# HARINGEY EV STRATEGY

April 2025

London Borough of Haringey

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# 1. Introduction

## Definitions of key terms

| Abbreviation | Definition |
|---|---|
| AADT | Annual Average Daily Traffic – a measure of traffic volume. |
| BEV | Battery Electric Vehicle – fully powered by electricity and has to be plugged in to recharge. |
| CENEX | Centre of Excellence for Low Carbon and Fuel Cell technologies - an independent, not-for-profit research technology organisation (RTO) and consultancy, specialising in the project delivery, innovation support and market development. |
| $CO_2$ | Carbon dioxide. |
| CPO | Chargepoint Operator – a provider and operator of chargepoints. |
| DfT | Department for Transport |
| DNO | Distribution Network Operator – owns and operates the infrastructure that connects properties to the electricity network. |
| EV | Electric Vehicle – any vehicle that uses electricity for propulsion including PHEVs and BEVs. |
| EVCP | Electric Vehicle Chargepoint – a location where EVs can plug-in and charge. |
| EVI | Electric Vehicle Infrastructure – structures, machinery, and equipment that are necessary and integral to support EVs. |
| HGV | Heavy Goods Vehicles – any truck weighing over 3.5 metric tonnes, generally those used to deliver large quantities of cargo. |
| ICE | Internal Combustion Engine – the traditional method of vehicle propulsion using fossil fuels and creating harmful emissions. |
| kW | Kilowatt – A measure of how much electrical power a device needs to operate. |

| | |
|---|---|
| kWh | Kilowatt hour – A unit of electricity. The capacity of electric car batteries is measured in kilowatt hours. |
| LEVI | Local Electric Vehicle Infrastructure - Fund supports local authorities in England to improve the roll out and commercialisation of local charging infrastructure. |
| NEVIS | National Electric Vehicle Insight & Support – delivered by CENEX, it supplies local authorities, consultancies, chargepoint operators and academic institutions with easily-accessible data, maps, modelling and up-to-date information on Electric Vehicles (EVs) and Electric Vehicle Infrastructure (EVI). |
| NOx | Nitrogen oxides. |
| OZEV | Office for Zero Emission Vehicles – a team working to support the transition to zero emission vehicles, part of the Department for Transport and the Department for Energy Security and Net Zero. |
| PHEV | Plug-in Hybrid Electric Vehicle – a vehicle that can be plugged in and charged but also has a combustion engine. |
| ZEV | Zero Emission Vehicle – a vehicle that has zero emissions at the tailpipe (exhaust). |

# Introduction

The Haringey Electric Vehicle Strategy sets out how the Council will support the use of electric vehicles in the borough; it is our plan to enhance and develop our network of electric vehicle charging infrastructure.

Building upon our inaugural Ultra Low Emission Vehicle Action Plan (2019-2029), this strategy aims to outline how the Council will support both current and projected demand for electric vehicles, remaining in alignment with national policy, all the while working to fulfil Haringey's broader decarbonisation and low-emission ambitions.

In light of the UK government commitment to phase out the sale of new petrol and diesel cars and vans, as part of the wider goal to be net zero emission by 2050, it is vital that the Haringey has a plan to support its residents and visitors with the transition which has begun and will only continue to grow over the coming years; we need to ensure the growing number of residents with electric vehicles can charge conveniently, and to make electric vehicle ownership accessible to the increasing number of residents thinking about making the change to electric vehicles.

One of the key components of this transition is the delivery of a charging infrastructure network. For Haringey, this requires a step change in providing access to that network, ensuring there is sufficient capacity to support resident and visitor needs. Unlike ICE vehicles, where refuelling typically takes place at a filling station, recharging electric vehicles is carried out on-street, or at home. Yet, it has been estimated that up to 80% of residents in Haringey do not have access to off-street parking, which underlines how essential it is for the Council to act.

This strategy will highlight the current and projected demand for EV charging in Haringey, while also taking into account key considerations such as existing constraints, resident perspectives and planned future developments. It will set out an action plan, with a focus on the establishment of an accessible charging network that meets the needs of Haringey residents, ensuring a forward-thinking and inclusive approach to sustainable transport infrastructure.

This strategy should be read in conjunction with both the emerging Safe and Sustainable Transport Strategy and Kerbside Strategy.

The key outcomes of the strategy are:

- Ensure all drivers have access to a high-quality electric vehicle chargepoint network
- Ensure that the chargepoint network is future proof and innovative
- Transition the council fleet as an example of proactive EV adoption
- Support the adoption of active travel, public transport and e-mobility

# 2. Context – Why is the switch to EVs happening?

## Why is the transition to EVs needed?

- The transport sector alone produces 26% of the UK's total greenhouse gas emissions.
    - Cars and taxis account for 52% of domestic transport emissions[1].
- Haringey, like many London boroughs, has dangerously high levels of air pollution.
    - In Haringey, transport emitted 138 kilotons of CO2 equivalent (ktC02e) in 2021.[2]

Yet, EVs can be instrumental in shaping a greener future for mobility. For instance:

- Battery electric vehicles (EVs) do not produce any tailpipe emissions. Replacing internal combustion engine (ICE) vehicles with EVs is essential to tackling climate change and reducing air pollution.
    - A typical EV emits around two-thirds less greenhouse gas emissions than an equivalent petrol car over their lifetime, even after accounting for emissions released during battery production and disposal.[3]
    - By 2050, it is estimated that an EV will produce over 80% fewer emissions than an equivalent petrol vehicle[4] due to improvements in renewable energy generation.
- Unlike ICE vehicles, EVs do not combust fuel, so they do not release nitrogen oxides. They also generate less particulate matter, though some is still emitted from tyres and brake wear.
    - Based on an EV uptake in line with the phase out of petrol and diesel vehicles by 2035, it is forecast that in Haringey, the uptake of EVs could reduce the CO2e emissions from 337,494 tonnes in 2023, to 242,707 in 2030 and 68,466 by 2040, an 20% decrease (Source: NEVIS, all vehicles). [5]

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[1] https://www.gov.uk/government/statistics/transport-and-environment-statistics-2023/transport-and-environment-statistics-2023#:~:text=UK%20Statistics%20Authority.-,Greenhouse%20gas%20emissions%20from%20transport%3A%202021,48%25%20in%20the%20same%20period.

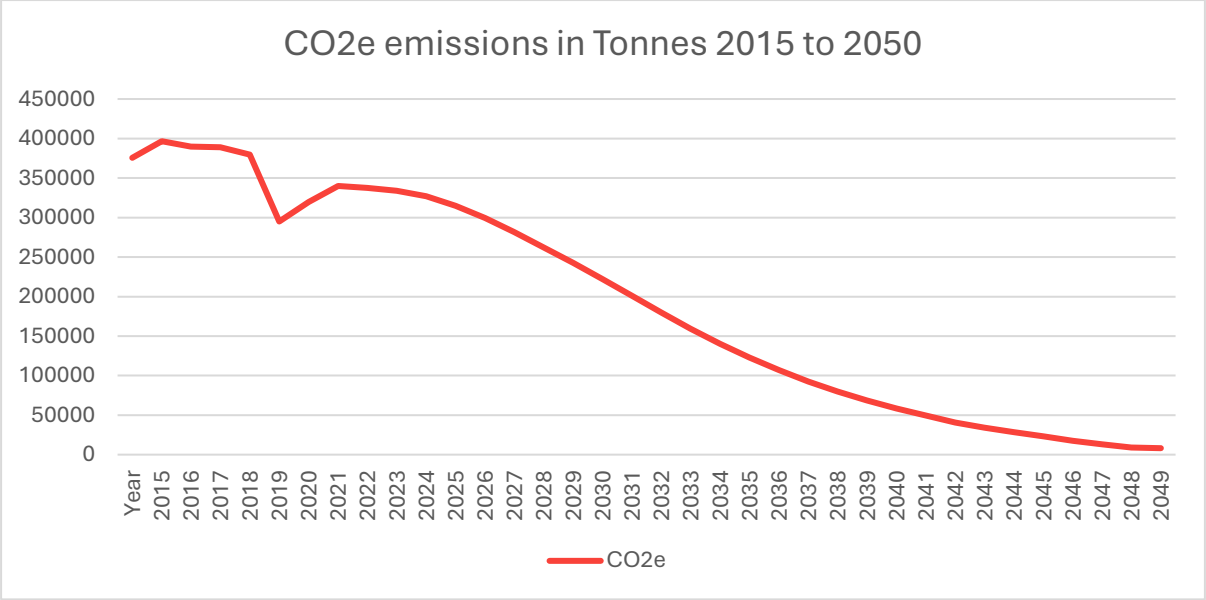
[2] https://maps.dft.gov.uk/ghg-emissions-by-local-authority/index.html

[3] https://www.gov.uk/government/publications/lifecycle-analysis-of-uk-road-vehicles

[4] https://www.gov.uk/government/publications/electric-vehicles-costs-charging-and-infrastructure/electric-vehicles-costs-charging-and-infrastructure#evlifecycle-emissions

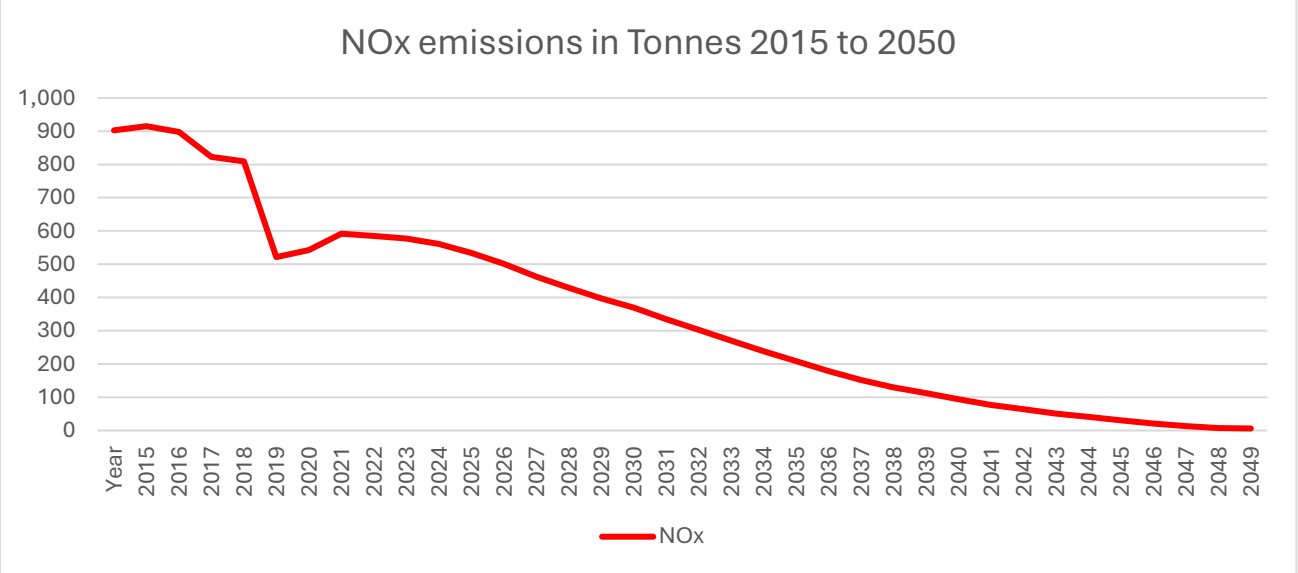
[5] This calculated includes the Scope 1 and 2 emissions which come from the burning of fuel in an internal combustion engine and the production of electricity used to charge EVs.

*Figure 2-1 CO2e emissions in tonnes 2015 to 2050 taking into account predicted EV uptake and phase out of petrol and diesel vehicles*




- Based on the phase out of petrol and diesel vehicles by 2035, it is forecast that in Haringey, the uptake of EVs could reduce the NOx emissions from 585 tonnes in 2023, to 397 in 2030 and 112 by 2040 (Source: NEVIS).

*Figure 2-2 NOx emissions in tonnes 2015 to 2050 taking into account predicted EV uptake and phase out of petrol and diesel vehicles*




- EVs will help reduce air pollution and benefit the health of residents and visitors, especially those with respiratory conditions.

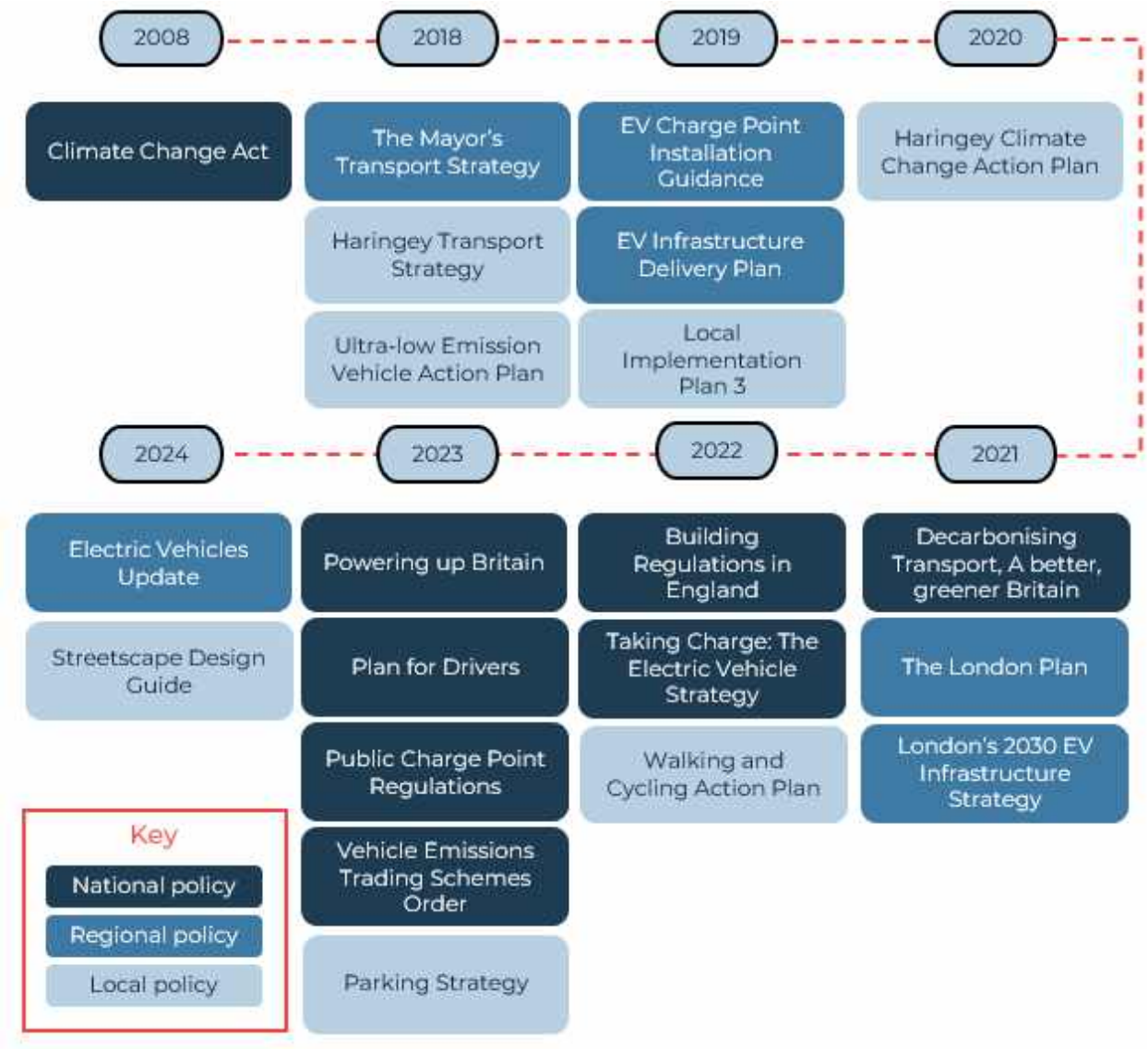
While EVs contribute to cleaner air and reduced reliance on fossil fuels, they are not without drawbacks. Their production generates emissions, and their use results in tyre and brake pollutants. Additionally, they do not address congestion or road safety concerns. However, EVs remain important, particularly for essential vehicle journeys, including those made by disabled residents and freight services transitioning to zero-emission fleets. Therefore, EVs must be considered within the multi-modal approach to transport in Haringey.

## Policy context

There are policies in place at a national, regional and local level which highlight the urgent need for action to decarbonise transport. There is an ambition at all levels of Government to accelerate EV uptake and scale up public EV charging infrastructure.

As well as recognising the need to expand public charging provision, these policies provide the wider enabling conditions for a successful expansion of public chargepoint networks. These conditions include financial support, increasing the availability of electric vehicles, and establishing regulatory standards.

*Figure 2-3: Summary timeline of policy documents included in this review.*

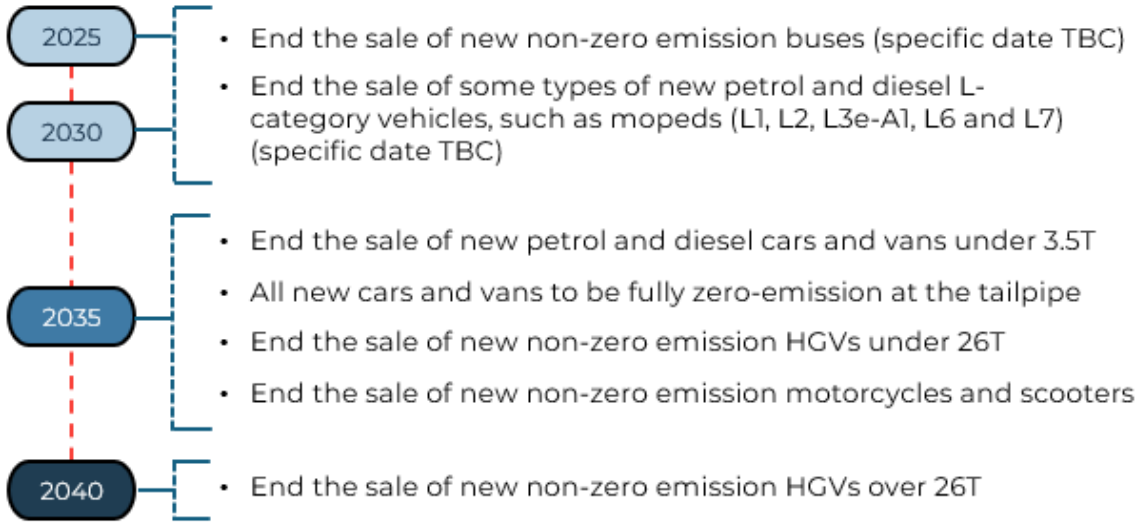


## National Policy

- The UK government has set legally binding targets to achieve net zero carbon emissions by 2050 under **The Climate Change Act (2008)**[6] .
- The Department for Transport's **'Decarbonising Transport: A better, Greener Britain' (2021)**[7] reinforces this goal, highlighting the transition to EVs as crucial and committing to a charging infrastructure network that meets demand.
- In the Department for Transport's **'Taking Charge: Electric Vehicle Infrastructure Strategy' (2022)**[8] * the government outlined a national action plan to install at least 300,000 public chargepoints by 2030 ensuring chargepoints on the strategic road network and local on-street charging, to remove barriers to EV adoption.
- Following the then Prime Minister's 2020 announcement to end new petrol and diesel cars and van sales by 2030, in 2023 the target was delayed to 2035.[9] To enforce the 2035 phase out date, the **Vehicle Emissions Trading Schemes Order 2023**[10], also known as the Zero Emission Vehicle Mandate, came into force in January 2024, requiring that 80% of new cars and 70% of new vans sold in Great Britain will be zero emission by 2030, increasing to 100% by 2035 (**Error! Reference source not found.**).[11]

6 https://www.legislation.gov.uk/ukpga/2008/27/contents
7 https://www.gov.uk/government/publications/transport-decarbonisation-plan
8 https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy
9 https://www.gov.uk/government/news/government-sets-out-path-to-zero-emission-vehicles-by-2035
10 https://www.legislation.gov.uk/uksi/2023/1394/contents/made
11 As well as selling ZEVs, to help meet the targets, manufacturers may trade allowances with other manufacturers or make use of a number of flexibilities, such as 'banking' overperformance in previous years. When manufacturers do not meet the targets, they must make payments to the Government.

*Figure 2-4: UK Government's planned phase out dates for non-zero emission vehicles*




## Selected wider policies

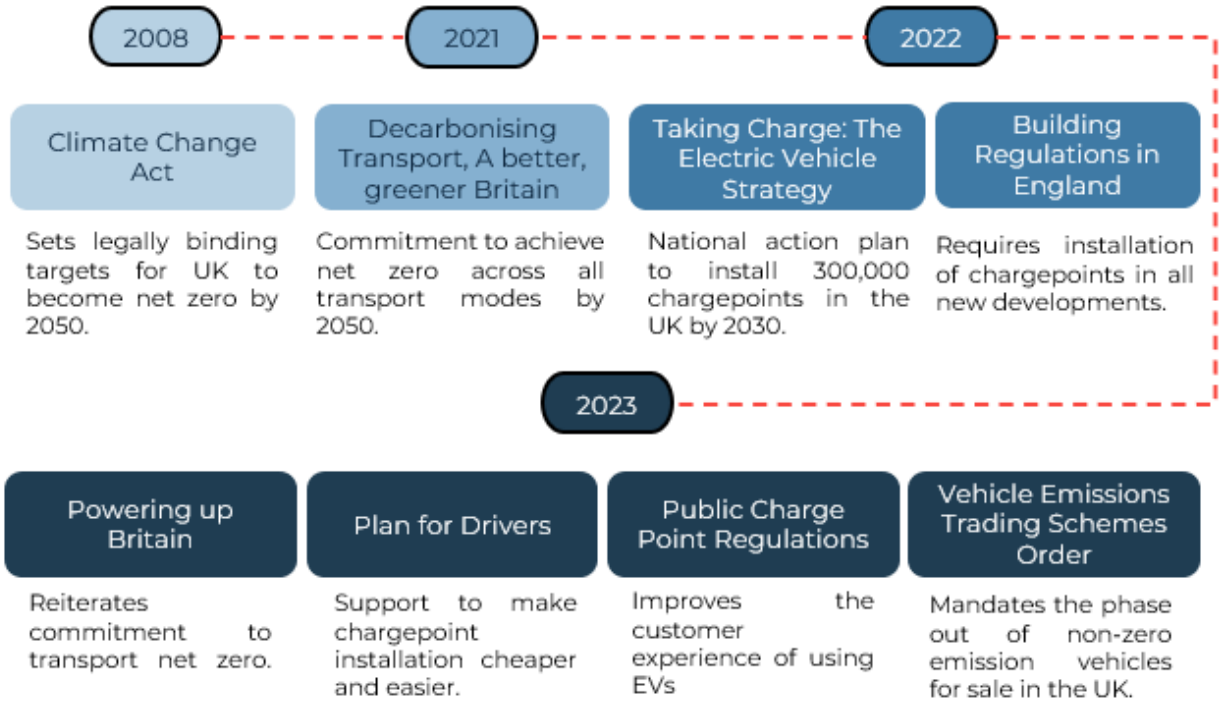
In addition to the key policies described above, there are many other UK policies in place that support the adoption of EVs and the infrastructure needed to charge them, including:

- Department of Levelling Up, Housing and Communities **Building Regulations in England (2022)**[12] require the installation of chargepoints in new residential and commercial developments throughout England.
- The UK's net zero transport commitment is reiterated in Department for Transport's **'Powering up Britain' (2023)**[13].
- Department for Transport's **Plan for Drivers (2023)**[14] introduces initiatives to reduce the cost and simplify the process of installing chargepoints for both individuals and organisations. It also includes guidelines for safer cross-pavement solutions for on-street charging.
- Department for Transport's **Public Charge Point Regulations (2023)**[15] aims to improve the customer experience for EV drivers by addressing contactless payments, reliability, customer service, and open data.

[12] https://assets.publishing.service.gov.uk/media/6218c5d38fa8f54911e22263/AD_S.pdf
[13] https://www.gov.uk/government/publications/powering-up-britain
[14] https://www.gov.uk/government/publications/plan-for-drivers
[15] https://www.legislation.gov.uk/ukdsi/2023/9780348249873

- Department for Transport's **Cross-pavement solutions for charging electric vehicles (2024)**[16] is guidance to help local authorities develop policies on cross-pavement EV chargers.

*Figure 2-5: Summary timeline of key UK policy on transport decarbonisation and electric vehicles*




## Regional Policy

London faces unique challenges relating to the introduction of EV chargepoints owing to its high proportion of households reliant on on-street parking, limited space for public charging infrastructure, and rapidly growing demand for electric vehicles. To address this, there are various strategy documents that are supporting the rollout of chargepoint infrastructure in London.

- The expansion of London's **Ultra-Low Emission Zone (ULEZ)**[17] encourages drivers across all London Boroughs to switch to less polluting vehicles, including EVs. Public chargepoints are required to facilitate the switch to EV for some households and businesses reliant on on-street parking or requiring 'top-up' during their journey or daily operations.

[16] https://www.gov.uk/government/publications/cross-pavement-solutions-for-charging-electric-vehicles/cross-pavement-solutions-for-charging-electric-vehicles
[17] https://tfl.gov.uk/modes/driving/ultra-low-emission-zone

- The Mayor's **Transport Strategy (2018)**[18] sets out ambitions for London to move away from trips by car, and for EVs to be used where car trips are necessary. The Transport Strategy commits to provide sufficient infrastructure to enable this.
- TfL's **London's Electric Vehicle Charge Point Installation Guidance (2019)** provides detailed information to support the installation of EV charge points in London. It focuses on the practical aspects of implementing EV infrastructure in the city's streetscape, prioritising rapid charge points for high-mileage drivers, like taxi operators.
- TfL's **London Electric Vehicle Infrastructure Delivery Plan (2019)**[19] provides a roadmap for providing the right type and the right amount of EV chargepoints in London up to 2025.
- The Mayor of London's **The London Plan (2021)**[20] recognises the demand for rapid electric vehicle charging infrastructure and notes that charging infrastructure should not negatively affect pedestrian amenity.
- TfL's **London's 2030 Electric Vehicle Infrastructure Strategy (2021)**[21] supports the aim for London to be net-zero carbon by 2030. Its vision is to accelerate the transition to zero-emission vehicles by setting out the requirements for the provision of infrastructure. The strategy forecasts there will be demand for up to 60,000 chargepoints in London by 2030. London's local authorities will need to identify suitable chargepoint locations, making use of public sector land and will need to secure funding to support the deployment and maintenance of EV infrastructure.
- In May 2024, TfL shared an **Electric Vehicles Update**[22] with its Safety, Sustainability and Human Resources Panel. At the time of the update, London had one third of the UK's total number of chargepoints; the network has grown 300% since 2019. The paper indicates that TfL is reviewing its current infrastructure model forecasts to ensure these reflect current user behaviour and EV uptake trajectories, but a timeframe is not given on when these will be made available to boroughs or published. The update notes that there is a requirement for provision of chargepoints to serve key user groups such as taxis and commercial vehicles, and

[18] https://tfl.gov.uk/corporate/about-tfl/the-mayors-transport-strategy
[19] https://lruc.content.tfl.gov.uk/london-electric-vehicle-charge-point-installation-guidance-december-2019.pdf
[20] https://www.london.gov.uk/programmes-strategies/planning/london-plan/new-london-plan/london-plan-2021#:~:text=The%20Mayor%20has%20prepared%20a,into%20the%20London%20Plan%202021.&text=The%20London%20Plan%20was%20subject,Inspectors%20from%20the%20Planning%20Inspectorate.
[21] https://tfl.gov.uk/modes/driving/electric-vehicles-and-rapid-charging#:~:text=London's%202030%20electric%20vehicle%20(EV)%20infrastructure%20strategy,-London's%20electric%20vehicle&text=The%20strategy%20%2D%20published%20in%20December,private%20sector%20to%20achieve%20this.
[22] Committee - Panels- Report Template (tfl.gov.uk)

particularly London's bus fleet. The update emphasises the importance of rapid and ultra-rapid chargepoints to meet user needs. To complement the installations of mostly lower-powered chargepoints undertaken by boroughs, TfL is also using its land for rapid chargepoint installations.

## Local Policy

This new Strategy comes at a time when Haringey is seeking to update many of its relevant strategies and policies.

- As part of our broader transport aims, we are working on an emerging **Safe and Sustainable Transport Strategy**, to affirm our overarching transport aims and objectives.
- This is underpinned by our emerging **Kerbside Strategy**, which aims to address the significant challenges posed by transport emissions, air and noise pollution, and road safety, while promoting sustainable and active travel.
- Furthermore, Haringey is working to produce its new **Local Plan**, which will provide updated and consolidated guidance around our planning policies and development strategies.
- In addition, Haringey is consulting on an update to its **Air Quality Action Plan 2025-2030**, which will outline our vision and commitment to improving air quality in Haringey, through setting out measures which detail the work Haringey and partners will do to improve air quality over the next five years.

Currently, we have a number of strategies in place which will influence the provision of EV charging infrastructure in the borough.

- In the existing **Haringey Local Plan: Strategic Policies (2013-2026) (2013, updated 2017),**[23] EVs are noted as a route to making private transport more sustainable, and a commitment made to increase the number of EV charging points across the borough.
- **Haringey's Transport Strategy (2018)**[24] set out the ambitions for the borough including a vision for improved air quality and a reduction in carbon emissions. Whilst the strategy aligns with wider London ambitions for more trips to be made by active travel, it also recognises the role of EVs in supporting sustainable transport goals. Supporting the use of electric/hybrid vehicles is a priority for us.
- The Borough's **Ultra-Low Emission Vehicle Action Plan 2019 – 2029 (2018)**[25] set out the plan to support the priorities laid out in the Transport Strategy. Part of this

[23] https://new.haringey.gov.uk/sites/default/files/2024-01/final_haringey_local_plan_2017_online.pdf
[24] https://new.haringey.gov.uk/sites/default/files/2024-02/haringey_transport_strategy_2018.pdf
[25] https://www.haringey.gov.uk/sites/haringeygovuk/files/ultra_low_electric_vehicle_action_plan_2019-2029.pdf

plan is to increase public awareness of the benefits and requirements for electric vehicles, to develop a charging network that meets demand, and to be a leader in innovation for carbon-friendly and cost-efficient charging technology. (This EV strategy is intended to update and replace the ULEV Action Plan).The Action Plan details guidance on what should be considered when locating EV chargepoints.

*Table 2-1: Guidance for considerations when siting EV chargepoints in Haringey (Ultra-Low Emission Vehicle Action Plan 2019-2029 (2018) Table 2-2: Guidance for considerations when siting EV chargepoints in Haringey (Ultra-Low Emission Vehicle Action Plan 2019-2029 (2018)*

| |
|---|
| Ensure locations do not impede on the pavement and pedestrian movement, maintaining a minimum footway width of 1.8 metres to accommodate both wheelchairs and pushchairs. |
| Consider accommodating these features in the carriageway, such as build-outs between parking bays. |
| Evaluate the appropriateness of reducing street clutter by integrating these features with other street furniture, like lamp columns. |
| Assess whether the location is on a primary road planned to be part of the cycle network (as per the Walking Cycling Action Plan) and consider the impact on those proposals. |
| Take into account other future plans for the road. |

The **Local Implementation Plan 3 2019-2022 (2019)**[26] recognised that provision of EV charging infrastructure is a challenge for Haringey, and Haringey is seeing a growth in EV users. More journeys by EV will help achieve the goals in the transport strategy.

Our **Air Quality Action Plan 2019-2024 (2019)**[27] outlined the actions we must take to improve air quality. Cleaner transport is one of seven key action topics, noting that there must be action to incentivise adoption of electric vehicles. Number of chargepoints is a performance measure.

In 2019, we declared a **climate emergency** and is aiming to be net zero carbon by 2041.[28]

In 2020, we published the route map for a zero carbon Haringey in the **Climate Change Action Plan (2021).**[29] This includes the vision that by 2041, roads will be repurposed with dedicated charging areas for EVs. It sets out that all planning applications should include EV chargepoints where applicable, and that there should be up to 2,000 chargepoints in Haringey by 2025, based on levels of demand. Continual monitoring of EV demand across the borough is a key action related to this.

[26] https://new.haringey.gov.uk/sites/default/files/2024-02/haringey_lip3_final.pdf
[27] https://www.haringey.gov.uk/sites/default/files/2023-05/haringey_final_aqap_2019-24_signed.pdf
[28] https://new.haringey.gov.uk/environment/climate
[29] https://www.haringey.gov.uk/sites/haringeygovuk/files/final_haringey_climate_change_action_plan_-_march_2021.pdf

Encouraging active travel is a theme that runs throughout our transport strategies. The **Walking and Cycling Action Plan (2022)**[30] is the plan for Haringey to become one of the best walking and cycling boroughs and to reduce the use of motor vehicles. The plan states that where EV chargepoints are introduced, these will not impede pedestrians and cyclists. Where they are installed on the public highway they will be located in build-outs in parking bays. Planting, cycling parking and charging capability for e-bikes will be considered.

We face a challenge of huge demand on parking, which is addressed in the **Parking Strategy (2023)**[31] which aims to enhance the safety and efficiency of the road network in Haringey. Encouraging the use of EVs is one of the strategy's objectives. The strategy supports the update of parking permit policy to include measures to account for electric vehicles.

Provision of EV charging infrastructure has an impact on streetscapes. This is recognised in our **Streetscape Design Guide (2024)**[32] which recognises in its audit guidance that there should be enough space reserved for electric vehicle charging when assessing parking and loading provision, and they should be well located. There is also a core focus on accessibility throughout the streetscape guidance, and consideration should be given to the streetscape being easy to use and easy to access. Designing for walkability is another objective of the streetscape guidance. It is noted that chargepoints should not impede pedestrian movements. Siting chargepoints on a lamp post is suggested as a means to de-clutter pedestrian spaces.

[30] https://new.haringey.gov.uk/sites/default/files/2023-11/adopted_walking_and_cycling_action_plan.pdf
[31] https://new.haringey.gov.uk/sites/default/files/2024-08/parking_strategy_20240705_0.pdf
[32] https://new.haringey.gov.uk/sites/default/files/2024-07/haringey_streetscape_design_guide_hr_july_2024.pdf

# 3. Types of EV, chargepoint technologies and market trends

The EV sector has been a fast growing and evolving space in recent years, with a range of vehicle propulsion and charging technologies competing for market share.

## Overview of electric vehicles

There are several types of vehicles which use electrical power in some form, but the significance of this electrical contribution ranges from being the sole source of power to relatively low.

As this strategy focuses on how we can intervene to encourage the uptake of electric vehicles that reduce emissions and improve air quality in the borough, this strategy will focus on types of EV which:

a) require plugging-in to an external source of electricity to charge, and

b) meet the definition of 'zero emission vehicle', as set out in legislation related to the ZEV Mandate (see Section 2). The key criteria are Worldwide Harmonised Light Vehicle Test Procedure (WLTP) CO2 emissions of 0gCO2/km and a minimum electric range of 100 miles.[33] Battery electric vehicles deliver the greatest reductions in CO2 emissions and air pollution.

While classed as zero emission vehicles, hydrogen fuel cell vehicles are not considered in this strategy due to their different use cases and refuelling requirements.

[33] https://assets.publishing.service.gov.uk/media/65e069a9b8da63b345c8627f/vets-how-to-comply.pdf

*Table 3-1 - Types of EVs*

| Type of Vehicle | Description | Classed as a Zero Emission Vehicle? | Can be plugged in? | Considered in strategy? |
|---|---|---|---|---|
| Mild Hybrids (MHEVs) | Vehicles that use a combustion engine always to power the vehicle, assisted by a small electric motor and battery in some driving conditions. These cannot run on electric power alone. | ✗ | ✗ | ✗ |
| Hybrid Electric (HEVs) | Also known as self-charging hybrids, vehicles powered by both a combustion engine and electric motor and battery, which can be used together or both individually. The battery gets charged by regeneration only. | ✗ | ✗ | ✗ |
| Plug-in Hybrids (PHEVs) | Vehicles powered by both a combustion engine and electric motor and battery, which can be used together or both individually. PHEVs have larger batteries than HEVs which can be recharged by plugging in to external power. | ✗ | ✓ | ✓ |
| Range extender Electric (RE-EVs) | Vehicles that use an electric motor and battery only to provide power, with an additional small combustion engine to act as a generator to provide extra battery charge. RE-EVs need plugging in to fully recharge.<br><br>*Note: As BEV ranges have improved, RE-EVs have become very uncommon, with most manufacturers ceasing production of their RE-EV models[34]. These will therefore not be included as a focus of the strategy. One exception to this is the current LEVC TX (the London hackney cab), to suit the operational requirements of this application.* | ✗ | ✓ | ✗ |
| Battery Electric (BEVs) | Vehicles that run on an electric motor only, using energy from a battery that must be charged by plugging in to an external power source. | ✓ | ✓ | ✓ |
| Fuel Cell Electric (FCEVs) / Hydrogen vehicles | Vehicles that use a hydrogen fuel cell to generate electricity for an electric motor which provides drive. | ✓ | ✗ | ✗ |

[34] https://www.drivingelectric.com/your-questions-answered/322/what-range-extender

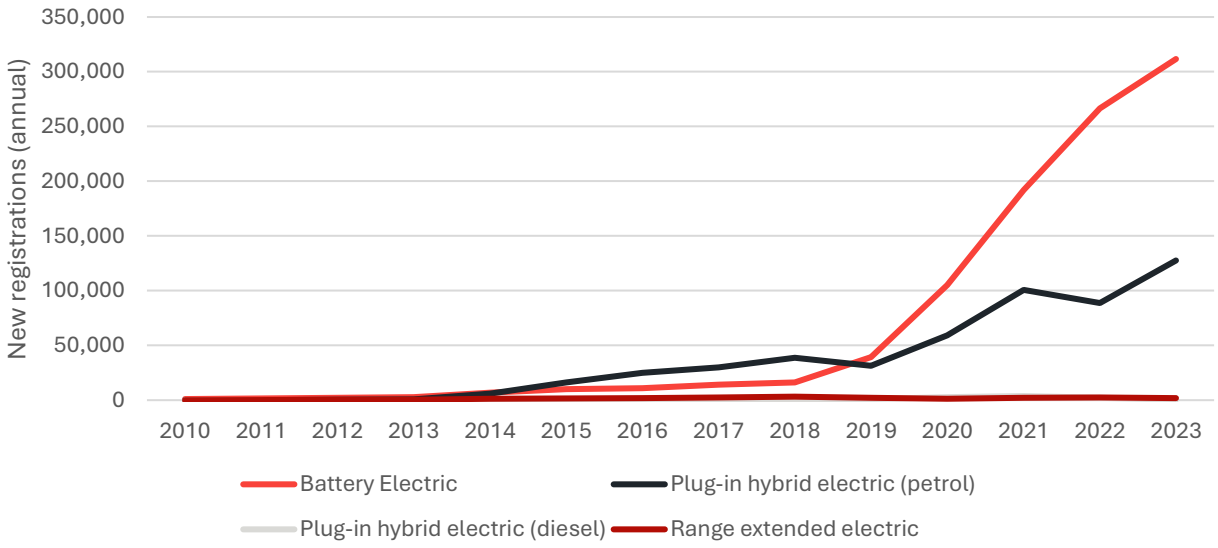
## Emerging trends and future developments in the electric vehicle market

As specific trends and technological developments emerge within the electric vehicle market, it is important to consider how they can inform this strategy.

*Substantial growth in new EV sales in recent years, particularly of Battery Electric Vehicles (BEVs)*

New electric vehicles sales have expanded rapidly in the UK, particularly in the last 5 years. Battery Electric Vehicles (BEVs) are now by far the most popular type of electric vehicle in the UK, with over 310,000 new registrations in 2023, having overtaken PHEVs in 2019; in 2023, the UK BEV market was 19 times larger than it was just 5 years prior.

*Figure 3-1 - New EV registrations over time in the UK (Source: DfT, VEH0181)*




*Financial incentives for EVs in the UK have changed, leading to significant changes in how consumers purchase/lease EVs*

There are a series of government incentives to help with the cost of the transition to electric vehicles (the full list of available grants is on the UK government website[35]), including grants for the upfront costs of chargepoints, both at home and at workplaces for small-medium sized businesses[35].

The car leasing market is currently undergoing rapid change; economic pressures have meant the wider personal contract hire (PCH) is down 11.4% year-on-year in Q1 2024, but business contract hire (BCH, also known as company cars) has grown 7.5% and salary sacrifice schemes are expanding by 63% year-on-year in the same time period.[36]

[35] https://find-government-grants.service.gov.uk/grants?searchTerm=electric+vehicle&from-day=&from-month=&from-year=&to-day=&to-month=&to-year=

[36] https://www.bvrla.co.uk/news-insight/leasing-outlook.html

In Q1 2024, BEVs made up a substantially higher share of BCH orders than in the wider new car market, with 41% of BCH orders being for BEVs, compared to just 8.3% for all new car sales[36]. The reason for this is the strong incentive to opt for low emission vehicles in the form of reduced benefit-in-kind (BiK) tax rate. An employee with a BEV company car will pay a 2% BiK tax rate for 2024-25, compared to between 15 and 37% for an ICE vehicle.[37]

*There is more EV model choice than ever, with the market trending towards large vehicles*

In 2024, the number of different BEV models in the UK reached 102, up from just 16 a decade ago in 2014.[38] This number accounts for nearly 30% of the total number of new vehicle models available in the UK today.

However, worldwide trends indicate that the electric vehicles are getting larger on average, which follows a similar trend to that of ICE vehicles. In Europe, over 60% of 2023 new BEV sales were of SUVs or large cars, up from just 20% in 2018[Error! Bookmark not defined.]. Due to the greater weight of larger vehicles, this shift has meant larger batteries (increasing demand for minerals used on battery production), longer charge times, greater energy usage and more demand on the grid. Comparing electric SUVs to medium-sized BEVs, SUVs with a similar range had 25% larger batteries (for context, range of a typical SUV is around 235 miles/380 km).[39]

*The used EV market is growing quickly, and prices are decreasing*

In 2023, the used car market in the UK accounted for around 4 in every 5 vehicle purchases in the UK.[40] As the market for new EVs continues to grow and mature, the used EV market is now beginning to emerge as early adopters replace or upgrade their current EV, and leases starting 3-5 years ago are expiring.[41]

In Q1 2024, the used EV market in the UK was experiencing year-on-year growth of 71%, although this still only accounted for around 2% of all used car sales.[42] This large grow in sales may be partly attributed to a greater demand for used EVs, but other factors such as an influx in vehicle supply due to expiring EV leases may also be playing a role. This influx in supply is, however, causing used EV prices to fall rapidly, with the average price of a three-year-old EV dropping by 43.8% in just the last 18 months.[43]

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[37] https://pod-point.com/guides/business/company-electric-car-tax?srsltid=AfmBOoqYJ-irz5q6xptxKAgrDb5BvNqzdP4ergD-NcF7EuarPYKtxek3
[38] https://www.smmt.co.uk/2024/05/brits-enjoy-best-ever-ev-choice-with-more-than-a-hundred-models-now-available/
[39] https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars
[40] https://heycar.com/uk/news/car-sales-statistics
[41] https://www.bvrla.co.uk/news-insight/leasing-outlook.html
[42] https://www.edie.net/used-electric-car-sales-in-uk-reach-record-highs/
[43] https://www.motorfinanceonline.com/news/used-ev-prices-drop-43-demand-increases-indicata/

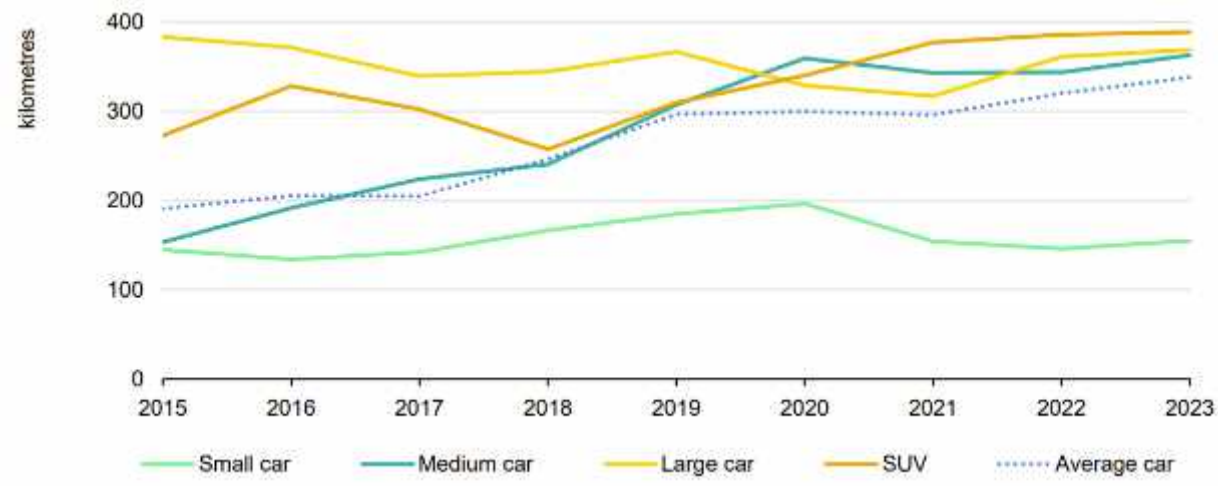
*Modest growth in the range of EVs in recent years, but new battery technologies are currently under development*

One of the key barriers to switching to an EV has been 'range anxiety', the fear that the distance an EV can travel without the need for a lengthy re-charge is not long enough for consumer needs.

In recent years, increasing battery sizes and improvements in battery technology and efficiency has meant that the sales-weighted average range of BEVs grew by nearly 75% between 2015 and 2023[Error! Bookmark not defined.], although this growth varies between vehicle body types.

Globally, the range for smaller BEVs has remained at a relatively constant 150km (93 miles), indicating the existing range is substantial enough to meet the urban usage typically seen for these smaller vehicles. Meanwhile, the typical range for medium-sized vehicles and SUVs has increased to around 380km (235 miles), up from 150km (93 miles) and 270km (167 miles) respectively in 2015[Error! Bookmark not defined.].

*Figure 3-2 - Range of EVs over time*[Error! Bookmark not defined.]




Compared to 2015-20, relative improvements in range have been slower in recent years due to a range of factors, including: [44]

- fluctuation in battery prices
- a more competitive EV market leading to vehicle manufacturers looking to reduce additional costs
- technical constraints (e.g. energy density)
- lack of consumer willingness to pay for marginal increases in range beyond which most driving needs are met.

The vast majority of current EV batteries use lithium-ion battery technologies. There are two types of Lithium-ion battery technologies; Lithium-NMC batteries are currently the most common batter technology used in EVs, but present environmental challenges related to their

[44] https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars

manufacturing[45], whereas Lithium-LFP batteries are cheaper, safer and more sustainable, but offer a shorter range[46].

However, there are alternative battery technologies that are currently under development which may have a future application in EVs;

- sodium-ion batteries, which are cheaper and more sustainable than Lithium-ion, but their energy density limits them to use in e-bikes and small cars[47]; and
- solid-state batteries, which promise a higher energy density and therefore improved range, but are in an early stage of development and current have some manufacturing hurdles. If these are resolved, solid-state batteries may become very significant in the medium-term future[Error! Bookmark not defined.]

[45] https://iea.blob.core.windows.net/assets/cb39c1bf-d2b3-446d-8c35-aae6b1f3a4a0/BatteriesandSecureEnergyTransitions.pdf
[46] https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-vehicle-batteries
[47] https://www.isi.fraunhofer.de/en/blog/themen/batterie-update/alternative-batterie-technologien-lithium-ionen-potenziale-herausforderungen.html

## Overview of chargepoint types and speeds

Chargepoints are categorised by their charging speed: the rate at which they can deliver electricity, from Domestic 3-pin sockets to ultra-rapid.

*Table 3-2 - Overview of chargepoint types*

| Chargepoint Type | | Max Power Output Kilowatts | Current/Supply Type | Charging duration (for a typical 40kWh battery) |
|---|---|---|---|---|
| Domestic 3-pin socket |  | 2.3-3 kW | AC – Single Phase | Approx. 17 hours |
| Slow |  | 3.7-5 kW | AC – Single Phase | Approx. 11 hours |
| Fast |  | 7.4 kW | AC – Single Phase | Approx. 6 hours |
| | | 11-22 kW | AC – Three Phase | Approx. 2-4 hours |
| Rapid |  | 43 kW | AC – Three Phase | Approx. 55 mins |
| | | 25-50 kW | DC | Approx. 40 mins |
| Ultra-rapid |  | 50kW-350 kW | DC | Approx. 7-16 mins |

The differing speeds of chargepoint types makes them suited to specific charging applications. In locations where the vehicle is expected to remain charging overnight, it isn't necessary for faster charging, whereas in applications such as motorway service stations, where vehicles are stopped briefly before continuing on a long journey, there is a demand for faster charging speeds.

*Table 3-3 - Overview of charging applications and relevant charging speeds*

| Application | Description | Typical chargepoint speeds found for application | | | | |
|---|---|---|---|---|---|---|
| | | 3-pin | Slow | Fast | Rapid | Ultra-rapid |
| Off-street home charging | Private home-based charging includes driveways, garages and off-street residents' parking. This is typically the cheapest and most convenient option.<br>A recent initiative is the development of platforms such as Zap Home peer to peer network allowing the sharing of privately owned chargepoints | ✓ | ✓ | ✓ | | |
| Residential on-street charging | Chargepoints installed to serve vehicles parked on-street, either in standalone units or integrated into existing street furniture (e.g. lampposts), or in communal parking areas (e.g. car parks). Vehicles are typically recharged slowly, often overnight | | ✓ | ✓ | | |
| Residential off-street charging hubs | | | ✓ | ✓ | ✓ | |
| Workplace charging | Workplace charging where available is a convenient option for employees, and well suited to the long dwell times characteristic of workplace parking, as well as the availability of private parking. Increasingly fleet vehicles are switching to EVs, which are often charged at the workplace | | | ✓ | ✓ | |
| Destination charging | Destination charging sites are publicly accessible sites where the driver has chosen to go to a site for other purposes, i.e. somewhere they would already have parked, such as a supermarket, railway stations, retail, leisure, hotels, workplaces etc. | | | | ✓ | |
| On-route charging | On-route charging describes locations such as public chargepoints at motorway service stations and petrol stations. Typically used for longer journeys, or where a quick turnaround charge is required | | | | | ✓ |

## Trends and future developments in EV charging

While the electric vehicle market continues to advance as a whole, significant developments in charging technologies should be given due consideration as part of this strategy, with potential impacts in both the short and long-term.

## Short-term developments

### *Increasing installation of 'cross-pavement solutions'*

While not a charging technology as such, there has been recent increase in the number of authorities permitting and facilitating the installation of 'cross pavement' solutions. Typically, these are channels for chargepoint cables installed into the footway to connect a private, typically wall-mounted home chargepoint unit with a vehicle parked on-street. Some 'overhead arm' solutions[48] are also at a much earlier stage of development. This trend follows the change in eligible criteria of various government grant schemes[49] to include cross-pavement solutions, the release of guidance by DfT for local authorities[50]

Cross-pavement solutions enable drivers access to cheaper domestic electricity tariffs compared to typical public charging tariffs and can be much cheaper to install compared to free-standing bollard chargepoints.[51] However, in many streets, EV drivers will not always park directly outside their home and cannot expect a reserved parking space. Local authorities also need to consider issues such as the request process, liabilities, supplier/product specifications, maintenance and decommissioning.

Haringey is committed to undertaking a trial of these solutions. This will allow us to monitor how they operate, review their impacts and better understand how they could fit into our broader strategy to make charging more accessible to resident

### *Smart charging is improving charging efficiency and reducing costs*

Smart charging is a broad term used to describe various techniques to manage charging of electric vehicles to ensure optimal charging efficiency, reduce costs to drivers, balance grid demand and improve long-term battery health through temperature/ load management.

Some forms of smart charging, such as time-of-use (controlling the time of day an EV is being charged) and unidirectional controlled charging (V1G) charging (changing the rate of charge delivery) are already commonplace in the across the EV charging market, especially for private home and workplace chargepoints.

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[48] https://chargearm.com/en/
[49] https://find-government-grants.service.gov.uk/grants/electric-vehicle-chargepoint-grant-for-households-with-on-street-parking-1
[50] https://www.gov.uk/government/publications/cross-pavement-solutions-for-charging-electric-vehicles/cross-pavement-solutions-for-charging-electric-vehicles
[51] For example, see https://energysavingtrust.org.uk/case-study/oxgul-e/

More sophisticated forms of charging include supplier-managed charging (SMC), which allows the supplier to change charge patterns to balance load across the grid using real-time demand and supply information, which is at an earlier stage of development and rollout. [52]

Various regulations already require smart charging functionality for home and workplace charging, and smart charging capabilities should also be integrated into Haringey's public charging network, especially for slower chargepoints where there is more flexibility to shift the timing and rate of charge. This will help future-proof the network and enable drivers to access the most affordable and innovative tariffs (cost of electricity) in the future.

## Longer-term developments

### *Vehicle-to-grid (V2G) technology can help manage demand on the energy grid*

Vehicle-to-grid (V2G) is a form of smart charging which enables the bi-directional transfer of charge between the EV battery and the grid, in effect enabling EVs to be used as a store of energy. The vehicles are charged at off-peak times and the electricity exported back to the grid to be used during peak times. The system is a way to balance generation and demand on the grid, maximise the use of local renewable energy generation, and may generate a modest revenue stream[53].

In addition, similar technologies which facilitate the bi-directional transfer of charge, such as vehicle to home (V2H) or vehicle to building (V2B) are currently in development.

V2G, and similar technologies, are currently not widely used in the UK. This is largely because V2G is only possible through the CHAdeMO charging protocol, severely limiting the number of compatible vehicles in the UK, although the technology is being developed for the more common CCS charging protocol. In Japan, where CHAdeMO charging is currently the standard, it is mandated that all EVs must provide V2G capabilities[54].

### *Wireless (inductive) charging has the potential to revolutionise how we charge, but only in limited use-cases*

Wireless or inductive charging technology allows the recharging of EV batteries without a physical connection between the vehicle and chargepoint unit. Power is transferred by electromagnetic induction from a chargepoint fitted into the road surface to a receiver fitted under the car.

A major barrier to widespread deployment is the standardisation of the hardware and vehicles, to allow interoperability between manufacturers. Current technical standards only allow charging at rates up to 11kW.[55]

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[52] https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-potential-impact-of-electric-vehicles-on-global-energy-systems
[53] https://www.vehicle-2-grid.eu/en/
[54] https://octopusev.com/ev-hub/what-is-v2g
[55] https://electroverse.octopus.energy/community/ev-blogs-and-guides/what-is-wireless-ev-charging

Static wireless charging is already being used in some industrial and fleet applications, and future applications may include taxi ranks[56] and charging for drivers with disabilities. It may also suit some on-street residential settings, car clubs and autonomous vehicles.

Dynamic wireless charging (wireless charging while the vehicle is in motion) is at an earlier stage of development than static charging. Applications may include charging for heavy goods vehicles[57] and buses. Installation of such technology has been found in earlier studies to be prohibitively expensive due to substantial capital costs to install the infrastructure[58]. The network would likely require specially designed vehicles to function which limits its scalability. Conductive charging, using overhead cables and pantographs, would likely be less expensive and require less civil work to implement[59].

The implementation of inductive charging technology in Haringey is likely to be limited in use case initially, with scope for applications such as static taxi rank charging or council vehicle fleet depot charging being the first instances of the technology in the borough.

*Battery swapping can eliminate the need to wait to re-charge, but is not expected to be commonplace in Haringey*

Battery swapping is where drivers or operatives exchange their depleted batteries for a fully charged replacement at a swapping station. The depleted batteries are then charged ready to be taken by someone else. This eliminates the need for drivers to wait to recharge a battery they are using to complete a journey.

There are, however, issues with lack of standardisation of battery packs[60] and the expense of establishing a dense network of battery swapping stations for larger vehicles. Battery swapping is more commonplace in e-bikes and e-scooters[61] where battery packs are small and can be easily swapped and transported (which also helps reduce the need for on-street charging infrastructure). Therefore, it is not expected that battery swapping will have a substantial role on the way residents use electric vehicles.

*Battery buffered chargepoints may reduce costs and challenges associated with DNO connections and grid infrastructure*

Battery buffered chargepoints are chargepoint locations which have a battery storage system on site that the chargepoints draw from when in use and get recharged from the grid.[62] This allows for the use of DC chargepoints (typically higher power and faster charging) with AC

[56] https://www.fleetnews.co.uk/features/wireless-charging-electric-taxi-trial-provides-key-learnings-for-fleets
[57] https://www.greenlancer.com/post/dynamic-wireless-charging-electric-vehicles
[58] https://www.sciencedirect.com/science/article/pii/S2772424723000173#ack0010
[59] https://www.blackridgeresearch.com/blog/will-inductive-charging-be-the-future-of-ev-charging
[60] https://www.technologyreview.com/2023/05/17/1073265/how-5-minute-battery-swaps-could-get-more-evs-on-the-road/
[61] https://www.forbes.com/sites/billroberson/2024/01/28/it-works-for-scooters-can-battery-swapping-work-for-electric-cars/
[62] https://connected-energy.co.uk/battery-storage-ev-charging/

grid infrastructure, reducing DNO costs and the evening out grid demand.[63] It also allows the use of smart charging techniques such as drawing electricity from the grid at off-peak (cheaper) times.

## Considerations for future proofing

As well as considering emerging technologies, the following principles will be considered for all new chargepoint infrastructure installed in the borough. This will help to 'future proof' the network, reducing risk and potential costs for the authority in the future.

*Table 3-4 - Principles to 'future proof'*

| Principles | Description |
|---|---|
| Inter-operability | The compatibility of public chargepoints with multiple software systems, back-office services, energy suppliers or CPOs.<br>To support this, Haringey should ensure new infrastructure is compliant with the Open Charge Point Protocol (OCPP). This standard allows chargepoint units to communicate with a central management system (e.g. to monitor utilisation and manage payments).<br>If a contract is terminated or a supplier ceases trading, OCPP allows a new service provider to migrate and integrate an existing chargepoint unit into their chargepoint network, without replacing the unit, reducing risk for the authority.<br>Using OCPP also provides greater freedom for local authorities to procure services from different suppliers, while also aiding roaming and smart charging across a regional network. |
| Inter-changeability | The ability to change the make/model of a chargepoint and retain functionality. This allows for the exchange of chargepoint units (potentially by different suppliers) with minimal cost and disruption when an upgrade is required, when a contract ends, or when more advanced technology becomes available.<br>Haringey should seek to achieve this by specifying the use of retention sockets which allow the exchange of units. |
| Passive infra-structure provision and grid connections | The installation of the necessary underground infrastructure to support future installation of EV infrastructure without the need for further disruptive groundworks.<br>Passive provision is inconsistently defined across national and local policies. It can refer to cable routes or ducting to easily install a chargepoint unit without further groundworks, or the additional grid capacity needed.<br>Requiring suppliers to install cable routes or ducting for neighbouring spaces is a low-regret, low-cost option. It allows for the gradual expansion of the chargepoint network as demand in the area grows enabling the infrastructure to flex based on EV uptake.<br>It is also possible to request a larger grid connection capacity than initially required and invest in any necessary grid upgrades likely to be |

[63] https://apricum-group.com/gearing-up-for-power-on-wheels-battery-buffered-charging-stations/

| | |
|---|---|
| | needed at a site at the outset. However, this can add significant cost and the additional capacity may not be needed. |

## Investment in the energy grid

It is expected that as consumers switch to electric vehicles the demand on the electricity grid will increase by around 10%.[64] Current energy demand is actually around 16% lower than it was at its peak in 2002, due to improvements in energy efficiency in the last few decades. By 2050, the transition to EVs could meet that road transport accounts for 15 to 20% of total electricity demand in the UK.

Nevertheless, aspects of the grid will require substantial investment to upgrade in preparation for the transition to electric vehicles. National Grid has already begun to prepare for the transition. The following factors are expected to contribute towards meeting the demand of electric vehicles:

- Connecting more renewable energy sources to the grid – National Grid expects growth in off-shore wind energy to reach 50GW output by 2030, and this combined with other renewables, new nuclear and connection to other countries will meet the future demand for electrifying transport while also further decarbonising the national electricity supply.[64]
- Continuing energy efficiency improvements – improvements to energy efficiency means that electricity demand is 16% lower than in 2002, despite a growing population[64]. Further improvements in day-to-day products and appliances such as LED light bulbs are expected to continue this trend further.
- Reduction in electricity usage in fuel refinement – The energy needed to refine oil for petrol and diesel is estimated to be 4.5kWh per gallon of petrol, the reduction in this refinement will free up capacity in the existing network.[64]
- Off-peak and vehicle-to-grid (V2G) charging – smart charging technologies will allow EVs to charge when there is less demand on the grid, or when there is more renewable electricity available, 'smoothing out' peak demands. Where vehicles are compatible, V2G technology will allow EVs to send energy back to the grid from the battery storage, if necessary, further providing tools to balance demand loads.[64]
- Upgrades to existing network infrastructure – upgrades to cables and substations on the local power network must be undertaken by DNOs to facilitate new chargepoint connections. This must be completed at a local level by assessing the impact of specific chargepoint sites on the local network[65]. Early engagement with DNOs by local authorities and CPOs will reduce cost and delays to the timeline of installation of chargepoints. This is where local authorities may have the greatest influence on ensuring the grid is prepared for the transition to electric vehicles.

[64] https://www.nationalgrid.com/stories/journey-to-net-zero-stories/can-grid-cope-extra-demand-electric-cars
[65] https://www.nationalgrid.co.uk/downloads/29134

## Summary

Many of the global EV market identified in this section are beyond the control of Haringey. However, the council can continue to monitor the supply of EVs and their affordability, including through the used market locally, to help tailor any communications and marketing activities.

In terms of charging infrastructure, it is important to select the most appropriate type (speed and design) of chargepoint for each location, taking into account factors such as dwell time, space available and grid capacity. For example, rapid and ultra-rapid chargepoints are typically better suited to car parks, rather than on-street locations.

In the longer term, as public charging patterns become more established as EV uptake increases, it may be necessary to re-evaluate the mix of different chargepoint types within an area. Despite expected improvements to vehicle ranges and compatibility with higher-powered charging, slower residential charging is still expected to have a key role within the charging network, due to its relative affordability and convenience for drivers.

Given these trends and the charging technologies currently available, we have identified three areas to focus on to help future proof the charging network:

- Working closely with the DNO to improve grid capacity for new chargepoints where needed
- Ensuring new chargepoint infrastructure where feasible:
    - is capable of smart charging to regulate electricity demand and enable drivers to access to innovative tariffs in the future
    - is interoperable, through specifying compliance with Open Charge Point Protocol (OCPP) to enable the transfer of assets between operators if a contract is terminated or a supplier ceases trading.
    - is interchangeable, through specifying retention sockets which allow chargepoint units to be easily replaced without future groundworks.
    - includes passive provision (e.g. cable trays as a minimum) to ensure the network can be expanded to meet future demand without the need to break ground to install more ducting and cabling.

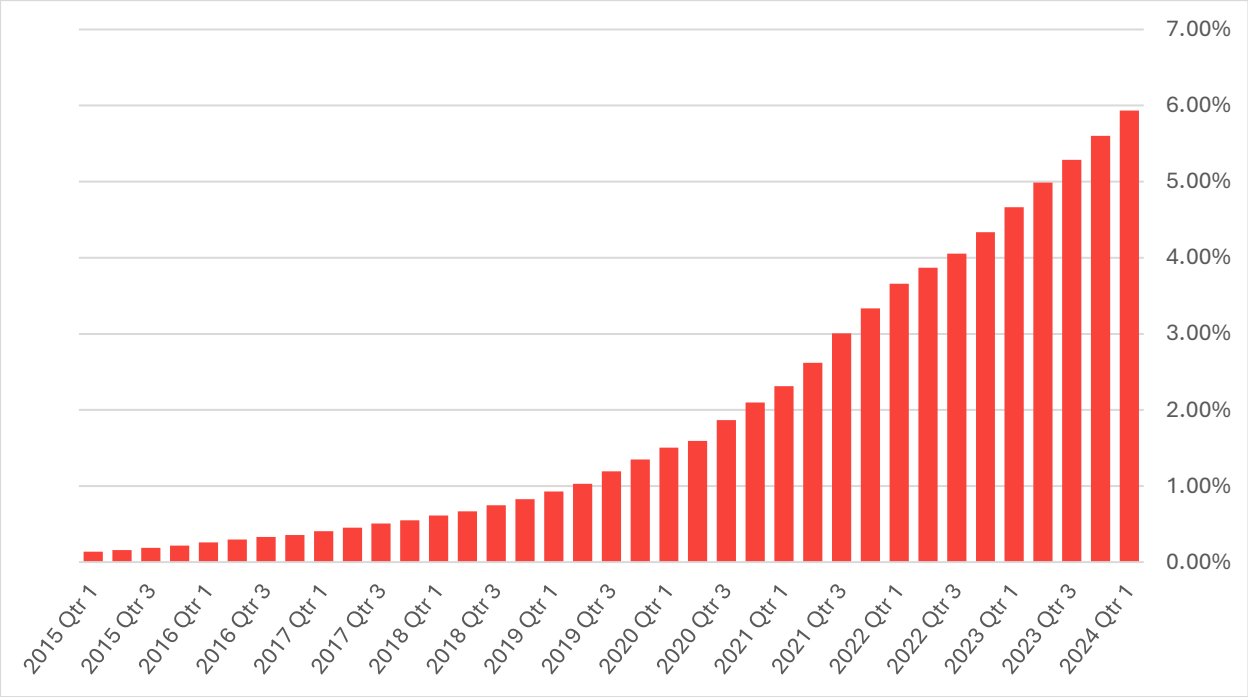
# 4. Assessing EV Demand

As uptake of electric and hybrid vehicles continues to grow across the UK, the number of chargepoints required to support these vehicles is increasing.

## Current EV Registrations

NEVIS (National Electric Vehicle Insight & Support) data on current and forecast EV uptake demonstrates the baseline EV demand within Haringey. As of Quarter 1 2024, there are 3,948 electric and plug-in hybrid vehicles registered in the borough. EVs make up 5.93% of vehicles in which is higher than the UK average of 2.09% and the London average of 3.43%, a figure which has grown since 2015.

*Figure 4-1 – EV vehicle percentage in Haringey quarter on quarter (2015 to 2024) (Source: NEVIS)*



## Existing Public EV Chargepoints

We have worked to install various types of chargepoint in the borough providing options to our residents. These include on-street standard chargers, lamp column chargers, and rapid chargepoints. [66]

The number of publicly accessible chargepoint sockets in the borough is over 290 as of May 2024, with a substantial increase of 119 from Q4 2023 (where there were only 112 total public chargepoints).

Based on the Q1 2024 data for both EVs and public chargepoints in there was an average of one public chargepoint for every 17 EVs registered in the borough.

This is higher than the London average for the same period, which had one public chargepoint for every 22 EVs. This improvement is due to the increase in chargepoints between Q4 2023 and Q1 2024.

As of the latest data for Q1 2024, there are 87 public chargepoints for every 100,000 people in Haringey[67]. That is lower than the London statistic of 209 public chargepoints per 100,000 but higher than the England average (28 public chargepoints per 100,000). The growth in public chargepoints in Haringey and London between 2019 and 2024 is shown in Figure 4-2.

The distribution of existing chargepoints and their charging speeds across the borough is shown in Figure 4-3. This shows that chargepoints speeds are generally fast, with a handful of rapid and ultra rapid chargers. The location of existing charge points are geographically well distributed across the borough with a number of new installations planned in the east of the borough where coverage of publicly available chargepoints was lower.

[66] Haringey London, 'Electric vehicle charging points', Electric vehicle charging points | Haringey Council, Accessed on 24th September 2024

[67] Data provided from UK Government Census 2021 and NEVIS

*Figure 4-2 – Number of Public Electric Vehicle Chargepoints per 10,000 Electric vehicles in Haringey and London (2019 to 2024) (Source: NEVIS)*

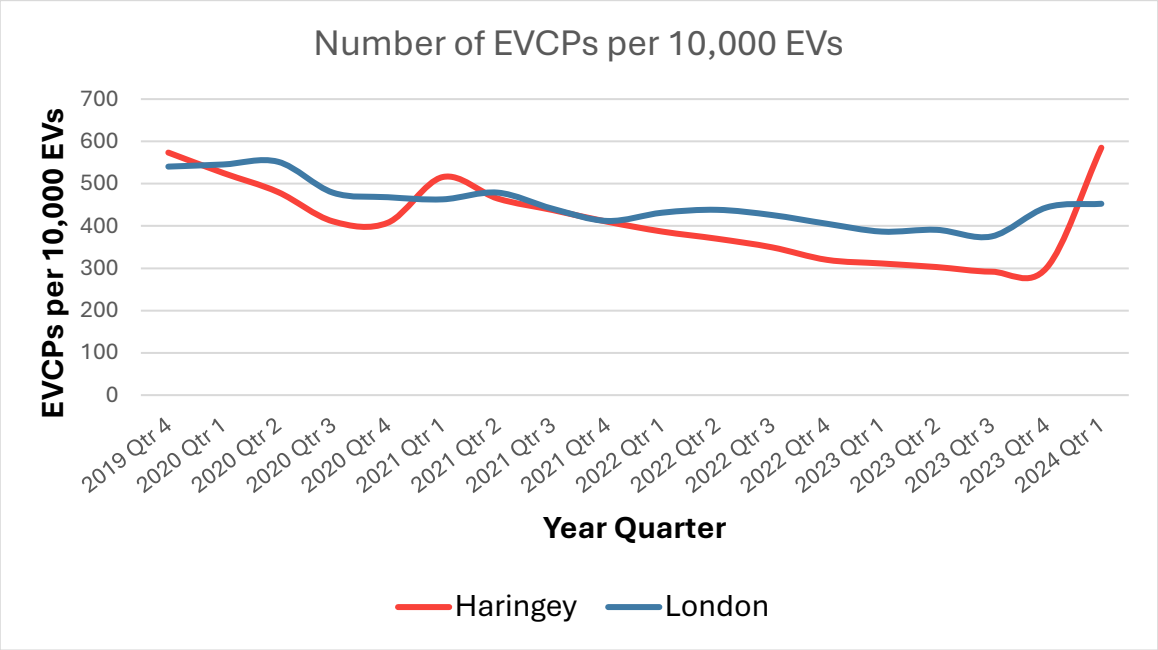
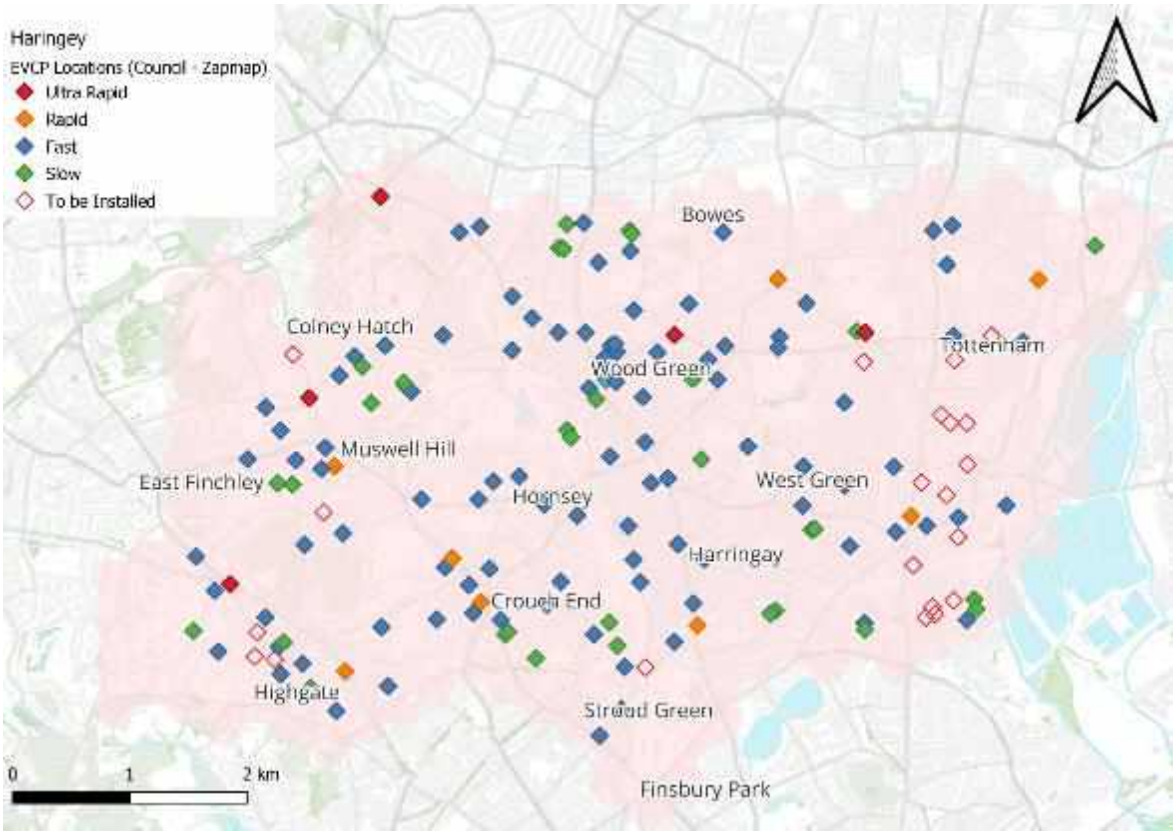



*Figure 4-3 – Location of chargepoints across Haringey (Source: Haringey Council and Zapmap)*



## Overview of high-level constraints and opportunities

The roll-out of EV infrastructure and EV uptake across the borough will need to be balanced against several constraints such as capacity of the electricity grid, public land ownership, and planning policies. Despite this, there are opportunities to overcome these and deliver the EV infrastructure required to support the robust uptake of EV vehicles across the borough.

## High level constrains and opportunities: electricity grid capacity

The capacity of the local electricity grid to accommodate new EV charging infrastructure can often be limited, and upgrading the network can be both costly and a significant barrier to increasing EV adoption.

We will need to work closely with the local Distribution Network Operator (DNO), which manages the electricity grid and local substations in the area, to address these challenges and support the growth of EV infrastructure within their community.

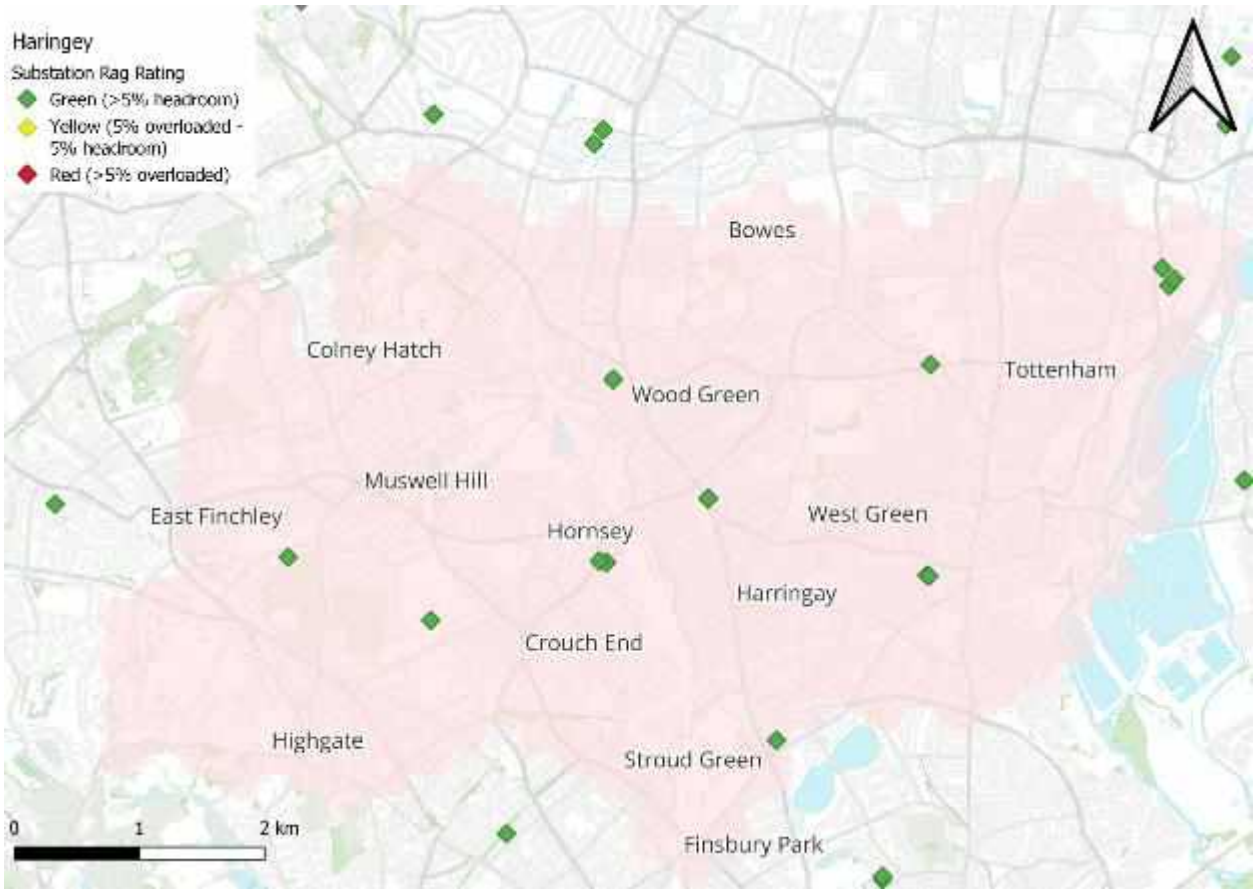
Using data published by the DNO and UK Power Networks, the available grid capacity can be estimated by assessing the maximum forecasted demand and the firm capacity at each primary substation. This provides a general overview of how much additional demand can be accommodated before infrastructure upgrades are necessary.

We have illustrated the primary substations across Haringey below, categorising available demand capacity into green, yellow, and red. "Green" indicates that there is 5% or more headroom available, "yellow" denotes a capacity range with 5% overload to 5% headroom remaining, and "red" signifies a situation where there is more than 5% overload.

There is good available headroom based on the substations within the borough. Although some areas are quite distant from substations, the substations themselves all have over 5% headroom which should provide an opportunity for installations without requiring a substation upgrade.

However, as part of the site selection process for new chargepoints, specific quotes for the costs associated with DNO connections would need to be gathered. Even if a local substation shows adequate capacity, additional upgrades, wayleaves or wiring might still be necessary to support new installations.

*Figure 4-4 – Map of Substation Headroom throughout Haringey*




## Planning Policies

The key planning policy constrains relate to what can be installed under permitted developments versus those require planning permissions. These include:

- limitations on installation of EV chargepoints near the highway and in conservation areas;
- limitations on the size and location of EV chargepoints; and
- limitations on the number of chargepoints which can be installed.

However, there are opportunities provided by proposed changes to planning policies which aim to ease installation, increase flexibility in size and location, and remove certain restrictions regarding chargepoints on public land. Policy constraints do limit the rollout of EV infrastructure with more extensive planning approval for installations beyond permitted development rights.

Within conservation areas.

Figure 4-5  of Haringey (Figure 4-5), residents who wish to install a chargepoint that will be visible to the public may need to seek planning permission[68]. The height and size of

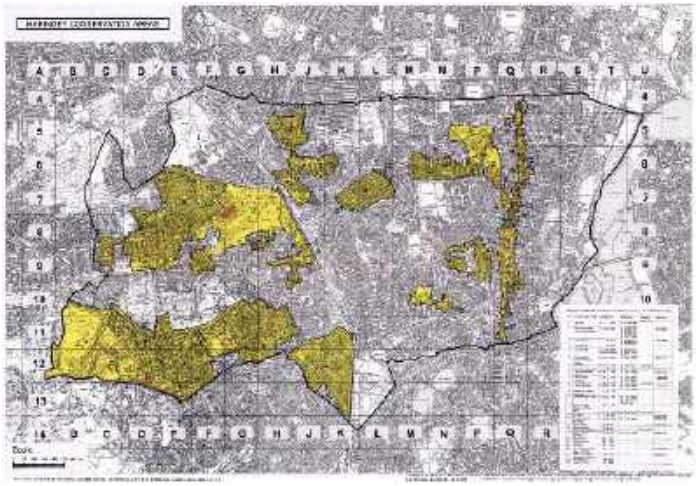
[68] Haringey Borough Council, Planning Advice Note Installing electric vehicle chargepoints for Residents planning_advice_notice_-_residents_final.pdf (haringey.gov.uk) Accessed on 26th September 2024

chargepoints are limited which limits the power that can be supplied by chargepoints, thus limiting the charging speed. Without planning permission infrastructure is limited to one wall-mounted or freestanding chargepoint per residential dwelling[69].

The government is consulting on policy updates, with proposed changes including greater flexibility in EV charging infrastructure installation. These changes support wider EV rollout, aligning with the government's Net Zero Strategy.

Proposed changes would allow permitted development rights for installing EV chargepoints on public land without the need for full planning permissions[70]. For new non-residential buildings or major renovations, with greater than 10 parking spaces, at least one EV chargepoint must be installed with cable routes for one in five parking spaces. For new residential buildings, EV chargepoints are required for each associated parking space.

*Figure 4-5 – Map of Conservation Areas within Haringey*



[69] Legislation.gov.uk The Town and Country Planning (General Permitted Development) (England) Order 2015 The Town and Country Planning (General Permitted Development) (England) Order 2015 (legislation.gov.uk) Accessed on 26th September 2024

[70] UK Government, Changes to various permitted development rights: consultation, Changes to various permitted development rights: consultation - GOV.UK (www.gov.uk) Accessed on 26th September 2024

# 5. EV adoption – barriers and interventions

While the uptake of EVs continues to rise quickly, both nationally and within the borough, there remain many barriers which discourage or prevent drivers from switching to EVs.

## Complexity of the decision to switch

The decision to switch to an EV is the outcome of a wide range of interrelated factors. These include practical factors, such as access to charging infrastructure and costs, but also an individual's knowledge, experience and motivations.

*Figure 5-1 Framework model of decision factors affecting EV adoption Reproduced from Transport and Environment, 2024*




As the UK moves towards approximately a fifth of all new vehicle sales being battery electric, various industry commentors have argued that the UK is now moving from the 'early adopters' to 'early majority' phase of the transition.

While some of the barriers that acutely affected the 'early adopters' are reducing, such as immature battery technologies and poor vehicle ranges, negative perceptions and uncertainty often remain despite the progress made. For the early majority, it is anticipated that factors such as cost, convenience and confidence are likely to become increasingly important.

## Barriers to EV adoption

To understand barriers to EV adoption in Haringey, stakeholder consultation was carried out via a survey with residents. The survey was open to all residents, regardless of whether they currently use an EV. A total of 375 survey responses were received.

Respondents were asked to consider whether they considered certain factors as barriers to EV adoption and use, along with rating them; the barriers were grouped as social, technological, economic, and infrastructure barriers.

## Summary of survey responses to barriers

The top perceived barriers for residents relating to EVs is the availability of chargepoints and the upfront cost of owning an EV. Factors related to charging infrastructure appear to be the most commonly perceived barriers across all the survey questions. Respondents are concerned about the availability of chargepoints, primarily close to their homes, but also at destinations and during the journey.

The perception of barriers did not vary largely between those who already use an EV and those who use petrol/diesel vehicles, but those who do not currently use a vehicle were more likely to be neutral across the board. Many of those currently using EVs rely on public chargepoints.

Social perceptions and barriers around maintenance and servicing were less of a concern for respondents.

## Barriers for local authorities when installing charging infrastructure

We understand that we have a role in the transition to EVs by overseeing the installation of charging infrastructure in the borough and through upgrading our fleet to EV (see Section 0). While several barriers and challenges to EV transition have been assessed by residents, we are also aware of the challenges we face as a local authority with regards to installation of chargepoints.

There are challenges that are similar to those that are residents face or CPOs when considering installation of chargepoints. In the development of our action plan (see Section 0) we have reflected on these challenges and barriers to develop actions that will support the broader aims of the borough and provide infrastructure where needed. The challenges we have identified include:

- Minimising the impact on the streetscape and footway widths when installing on-street infrastructure. Where pavements are narrow, this limits which types of chargepoint can be installed, unless build outs are used, increasing installation costs.
- Limited council-land land availability (e.g. car parks) for chargepoint hubs.
- Securing sufficient investment from the private sector to complement. Government grant funding (e.g. LEVI) to achieve our targets in terms of the scale, pace and quality of infrastructure deployment.

- Constraints in some locations on grid capacity, limiting the number or speed of chargepoint which can be installed, unless investment is made in upgrades.
- Restrictions related to planning permissions, as while the installation of some chargepoints by the council is covered by permitted development rights, these rights do not cover every scenario, for example conversation areas or for cable gullies.
- Limited resourcing to manage the complex procurement process for a public chargepoint network and ongoing project management.

## Feedback on interventions from the survey

As part of the public consultation survey, respondents were asked for their feedback on how impactful different interventions would be on driving EV uptake in Haringey and at alleviating barriers. The interventions focus on actions Haringey Council could take.

## Summary of survey responses to interventions

Regarding how Haringey can encourage more people to use an electric vehicle, the most impactful intervention according to respondents was to install chargepoints that charge a lower price for electricity. This aligns with earlier feedback in the survey that respondents are concerned about availability of costs and chargepoints. Providing clarity on information regarding charging costs is also considered to be impactful.

Ensuring that procurement specifies high quality standards from chargepoint operators is also considered to be one of the most impactful interventions.

Many respondents agreed that it would be very impactful for the Council to transition our own fleet to EVs. This is an opportunity to lead by example and demonstrate that EV ownership is feasible. It could also increase the visibility of EVs and improve awareness for residents.

Fewer respondents see the value in interventions that provide general information about EVs. This aligns with the finding that lack of information is not considered a barrier.

In terms of helping make informed decisions about electric vehicle ownership, the option that Haringey provides alternative options to vehicle ownership received the most positive response. The upfront cost of owning an EV was highlighted as one of the main barriers to EV uptake. Providing alternatives, such as car clubs, means that residents can utilise EVs without facing the costs of ownership, long term leasing, or servicing and maintenance.

It is also apparent in this question that the provision of information is considered less impactful at driving uptake.

EV infrastructure was highlighted as a barrier to uptake. Respondents were also asked for their views on how different interventions could improve EV charging options in Haringey.

The survey asked respondents to rate how impactful interventions would be in improving EV charging options, and respondents were very responsive to many of the options suggested in this question. Many of the options were associated with where we can install chargepoints. The most popular option was to install chargepoints on private land like supermarkets. Very few respondents felt that the installation of more chargepoints would have no impact.

Respondents also felt that encouraging competitive pricing by installing chargepoints from a range of providers would be impactful, reflecting earlier sentiments that the cost of charging may

be a barrier. The option to have specific parking bays for lamppost charging was slightly less popular. This could be due to competition over parking spaces in the borough.

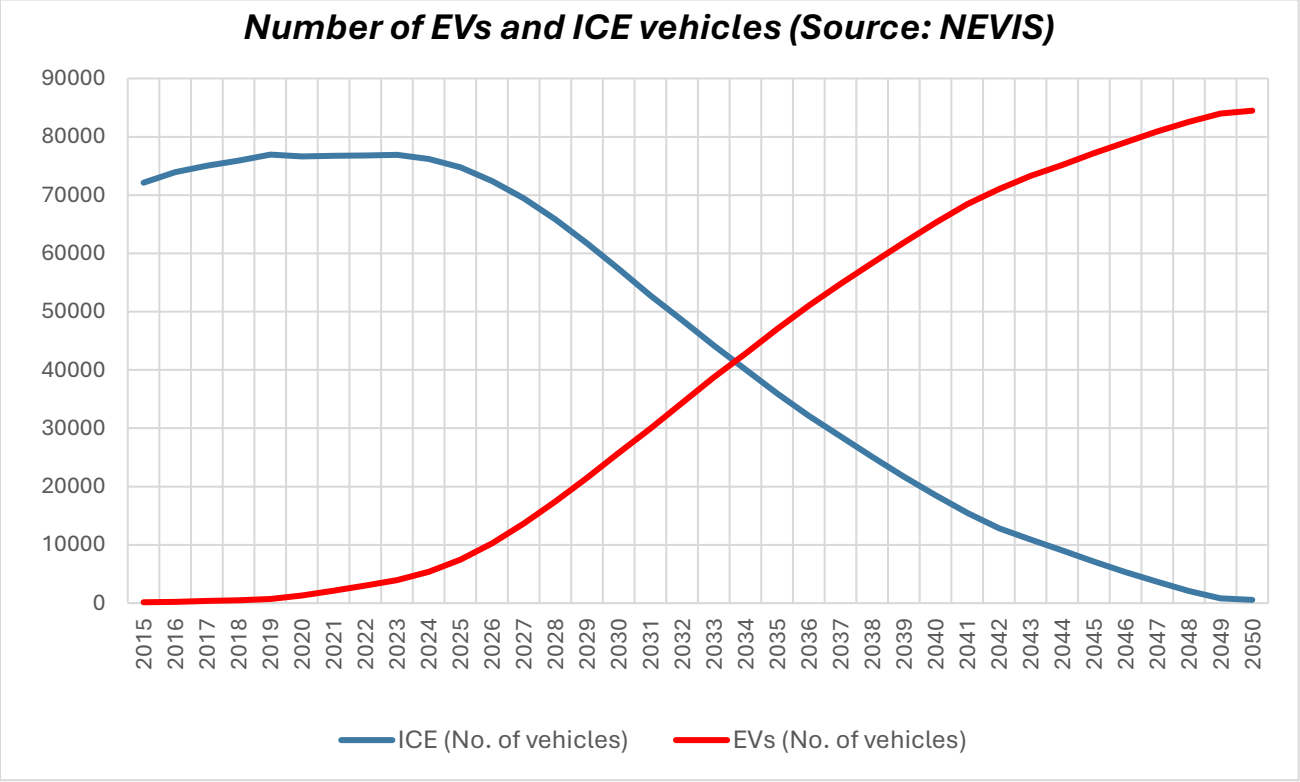
# 6. Forecasting Future EV and EV Charging Demand

## EV Uptake Forecasting

The NEVIS forecast for EV uptake for was used to assess future uptake of EVs in the borough. The forecast model assumes that by 2050 nearly all vehicles will be EVs.

The forecast model assumes that by 2050 nearly all vehicles will be EVs. This is in line with the previous government's legislation and projections. The estimated increase of EVs to 2030 is impacted by the planned 2035 ban on the sale of petrol and diesel vehicles.

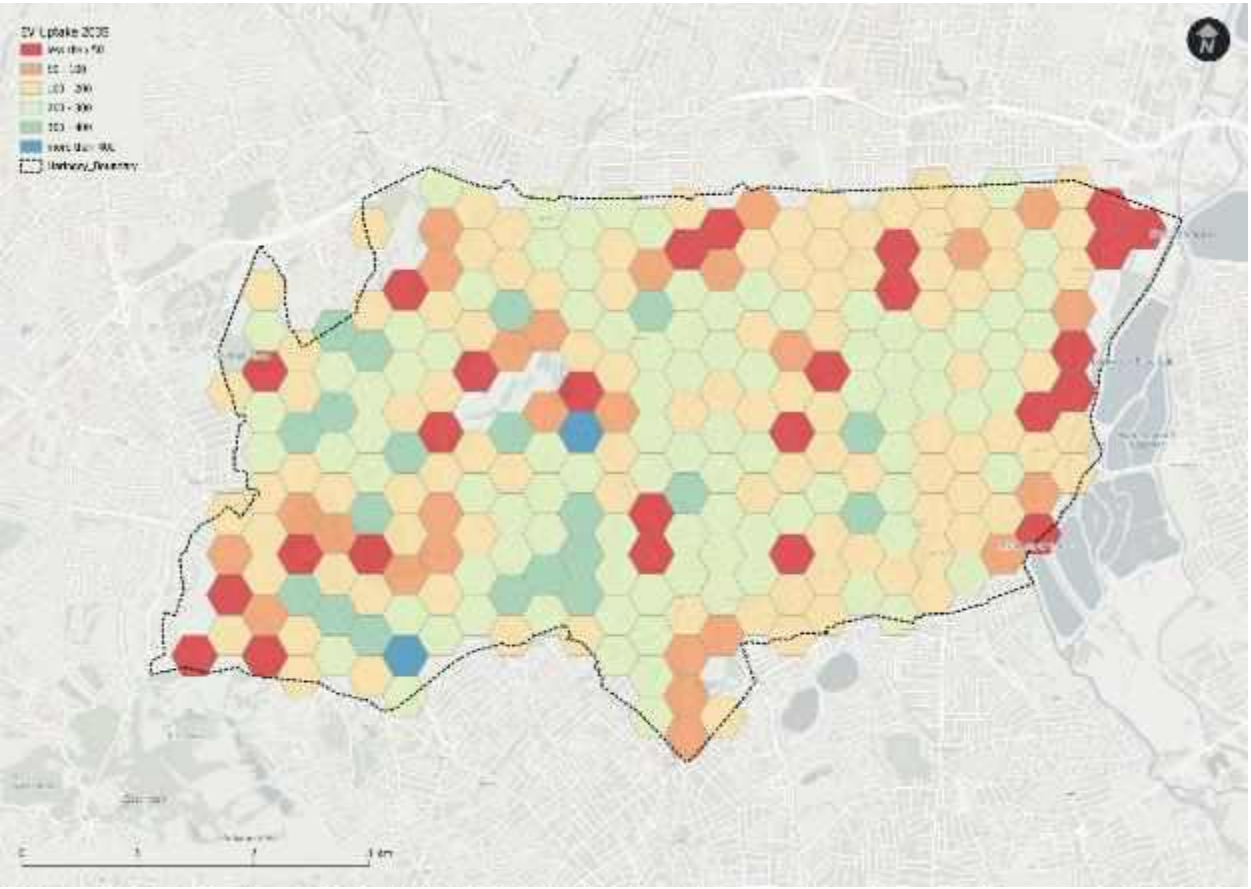
*Figure 6-1 – Number of EVs and ICE vehicles in Haringey from 2015 to 2050 (Source: NEVIS)*




It indicates that the number of EVs in Haringey would increase as follows:

- 2024 5,362
- 2026 10,250
- 2030 21,500
- 2035 47,037

*Figure 6-2 – Map of forecasted EV uptake across Haringey by 2035 (Source: NEVIS)*



## Chargepoint Requirement Forecasting

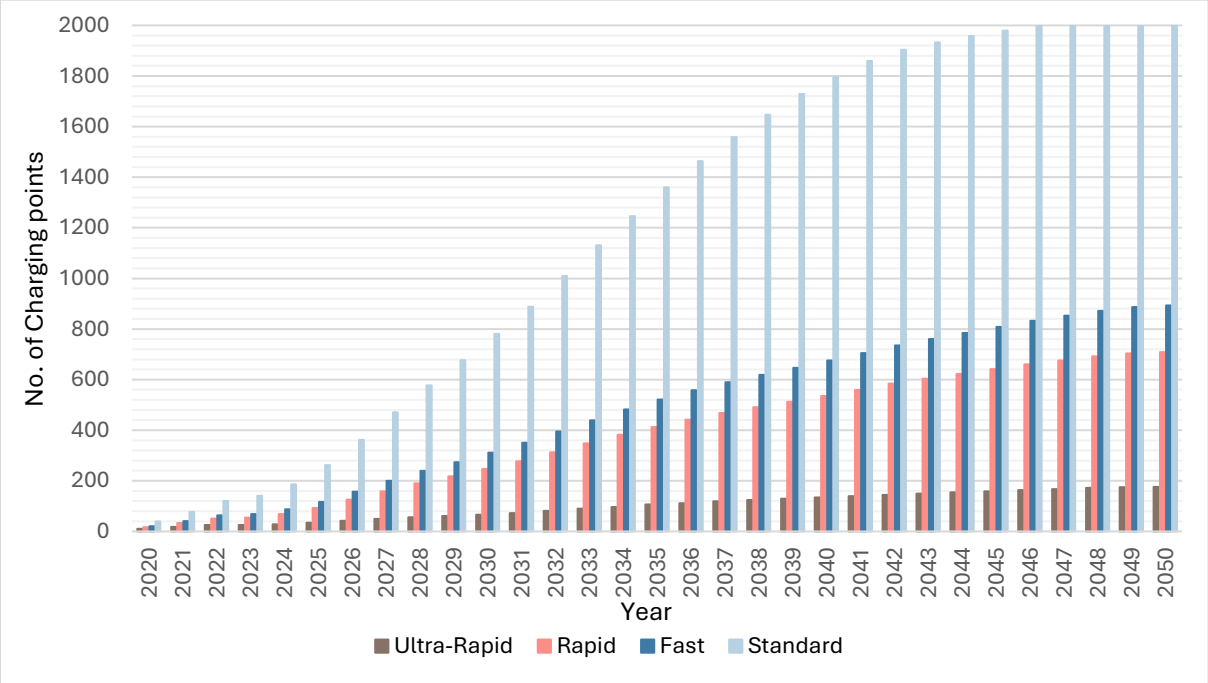
To meet growing demand for chargepoints and ensure lack of adequate infrastructure does not pose a barrier to EV adoption, there is a need to accelerate the delivery of publicly available chargepoints.

It is challenging to accurately predict future chargepoint requirements as many factors can influence uptake. The numbers presented here are an estimation. Estimations can vary based on:

- Forecast EV growth;
- Charging habits - Public vs Private charging, rapids vs slow chargepoints;
- Vehicle mileage and efficiency;
- BEV and PHEV ratios, and PHEV mileage in electric mode;
- Off-street parking availability; and
- Trends in vehicle and chargepoint technologies, including range and charging rates.

NEVIS forecast requirements for standard, fast, rapid and ultra-rapid public chargepoints (as defined in Table 3-2) up to 2050 are displayed below. As can be seen in the forecasts, the number of publicly available EV chargepoints is currently not keeping up with the forecast demand.

*Figure 6-3 – Forecast number of standard, fast, rapid and ultra-rapid public chargepoints required in Haringey 2020 to 2050*




Considering the forecast data, by 2030, the council estimates needing 962 additional standard chargers and 61 rapid chargepoints to meet growing EV demand through the delivery of on-street charging options.

# 7. Fleet Transition

As part of the consideration of this EV Strategy is our own fleet vehicles. The fleet is currently made up of council purchased vehicles as well as contract vehicles. Our owned vehicles currently total 280 vehicles.

When considering our fleet transition one of the first factors is ensuring the EV alternative meets the demands of the vehicle and needs of the user. Currently we have committted to transitioning small vehicles first as the market offers the most options for EVs within this vehicle type. We will review the market regularly and as new vehicles become available for larger vans and specialist vehicles look to transition those. While we look further into our fleet transition, we must also investigate alternatives to electrification and monitor their development, if we recognise there may be vehicle types not suitable for electrification, but still offers an option for decarbonisation.

To achieve a successful fleet transition, we anticipate the following process being followed:

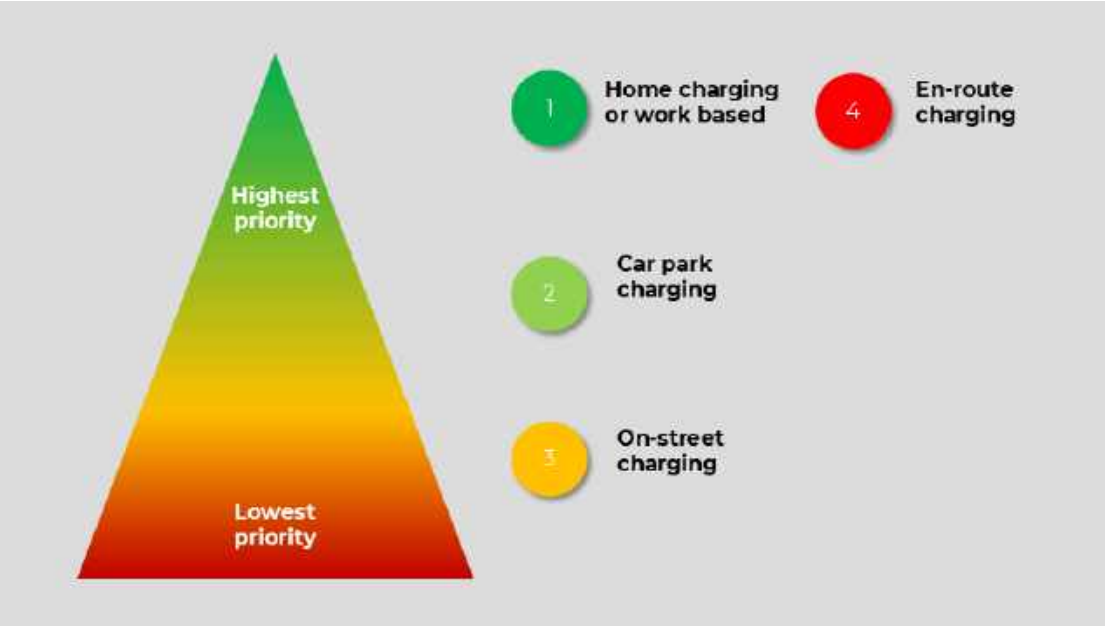
- Assess and understand the driving patterns and operational requirements of the fleet
- Identify suitable models to replace ICEs considering the affordability of EV equivalents
- Identify the required charging infrastructure
- Make the fleet transition phased and encourage sub-contractors to transition to EVs

By following a clear process, we will be able to provide a clear business case for the transition and understand the costs associated with it. This planning will provide an opportunity to identify potential funding avenues available to us for the installation of charging infrastructure where it is needed for the fleet.

# 8. Charging Hierarchy for Haringey

When considering the requirement for chargepoints in the borough we have assessed where residents currently charge, where resident would prefer to charge and where chargepoints should be installed. In line with this we have developed two hierarchies. The first is a hierarchy of charging; this was informed by the responses to our consultation and outlines the preferences considering where current EV owners currently charge

*Figure 8-1 - Charging Preferences Hierarchy*




Following the development of the charging preferences hierarchy we then considered how we can support charging preferences and EV uptake through chargepoint provision. To do this we have developed a chargepoint hierarchy. This identifies our areas of focus with regards to the installation of chargepoints led by us. It considers the selection of chargepoint technologies for different types of charging locations and has also taken into account as feedback from residents. The hierarchy identifies the type of chargepoint infrastructure based on length of stay, cost, land availability, and impact on the streetscape.

The hierarchy will be used to help guide decision-making, rather than providing a rigid framework. The eventual choice of technology for each location will be influenced by local, site-specific

factors, and funding available. The hierarchy was informed by the responses to our consultation and what our residents identified as barriers and actions they would like to see us take.

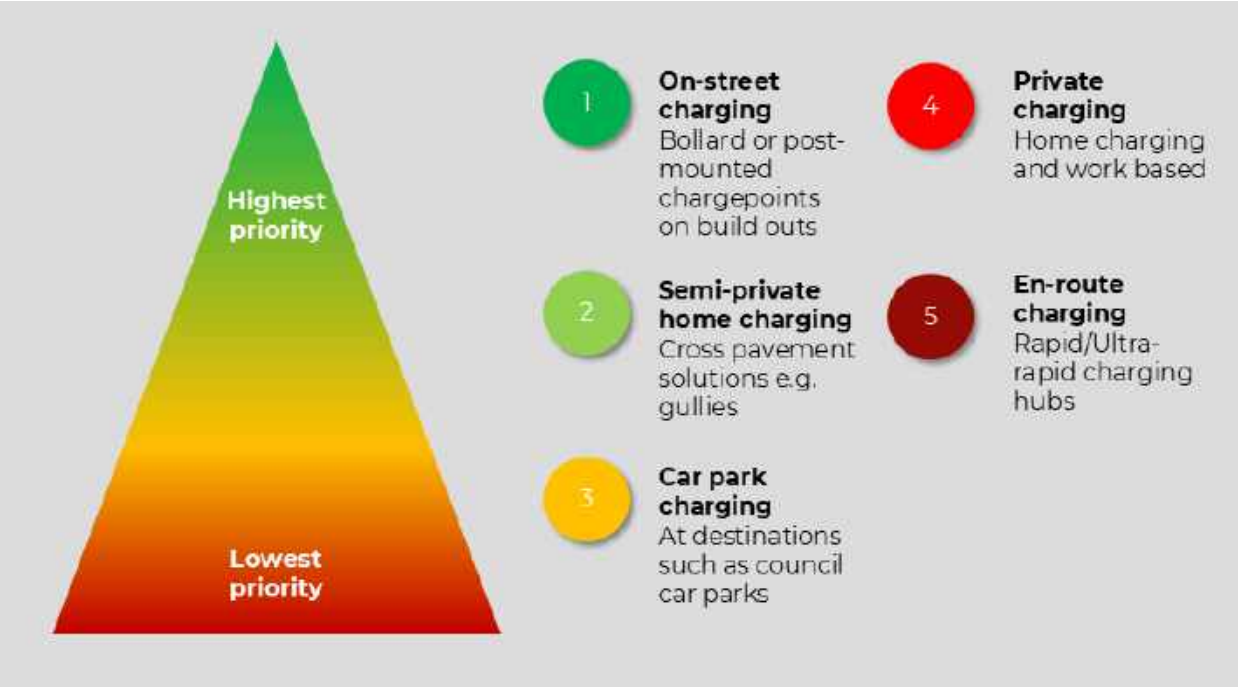



*Figure 8-2 – Haringey Chargepoint Installation Support Hierarchy*

Figure 8-2 outlines our areas of focus when leading on the installation chargepoints with the aim being to support those who cannot install a chargepoint at home to be able to transition to EV. We understand that those without access to off-street parking may feel an additional barrier to transitioning to EV, and we wish to ensure there is support across the borough for different solutions. As part of the charging options we understand that cross pavement solutions may be most appropriate to some of our residents. We want to make these accessible but also ensure that they are appropriately installed and that they limit or eliminate trailing cables.

As identified in Section 0 the solutions are evolving and as innovative chargepoint designs and delivery models develop these will also be considered.

We believe that as a council we have a key role to play in the installation of chargepoints but that this should and will be complemented by the private sector installations.

# 9. Action Plan

At the core of our strategy development was consideration of the actions we would take to support the transition to EV for our residents. The action plan outlines what we plan to do to support this in four key areas of focus:

- Ensure all drivers have access to a high-quality electric vehicle chargepoint network
- Ensure that the chargepoint network is future proof and innovative
- Transition the council fleet as an example of proactive EV adoption
- Support the adoption of active travel, public transport and e-mobility

The four areas outline above will support us in achieving our vision for the strategy:

"*Haringey's vision for the EV strategy is to support the ambitions for the whole of Haringey to be net zero by 2042. EVs are one component of Haringey's approach to transition towards a net zero borough.*"

Our action plan follows the principals of SMART objectives making our planned actions Specific, Measurable, Achievable, Relevant and Time-bound. To achieve this, we have identified our role within in action in terms of leading on the delivery, supporting on the delivery of the action or supporting external stakeholders to take action. This will allow us to prioritise actions effectively and completing monitoring and evaluation on progress. For each of the four areas of focus we have devised a number of sub-actions.

*Table 9-1 - Sub-actions relating to the focus area 'ensure all EV drivers have access to a high-quality electric vehicle chargepoint*

| Action | Haringey Council Role | Other Stakeholders | Timescale |
|---|---|---|---|
| **Ensure all drivers have access to a high-quality electric vehicle chargepoint network** | | | |
| Conduct a site selection exercise to establish a prioritised long-list of public EV charging sites in the borough | Lead on delivery | Residents, CPOs, DNOs | Short-term (<2 years) |
| Research and decide on a procurement framework | Lead on delivery | | Short-term (<2 years) |
| Support forecourts, supermarkets and other private business can install chargepoints | Support external stakeholders on delivery | Residents, Landowners, CPOs | Medium-term (2-5 years) |
| Work across the borough to ensure the chargepoint network meets residents needs | Support action delivery | Residents, CPOs | Long-term (.>6 years) |

*Table 9-2 - Sub-actions relating to the focus area 'Ensure that the chargepoint network is future proof and innovative'*

| Action | Haringey Council Role | Other Stakeholders | Timescale |
|---|---|---|---|
| **Ensure that the chargepoint network is future proof and innovative** | | | |
| Formalise council position on cross pavement solutions through the monitoring and evaluation of trials | Lead on delivery | Residents, CPOs, | Short-term (<2 years) |
| Promote design principles to ensure EV chargepoints are inclusive and accessible including them in council led specifications | Lead on delivery | Residents, CPOs | Short-term (<2 years) |
| Review the impact of EV charging bays on parking management | Lead on delivery | | Short-term (<2 years) |
| Support the growth in the charging network to meet the anticipated demand of 962 additional standard | Support action delivery | Residents, Landowners, CPOs | Medium-term (2-5 years) |

| | | | |
|---|---|---|---|
| chargers and 61 rapid chargepoints. | | | |
| Include rapid charging where feasible in parklets | Lead on delivery | Residents, CPOs | Medium-term (2-5 years) |
| Leverage private sector funding to scale up the network | Support external stakeholders on delivery | Residents, Landowners, CPOs | Medium-term (2-5 years) |
| Multiple chargepoint operators in the borough to ensure tariffs remain competitive | Support external stakeholders on delivery | Landowners, CPOs | Medium-term (2-5 years) |
| Investigate how we can help taxi and private hire vehicle drivers to transition to EVs | Support action delivery | Drivers, Landowners, CPOs | Medium-term (2-5 years) |

*Table 9-3 - Sub-actions relating to the focus area 'Transition the council fleet as an example of proactive EV adoption'*

| Action | Haringey Council Role | Other Stakeholders | Timescale |
|---|---|---|---|
| **Transition the council fleet as an example of proactive EV adoption** | | | |
| Understand the feasibility of fleet transition of larger and non-standard vehicles | Lead on delivery | | Short-term (<2 years) |
| Develop in-depth fleet transition plan | Lead on delivery | | Medium-term (2-5 years) |
| Carry out fleet transition | Lead on delivery | | Long-term (>6 years) |
| Support local businesses, schools and universities to upskill for EV adoption and EV infrastructure installation | Support external stakeholders on delivery | Local businesses, education facilities, Landowners, CPOs | Long-term (>6 years) |

*Table 9-4 - Sub-actions relating to the focus are 'Support the adoption of active travel, public transport and e-mobility'*

| Action | Haringey Council Role | Other Stakeholders | Timescale |
|---|---|---|---|
| **Support the adoption of active travel, public transport and e-mobility** | | | |
| Upskill staff on e-mobility, public transport and modal shift | Lead on delivery | | Short-term (<2 years) |

| | | | |
|---|---|---|---|
| Consult constituents on main push and pull factors regarding modal shift | Support action delivery | | Short-term (<2 years) |
| Explore avenues and options sustainable commuting, last mile, taxis, car clubs | Support action delivery | | Medium-term (2-5 years) |