

Cheshire East Electric Vehicle Infrastructure Strategy Consultation Pack

Why develop an electric vehicle infrastructure strategy for Cheshire East?

The UK is facing a climate emergency and is committed to reducing greenhouse gas emissions to net zero by 2050 in response to recommendations from the Committee on Climate Change. The Council noted that Parliament had declared a climate emergency in May 2019 and committed to becoming carbon neutral by 2025. Additionally, the Council is committed to improving air quality as outlined in the 2018 Air Quality Action Plan. Although significant activity to decarbonise will be led nationally, the Council has a role to play in aiming to minimise the carbon intensity of our transport system.

Enabling the transition to electric vehicles is anticipated to make a significant contribution to meeting these aims. The Council has already invested in providing a number of electric vehicle charge points, however there still key gaps. Notably, there is a lack of provision in the east of the borough including the Macclesfield area, and other gaps in provision in towns and rural areas. The current supply of charge points is likely to be insufficient to support the future uptake in electric vehicles.

Electric vehicles have zero tailpipe emissions, and this strategy will also support Cheshire East's aims to improve air quality as set out in the Cheshire East Air Quality Management Plan (2018). The UK government's ultimate vision as set out in "The Road to Zero Strategy" published in July 2018 is 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. However, on

the 18th of November 2020 the government brought forward the timeframe to 2030 through the following steps:

- Step 1 will see the phase-out date for the sale of new petrol and diesel cars and vans brought forward to 2030.
- Step 2 will see all new cars and vans be fully zero emission at the tailpipe from 2035 (ending the sale of Plug-in Hybrid electric vehicles).

EVs are an alternative to petrol and diesel vehicles which reduce emissions, particularly in congested urban areas, where, stopping and starting, idling, and over-revving of petrol/diesel vehicles in queues produces high concentrations of emissions. EVs use an electric drivetrain to provide power to the wheels rather than carbon-based fuels, so they generate zero exhaust emissions and less noise whilst driving. In spite of the increased electricity requirement, EVs have a lower whole-life carbon footprint than petrol/diesel vehicles and given the UK's progress towards and remaining plans for greener electricity generation these benefits will increase further in the future. EVs also produce less noise pollution and encourage a smoother driving style than petrol/diesel which increases driving efficiency by reducing the power required per km driven and causing lower particulate emissions from brake and tyre wear.

There are a range of actions needed to decarbonise transport such as increasing the numbers of people walking, cycling, and using public transport as set out in Cheshire East's Local Transport Plan. Transitioning the remaining vehicle fleet to EVs will have an important role to play in complementing this modal shift.

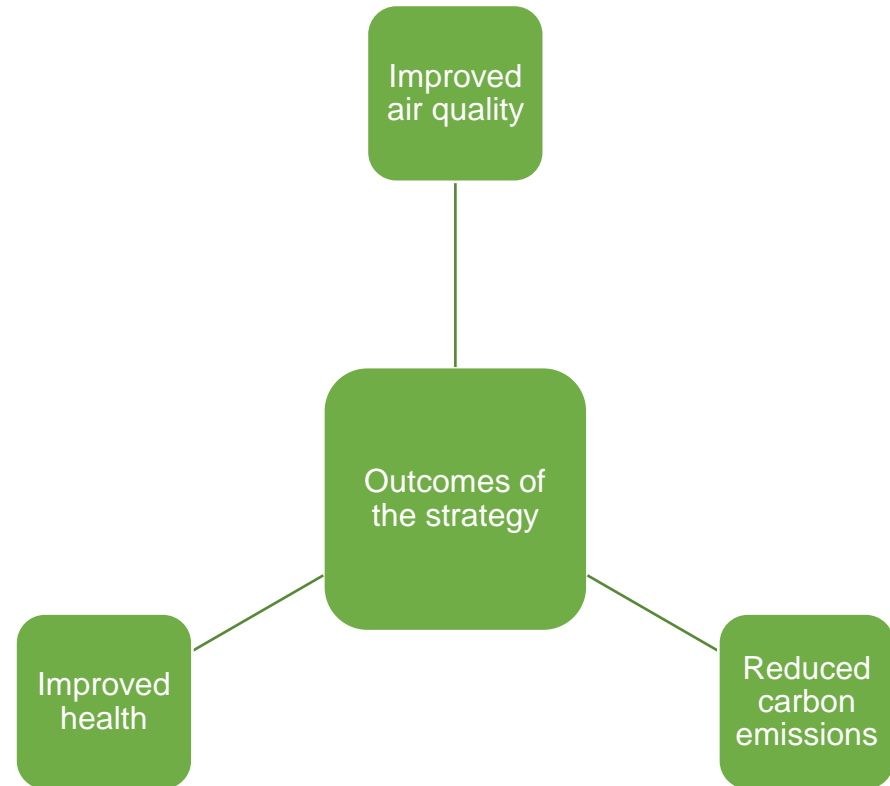
Objectives and Outcomes of the Strategy

Through engagement with industry stakeholders, Cheshire East officers, and a review of relevant data, strategies and policies, the following objectives for the strategy have been set:

- To support the uptake of electric vehicles by individuals, businesses, and organisations within Cheshire East.
- To guide the provision of infrastructure that is safe, easy to use and represents good value for money both on installation and throughout its life.
- To help ensure infrastructure is in keeping with the streetscape through sensitive placement and appearance, avoiding any negative impacts on other road users, particularly pedestrians.
- To seek to overcome inequalities in infrastructure provision, enabling our communities to transition to electric vehicles in a timely way.
- Supporting electric vehicles in the context of a wider transport system that encourages mileage reduction, active travel, and public transport.

The above objectives have guided the development of this strategy and will continue to guide implementation of the key measures set out within it.

The outcomes Cheshire East Council wants to achieve from implementing this strategy are:



The Current Situation

Buying and driving an EV can feel intimidating for many people and there is a general lack of awareness about the benefits and practicalities of driving an EV.

Range of vehicles – one common perceived barrier to driving an EV is the real-world range of vehicles before recharging is needed. Approximately 64% of the plug-in vehicle models available in UK have a battery capacity of less than 20 kWh which equates to less than 80 miles, however this includes plug-in hybrid vehicles that have predominately petrol engines to extend the vehicle range. However, all the new models announced to reach the market beyond 2020 are battery electric vehicles with capacities above 30 kWh equating to 120+ miles. This demonstrates the trend towards increasing battery capacity, intended to meet consumers' demand for increased range per charge and to tackle the continuing reports of range anxiety by potential adopters.

New buyers of EVs are experiencing much greater range than the early adopters upon which much research was based. Ranges have gone from less than 100miles to 200+miles. 250 miles electric range is more than adequate for the vast majority of UK drivers daily driving requirements which are below 20 miles per day, meaning they don't need to recharge every day. Even company car users whose annual mileage is quoted as 17,500 miles typically do not exceed 70 miles per day so electric range should be adequate for most daily mileage requirements.

Charging of vehicles – one of the most often cited barriers is the lack of charging infrastructure. All plug-in vehicles require infrastructure to recharge their on-board batteries, by connecting the vehicle to an external electricity supply, most commonly the electrical grid or to an electrical storage facility. Currently, there is a

range of charging infrastructure types and connectors which differ across vehicle manufacturers and models; however, all manufactures (with the exception of Tesla) are working towards the Open Smart Charging Protocol meaning charging types and connectors will become standardised in the coming years.

Plug-in vehicle charging technology is evolving rapidly. Prior to 2016, most technology charged at 3kW alternating current (called slow charging), which was adequate to fully recharge most batteries (typically up to 24kWh) overnight. With the development of vehicles came fast 7kW alternating current charging, and with the introduction of higher capacity batteries, direct current fast, rapid, and ultra-rapid charging technology has since become available that (providing the vehicle is compatible) recharges vehicles much quicker.

Approximately 80% of vehicle charging is currently conducted at home locations where energy costs are lower, with top up charging taking place when required at destinations or on-route.

Uptake of EVs in Cheshire East

Figures from the Department for Transport and National Chargepoint Registry show that 5,285 plug-in vehicles were registered in Cheshire East in the second quarter of 2022. At this time there were 33 publicly available chargepoints at 80 outlets. This meant there was a total of 64 vehicles per charge point and 26 vehicles per outlet. Forecasts suggest that if current progress continues 5,776 ULEVs could be licensed in the Cheshire East area by 2025. We believe that significant changes are likely in battery technology to greatly increase energy density, battery life and vehicle range around 2025. This trend coupled with reaching price parity between EV and petrol / diesel could have a major impact on Plug-In Vehicle demand and a more rapid pace of transition to EV is anticipated from approximately 2025 onwards.

Current Charging in Cheshire East

Key to developing a forward-looking strategy for electric vehicles is understanding the current level of charging infrastructure in Cheshire East. **Error! Reference source not found.** shows the existing charge point provision in Cheshire East.

The existing charging infrastructure in Cheshire East includes Sandbach motorway services, which are currently served by the Ecotricity network and feature two rapid chargers on each side of the motorway. A survey of rapid chargers in Cheshire East also revealed that the private sector is installing chargers including some KFC, Morrisons, Lidl, Sainsburys, Shell and BP locations, as well as other establishments such as hotels and a health club.

There is a notable lack of charging infrastructure in the east of the borough and the Macclesfield area, with no 'rapid' chargers and few 'fast' chargers in operation at the time of writing. Initial discussions with the District Network Operators for Macclesfield and Congleton have also identified these areas as having constrained capacity in the electricity network which may limit the ability to provide EV charging infrastructure.

The Plug-In Vehicle per outlet ratio in Cheshire (26) is above the UK average of 16 (at time of writing in November 2022). However, this figure is substantially lower than other comparative areas such as Dorset, Cheshire West and Chester, and East Riding of Yorkshire, where current ratios vary between 49 to 64.

Analysis has also been conducted to understand areas of Cheshire East that have high concentrations of flats and terraced houses in which residents are unlikely to have the ability to recharge electric vehicles. This type of housing is located in the denser urban areas, including Macclesfield, Crewe, Nantwich, Knutsford, and Wilmslow.

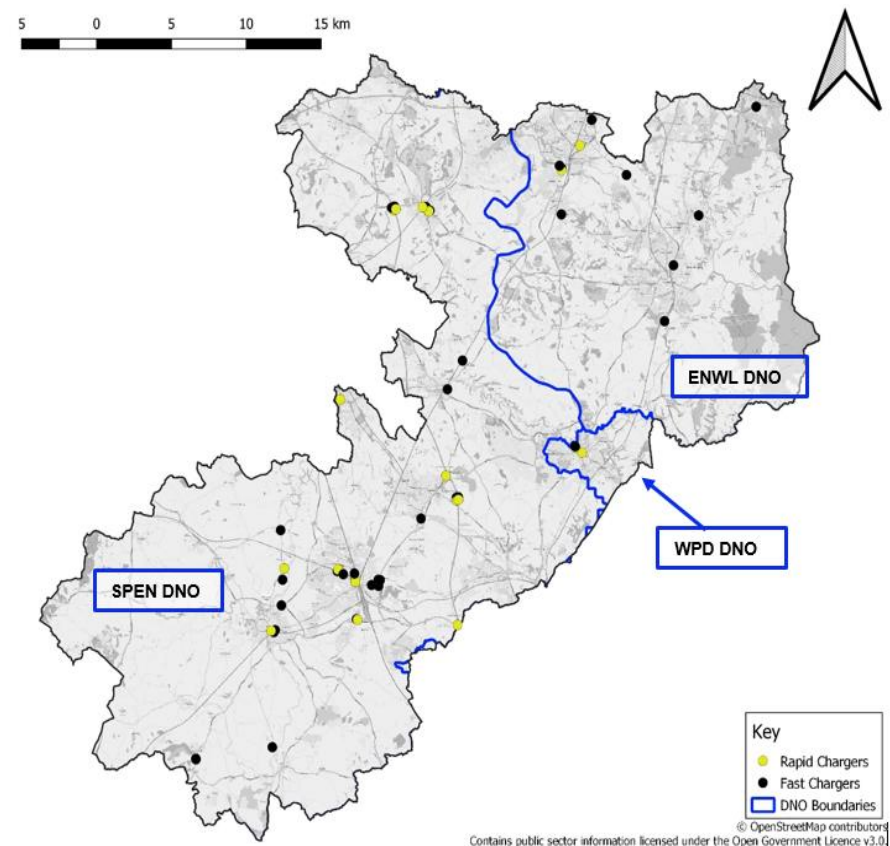


Figure 1-1 Existing Charging Infrastructure and DNO boundaries

Measures Proposed in this Strategy

A number of measures are proposed in this strategy to support the transition to electric vehicles in Cheshire East as set out below.

Table 1-1 Proposed sequencing of measures

Measure	Short term (0 – 2 years)	Medium term (2 -5 years)	Longer term (5+ years)
Providing charging points in car parks at key destinations (e.g., Town Centre's, train stations, retail parks, major employment sites).	✓	Continuous monitoring of charge points usage and commercial provision to determine when / if further phases of Council-led charge points are required	
Providing on-street charging points to support residents with limited access to parking provision and home charging with a focus on off-street car parks and consolidated on-street community hubs.	✓		
Providing on-route charging points to serve the Major Road Network.	✓		
Providing off-street charging points to support residents with limited access to parking provision and home charging.	✓		
Introduce charge points for the Council's own fleet and grey fleet.	✓		
Continuous engagement and joint working with the District Network Operators (Scottish Power Electricity Networks, Electricity North West, Western Power Distribution) to bring forward cost effective charge points and strategic strengthening of the power network, particularly in Macclesfield and Congleton where capacity is constrained. There is also an opportunity to investigate how distributed renewable energy solutions such as solar power may contribute to addressing power constrictions.	✓	✓	✓
Engage with taxi industry and providing charging infrastructure for taxis in convenient locations.	✓ (Focusing on rapid chargers)	✓ (Focusing on rapid chargers)	✓ (Potential for wireless inductive chargers)
Engage with bus operators and consider providing charging infrastructure for buses.		✓	✓
Encourage and where possible support the introduction of commercially provided charging forecourts.	✓	✓	✓
Introduce charge points for HGVs should appropriate technology come forward.			✓

Site Selection

This strategy assesses potential locations for providing future EV charge points against a framework of investment criteria including:

- The contribution to serving residential, destination and on-route charging needs;
- Site security and ambient surveillance levels;
- Cost effectiveness of connection to the electricity network;
- Avoiding conflicts with commercially provided charge points e.g., at supermarkets; and
- Projected uptake of electric vehicles in the surrounding area.

This framework was used to assess potential locations in Council car parks, in Principal Towns and Key Service Centres and at Local Service Centres, plus a number of on-street locations with limited off-street parking. The results provide a high degree of confidence that there is a reliable basis for determining quick wins in Cheshire East that are deliverable, affordable and likely to meet the needs of local users. This assessment framework can be updated to inform future phases of work in subsequent years.

Commercial Models

The strategy sets out a range of commercial models that are available to the Council to deliver EV charging infrastructure. The preferred approach is one that retains an element of control over the location of sites and their operation whilst working collaboratively with the private sector to leverage investment funding and access up-to-date technologies throughout the life of a contract or concession.

Next Steps

As part of the next phase of work, site selection for delivery of charge points will be considered further with the aim of providing a balanced network in a timely way to support demand for charging. This will draw on evidence contained in this strategy, detailed cost estimates of connecting to the electricity network, and discussions with stakeholders.

Let us know your views

We want your views on this draft strategy to ensure the right objectives and measures are identified. Once this consultation has concluded feedback will be reviewed and inform the final Electric Vehicle Infrastructure Strategy.

Please complete the survey included within this Electric Vehicle Infrastructure Strategy pack and return using the free post envelope, ensuring that you have read and understand the Privacy Notice included within this pack. Please submit your feedback by the 23rd of December 2022.

If you have any queries about the content of this pack (e.g., if an item is missing such as the privacy notice or free post envelope) please call Customer Services on 0300 123 55 00.