Local Planning Authority prior to installation to check if permission/consent is required to install a chargepoint; and
- Building Regulations Approved Document S requires the installation of EV chargepoint for each home with allocated parking.

Non-residential Chargepoints

For non-residential developments (new development and refurbishment) with more 10 or more parking spaces there must be EVCI provision for 1 space per 10 parking spaces.

Accompanying this should be cabling for a further 1 in 5 spaces to have a chargepoints at a later date (passive provision)

Covered parking is not required to have a chargepoint installed but must have the cabling for a chargepoint to be installed at a later date.

29 Home charge points are private chargepoints connected to a domestic electricity supply

Appendix 2

Local Policy Drivers

Policy	Remarks/Link
Bromsgrove District Council Ultra Low Emissions Vehicles Strategy	www.bromsgrove.gov.uk/media/4929912/Bromsgrove-District-Council-Ultra-Low-Emissions-Vehicles-Strategy.pdf
Destination Zero.pdf (malvernhills.gov.uk)	Destination Zero Creating a greener, more sustainable Malvern Hills district
RBC ULEV Strategy (redditchbc.gov.uk)	Redditch Borough Council Ultra-Low Emission Vehicles Strategy
Worcester City Council Electric Vehicle Charging Strategy.pdf	Electric Vehicle Charging Strategy 2023 – 2025 for Worcestershire City Council
Wychavon Intelligently Green Plan	Wychavon Intelligently Green Plan 2020-2030
Corporate plan | Wyre Forest District Council (wyreforestdc.gov.uk)	www.wyreforestdc.gov.uk/your-council/transparency-and-freedom-of-information/freedom-of-information-publication-scheme/what-our-priorities-are-and-how-we-are-doing/corporate-plan/
Worcestershire Energy Strategy	www.wlep.co.uk/wp-content/uploads/P3695-Worcestershire-Energy-Strategy-Strategy-with-glossary.pdf
Midlands Connect - Supercharging the Midlands	www.midlandsconnect.uk/publications/supercharging-the-midlands/

Source: WCC

Appendix 3

Types of Chargers

There is a range of electric vehicle charging technology that delivers different speeds of charging. The different speed of charging suit different locations. Where cars are generally parked for longer periods (including at home and at workplaces), charging can be slower. Where drivers are stopping en-route on long journeys for a short period of time, a higher power faster charger will be more suitable.

Generally, a higher powered charger will cost more pence per kW when compared with lower powered chargers. Drivers will pay for the faster charge time and convenience of charge much like the higher prices of fuel at motorway service stations (See Table A.1.1). As with EV vehicles, charging technology is advancing quickly, the details below give an indication of the different powers of chargers and their application.

Table A.1.1: Types of Chargers

Charger Type	Power	Location	Details[30]
Slow / Standard AC	0 - 7 kW	• Homes with off street parking • Some older destination car parks	• 12-5.5 hours for full charge • Often used to charge overnight
Fast AC / DC	8-49kW	• Homes with off street parking • Destinations (car parks, shopping centres, leisure, workplaces etc)	• 1 – 5 hours for full charge • Homeowners can often access lower tariffs

30 Charging times depend on factors including car battery size, power rating of charger and miles between charges

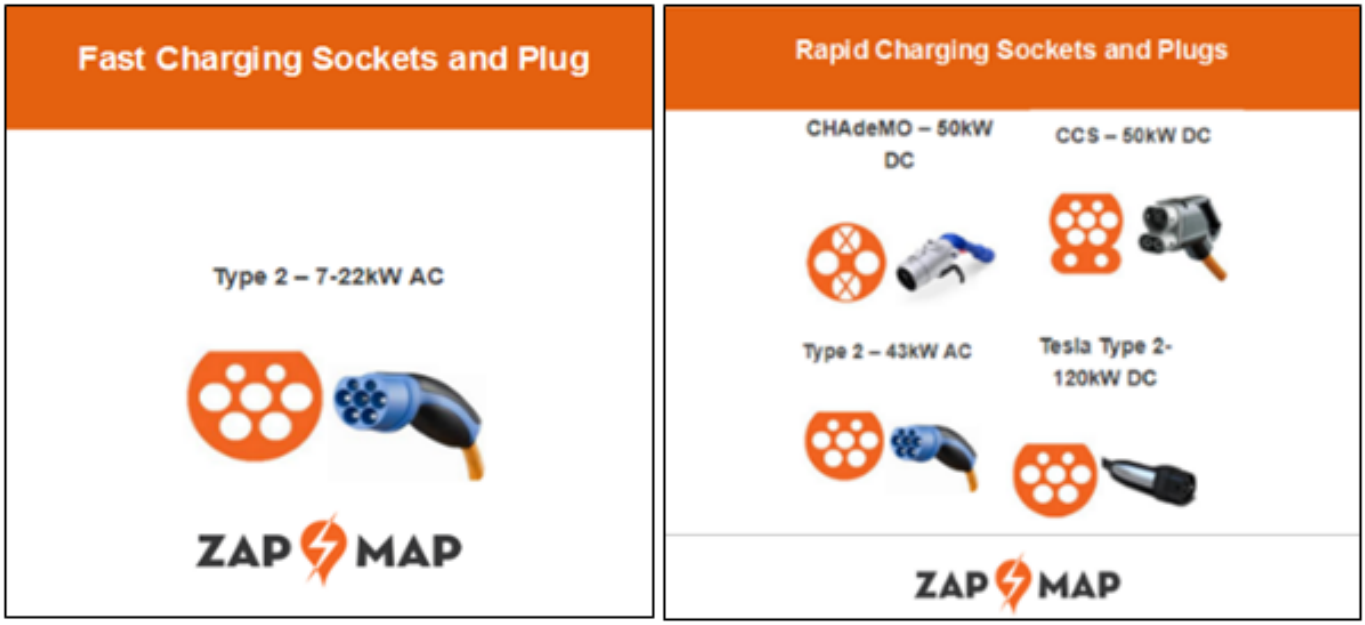
Charger Type	Power	Location	Details[30]
Rapid DC	50-149kW	• Short Stay Destinations (motorway service stations and car parks)	• 15mins – 1hour for full charge • Provide top-up facilities in the natural break time for those driving longer distances, or while making 'pop-in' visits to shops or businesses
Ultra-rapid DC	150kW+	• En route destinations (larger cities & motorway services)	• 10mins – 1 hour • Equivalent to existing filling stations with facilities alongside

Source: NEVIS/WCC

EVs are supplied with a charging cable to connect to slow and fast charge points. This cable has a plug specific to the vehicle on one end, and a suitable plug on the other end to connect to the charge points. This is typically referred to as a Type 2 connector.

Rapid and high-power chargers are fitted with tethered cables and connectors that plug directly into the vehicle due to the high power being delivered. Most vehicle manufacturers use the CCS DC socket/plug with the CHAdeMO still in use for older vehicles (see image on the right in Figure A.1.1).

Figure A.1.1: Type 2 socket and plugs for slow/fast and rapid charging in the UK



Source: Zap Map

Appendix 4

Site Selection

As per LEVI funding requirements, locations must predominantly be on street and as such will be under ownership of WCC Highways. A high level long list of potential postcode areas will be complied that take into account (in no particular order):

- Lack of on-street parking
- Demand or projected demand for EV ownership
- House Density
- Within a 5-10 minute walk of residential demand / projected demand
- Lack of current and projected privately installed charging infrastructure
- Grid capacity

The long list will then be further be used to access user and supplier acceptance and be tested against other criteria (Table A.2.1) to ensure EVCI is located in the optimal position.

Table A.2.1: Criteria to Consider in Site location

Criteria for Consideration[31]	Comment
Safety	Installations must be 450mm from carriageway edge
Accessibility	Keeping footway clear of cables and other obstructions. Minimum 1.2m width footpath is desired.
Security	-
Proximity to Point of connection	-
Proximity to residential off-street parking area	For on street chargers
Proximity to key destinations	For rapid and ultra rapid chargers
Mobile connectivity	Enabling online / app payments

31 Listed in no particular order

Criteria for Consideration[31]	Comment
Proximity to main routes	For ultra rapid chargers
Proximity to facilities (food & drink and toilets)	For ultra rapid chargers
Proximity to other nearby chargers	-
Potential for grouping chargers and expansion	-
Statutory utilities and other road works	e.g. Section 50 & 38 requirements
Rurality of site	In rural locations compromise may be required
Environmental Considerations	Flooding, archaeological & heritage features and biodiversity
Ownership of land	In some instances, leasing will be considered
Dwell time	Length of stay under normal parking situations
Consideration of future potential charging technology / solutions	

Source: WCC

Appendix 5

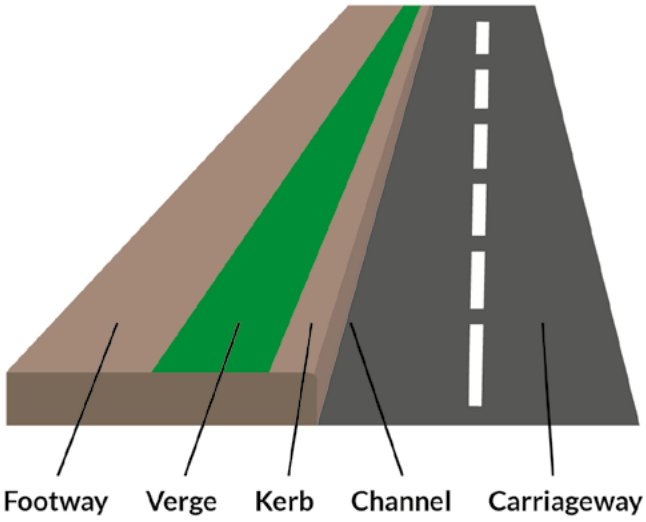
Guidance on the use of Cable Protectors for Electric Vehicle (EV) Charging

This guidance is primarily for, but not limited to, aid residents without access to off-street parking to charge an EV using their own home electric supply. It is intended to assist residents/ users to make informed decisions about how they can charge a vehicle whilst reducing the risk of obstruction or injury to users of the highway.

Charging cables may be placed across footways only if they are housed in appropriate cable protectors. It is important to consider public safety and existing legislation when placing the cable from the power supply in a home to a vehicle. Any legal liability arising from the placement of the cable or protector is the users' responsibility. Users should speak to their home insurer to confirm their home insurance policy cover complies with provision of cable protectors.

Important information to note:

- It is the users' responsibility to adhere to any local parking restrictions that may be in place and to avoid obstructing the footway or any accesses formal and informal crossings (such as tactile pavements or dropped kerbs).
- It is the users' responsibility to avoid putting themselves and others at risk when placing an electric cable across a public footway or any area where the public may cross.
- Anyone wishing to install a private residential charging point should satisfy themselves, that they have complied with all relevant planning conditions before doing so. Please check with your local planning authority at the district or borough council.



Parking your vehicle for charging

Vehicles should be parked as close to the property as possible. Where a vehicle cannot be parked immediately outside the property, the cable (housed in the appropriate cable protector), should be run along the carriageway channel against the kerb. The recommended maximum distance from a point outside the property is 10 meters (approximately 2 car lengths).

The cable must not cross the carriageway. The vehicle should always be parked on the same side of the road as the property it is being charged from.

Charging your vehicle

Before charging, users should refer to the vehicle's handbook and instructions for the use of cables, including extension cables. If necessary, seek advice from a qualified electrician before charging.

Important information to note:

- Only EV charging cables placed within a suitable protector can cross the footway and verge, no other form of electrical cabling or extension leads can be placed on the public highway.
- Cables should be laid flat and never be extended from an upper storey to a vehicle, nor should they be hung from any street furniture including lamp columns or trees.
- The cable protector and cable should only be placed over the footway when the vehicle is charging and should always be removed when not in use.
- It is the users' responsibility to ensure that the cable does not cause a danger or nuisance to the public and that the public highway infrastructure is not damaged.

Using a cable protector

The most appropriate solution for getting the cable from a property boundary to a vehicle safely is to use a suitable cable protector. Cable protectors are regularly used in public spaces and areas of high footfall to cover cables or wires on a temporary basis. Cable protectors should be visible, durable and laid across the footway as shown in pictures below.

Important information to note:

- It is the users' responsibility to ensure that the cable protector is used in accordance with the manufacturer's instructions and is suitable for outdoor use on a public footway.
- Any cable protector used should cover the full width of the footway and verge between the property and the vehicle.
- The cable protector should not create a trip hazard or obstacle for any user including those with mobility difficulties e.g. sight loss, users of wheelchairs and other walking aids and should:

  a. be non-slip

  b. have high visibility contrasting colour markings e.g. yellow and black

  c. have anti-trip sloped sides and;

  d. be of a tough construction suitable for outdoor use

- Users should remove any cable and cable protector as soon as charging has finished.

Cable licensing

Currently an EV charging cable does not require a license. However, as policies are reviewed and updated this may change in the future.

A license is required for all other temporary placement of cabling on or over the Highway.

Although no license is currently required, where a location is not suitable then the County Council has existing powers under Section 162 of the Highways Act to seek to have the cable removed. The Council reserve the right to request inappropriately used cables or those which cause obstruction to be removed.

Appendix 6

Commercial Arrangements and Associated Risks

Category	Own & Operate	PPCP - External Contractor	PPCP Concession	Joint Venture	Land Lease
Who invests?	Least favourable to LA	Less favourable for the LA	Most favourable to LA & Delivery Partner	Less favourable for the LA	Most favourable to LA
CAPEX	LA	LA	LA or Supplier or Shared	JV	Supplier
OPEX	LA	Shared	Supplier	JV	Supplier
Who Owns?	Most favourable to LA	Less favourable for the Delivery Partner	Most favourable to LA & Delivery Partner	Less favourable for the Delivery Partner	Least favourable to LA
Distribution assest	DNO	DNO	DNO	DNO	DNO
Local conncestion assest	LA	LA	Supplier	JV	Supplier
Charging assests	LA	LA	Supplier	JV	Supplier
Who Controls?	Most favourable to LA	Less favourable for the Delivery Partner	Most favourable to LA & Delivery Partner	Less favourable for the Delivery Partner	Least favourable to LA
Technical specification	LA	LA	LA or Shared	JV	Supplier

Category	Own & Operate	PPCP - External Contractor	PPCP Concession	Joint Venture	Land Lease
Location choices	LA	LA	LA or Supplier or Shared	JV	LA
End user tariff	LA	Supplier	LA or Supplier or Shared	JV	Supplier
Who is Responsible?	Least favourable to LA	Less favourable for the LA	Less favourable for the Delivery Partner	Less favourable for the LA	Most favourable to LA
Planning approvals	LA	LA	Supplier	JV	Supplier
Distribution assets	DNO	DNO	DNO	DNO	DNO
Local connection assets	LA*	LA	Supplier	JV*	Supplier
Chargepoint installations	LA*	LA	Supplier	JV*	Supplier
Operations	LA*	Supplier	Supplier	JV*	Supplier
Insurance	LA*	Supplier	Supplier	JV*	Supplier
Customer services	LA*	Supplier	Supplier	JV*	Supplier
Electricity purchase	LA*	LA or Supplier	LA or Supplier	JV*	Supplier
Decommissioning	LA*	LA	LA or Supplier	JV*	Supplier
Who Owns the Risk?					
Technology osolescence	LA	LA	Supplier	JV	Supplier
Regulatory change	LA	Shared	Supplier	JV	Supplier
Electricity prices	LA	LA or Supplier	LA or Supplier	JV	Supplier
Utilisation	LA	Supplier	Supplier	JV	Supplier
Who Takes Revenue?	Most favourable to LA	Less favourable for the Delivery Partner	Less favourable for the LA		
EV charing income	LA	Shared**	Shared***	JV	Supplier
Ground rent	N/A	N/A	N/A	N/A	LA

Source: CENEX, National EV Insight and Support-NEVIS

Appendix 7

Key Performance Indicators to monitor progress of strategy

Ref No.	Indicator	Measure	Data source
1	LEVI Capital Funding secured	• Circa £3.5m of grant funding	• Formal Grant offer
2	Fully viable solution	• Approved project including tender documentation	• OZEV
3	Suitable arrangements in place to deliver LEVI funded EVCI	• Signed contract with chargepoint operator	• Contract Award
4	Growth in registered EVs in Worcestershire	• Percentage of vehicle parc as EV registered in Worcestershire	• Vehicle licensing statistics data tables - GOV.UK
5	Transport related Emissions	• Reducing emissions related to domestic transport (reducing from ICE vehicles)	• UK greenhouse gas emissions: provisional - data.gov.uk
6	Improvement in air quality	• Improved pollutants related to domestic transport (reducing from ICE vehicles)	• Local Air Quality Reporting | Worcestershire Regulatory Services
7	Number of chargepoints	• Total number • Number installed via WCC initiated contract. • Number per 100,000 of population	• WCC contract monitoring data • DfT statistics
8	Geographical coverage of network	• Percentage of settlement coverage	• WCC GIS data

Ref No.	Indicator	Measure	Data source
9	Utilisation of Chargepoints (from contract monitoring)	• Number of chargers registered. • kWh of electricity drawn • Utilisation rate for each charger	• CPO back-office data
10	Reliability of Network (from contract monitoring)	• Percentage of availability per charger • Chargepoint Network availability • Fault Response times High, Medium & low Priority) • Planned Inspection Maintenance • Chargepoint Management System	• CPO back-office data
11	Customer satisfaction (from contract monitoring)	• 24/7 customer response helpline availability • Response time to answer customer service line • Number of compliments / complaints • Response time to answer complaints • Customer satisfaction survey	• CPO back-office data • WCC contract monitoring data • Engagement survey

Source: WCC

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xviii Electric vehicle charging device grant scheme statistics: July 2023 - GOV.UK (www.gov.uk)

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xxii Bromsgrove District Council | Worcestershire Regulatory Services

xxiii Planning for Green Infrastructure | Worcestershire County Council

xxiv *CENEX, National EV Insight and Support-NEVIS*

xxv *CENEX, National EV Insight and Support-NEVIS*

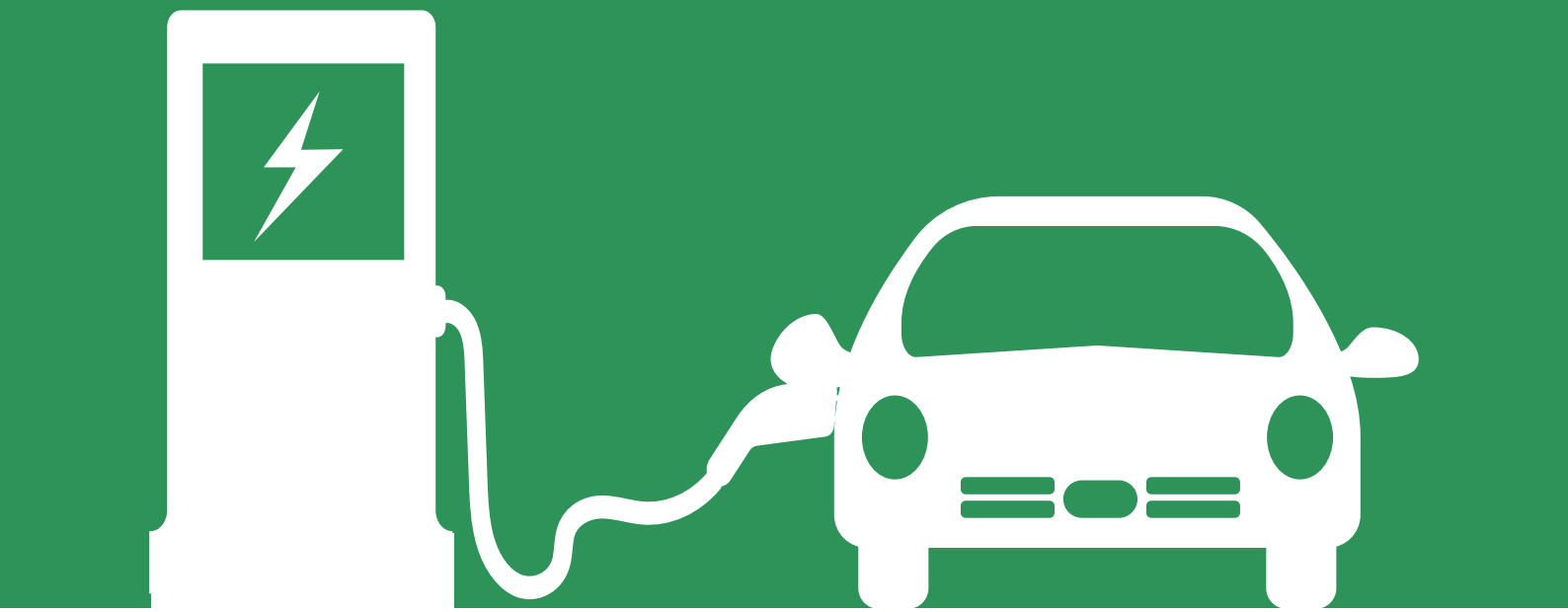
xxvi *CENEX, National EV Insight and Support-NEVIS*

xxvii Transport decarbonisation plan - GOV.UK (www.gov.uk)

Glossary

Abbreviation	Explanation
AQMA	Air Quality Management Areas are used to highlight locations where air pollution exceeds government defined limits.
BEV	Battery Electric Vehicle is a vehicle that is exclusively powered by battery.
BSIPs	Bus Service Improvement Plans are written by Local Transport Authorities to set out the vision for improving bus services within their local area to reflect National Bus Strategy.
CCS	Combined Charging System also commonly known as CCS/CCS2 is a type of connector for electric vehicles favoured across Europe and North America.
CHAdeMO	CHArge de Move, equivalent to "charge for moving," this fast-charging system for battery electric vehicles and allows for bi-directional charging historically favoured by Japanese car makers.
CPO	Chargepoint Operators can operate or own and operate the electric vehicle chargers and associated infrastructure, they may also supply and install the infrastructure.
DfT	The Deportment for Transport is the Government office that is responsible for providing policy, guidance and funding for transport and local authorise in England.
DNO	Distribution Network Operator - owns and operates infrastructure connecting assets to the national grid.
EV	An Electric Vehicle is a vehicle that is powered by battery, this may be fully or partially battery powered.
EVCP	Electric Vehicle Charging Point is a facility that allows an EV to be charged.
EVCI	Electric Vehicle Charging Infrastructure is the associated assets (over and underground) that are required to operate an electric vehicle charging point.
ICE	Internal Combustion Engines are vehicles powered by diesel and petrol engine vehicles.

Abbreviation	Explanation
ICEing	Refers to diesel and petrol engine vehicles occupying blocking EV charging bays.
IOT	Internet of things describes devices that are able to connect with other technologies over the internet to exchange and process data.
KPI	Key Performance Indicators are metrics that are used to track progress.
LEP	Local Enterprise Partnerships are non-statutory bodies that have responsibility for economic development in England.
LCWIPs	Local Cycling and Walking Infrastructure Plans are written by Local Transport Authorities to set out the vision for improving local cycling, walking and wheeling infrastructure plans in their local area to reflect National Strategy.
LEVI	The Local Electric Vehicle Infrastructure fund supports the rollout of near home electric vehicle charging infrastructure across England.
LGVs	Light Goods Vehicles include commercial vehicles such as vans and pick-ups trucks, they are generally used for transportation of commercial loads.
LTA	A Local Transport Authority is responsible for transport planning, passenger transport and highways.
LTP	Local Transport Plans are produced by Local Transport Authorities and are the mechanism for delivery of integrated transport for that local area.
PAS 1899	This is a specification to support the building of an inclusive electric vehicle charging infrastructure in the UK.
PHEV	Plug-in Hybrid Electric Vehicles are vehicles that have a combustion engine and a small battery.
Time of use tariff	These are energy tariffs that utilise smart metering to charge lower rates at times when there is less demand.
V2G	Vehicle to grid charging the term for transfer of electricity stored in EV batteries back into the grid to assist with supporting increase period of demand.
V2X	Vehicles to everything is the term for transfer of electricity stored in EV batteries to all energy consuming destinations such as houses.
WCC	Worcestershire County Council is the Local Transport Authority across Worcestershire.
WLEP	Worcestershire Local Enterprise Partnership is a non-statutory body that has responsibility for economic development in the County.
ZEPLVs	Zero Emission Powered Light Vehicles are alternative options to traditional delivery vehicles powered completely powered by electric and can comprise of electric micro cars or scooters and are useful where other options are unviable.



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