

Charging up the green recovery

Economic benefits of electric
vehicle infrastructure

Foreword

Councils across the country are focussing their efforts on how we can lead the economic recovery post-pandemic. Communities have suffered during this period of hibernation and we need to ensure that we secure a recovery that delivers sustainable growth for all our residents.

Alongside the imperative of ensuring we get the economy growing again we have to ensure that we are taking steps to tackle the climate emergency. The climate emergency has not gone away, it continues to be a pressing concern for us all.

The only way to deliver sustainable long-term growth is to ensure that that growth is part of a transition to a decarbonised economy. Only growth that sustains industries that have a future will deliver the long-term jobs and investment that our communities need.

Too often economic growth and environmental protection are seen as being in opposition. This does not have to be the case. In fact, timely investment in green jobs could deliver a long-term boost to our economy. Nearly 700,000 direct jobs could be created in England's low-carbon and renewable energy economy by 2030, rising to more than 1.18 million by 2050. We need to think again about how we support people into those jobs and invest in the critical infrastructure to make the transition. Long term recovery can only be delivered by industries that have a long-term future in a post carbon economy.

In writing this guide the Local Government Association (LGA) has sought to address how electric charging infrastructure can help us access this green dividend. Many councils have been looking at investing in charging infrastructure and transitions to the vehicle fleet. We previously wrote a guide outlining the reasons councils should consider electric vehicle infrastructure in their future plans.

Whilst this guide was drafted before the current lockdown, given the importance of securing our economic recovery and the need for that recovery to be compatible with our environmental goals we are now sharing this guide to examine these issues in more detail. This guide focuses on the role that electric charging infrastructure investment can play in green growth. We hope councils find it useful and interesting.

Councillor David Renard

Chairman, LGA Environment, Economy, Housing and Transport Board

Exploration of the clean, green growth opportunities for councils

Introduction

Since the introduction of the Climate Change Act 2008, carbon emissions from the UK energy sector have more than halved, yet during this same period, emissions from transport did not decrease at all. As a result, in 2017, transport became the UK's biggest source of carbon emissions.

To address the carbon emissions from transport, the UK Government released the Road to Zero strategy in 2018¹, setting out its plans to end the sale of new petrol and diesel vehicles by 2040. These plans were adopted into the UK's wider Industrial Strategy, emphasising the importance of zero-carbon mobility not just to the environment but to the long-term economic prosperity of the UK.

Through an amendment to the Climate Change Act made in 2019, the UK is presently committed to become net-zero carbon by 2050. To meet this challenge, the UK Government later announced its intention to strengthen the ambition of the Road to Zero strategy. Under revised proposals announced in February 2020, the sale of new petrol, diesel and hybrid vehicles would be banned by 2035 – if not sooner.²

Whilst the promotion of walking, cycling and public transport is often the best route to reduce carbon emissions from transport, alternative vehicle technologies are vital to reducing environmental impacts where private transportation is required. Hydrogen fuel technology has long promised an attractive,

like-for-like replacement for petrol and diesel but, in recent years, electric vehicles (EVs) have become firmly established as the most economically viable zero-emission alternative for cars and small vans.

The widespread adoption of EVs will need to be supported by provision of adequate public recharging infrastructure. In its Road to Zero strategy, UK Government committed to support the development of one of the best electric vehicle infrastructure networks in the world through measures ranging from capital infrastructure funding to changing the National Planning Policy Framework.

Councils have a vital role in the development of the UK's EV charging infrastructure network. Whilst the extent of local government involvement can vary from taking full ownership of public infrastructure through to light-touch co-ordination of private investment, many councils are finding that local action is necessary to support the transition to zero-carbon mobility. Taking no action at a local level may hinder the adoption of clean transport technologies, forgoing the economic growth opportunities they offer.

Whilst this document's primary audience are elected members, it also serves to highlight more widely to councils the potential economic benefits and growth opportunities that can be unlocked by providing infrastructure and making interventions to promote the use of EVs within their administrative areas.

1 UK Government, 2018. 'The Road to Zero', https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

2 UK Government, 2020. PM launches UN climate summit in the UK <https://www.gov.uk/government/news/pm-launches-un-climate-summit-in-the-uk>

This guide provides an introduction to how EVs can benefit local economies in the following ways:

- **Regeneration:** Increasing patronage of local businesses, improving access to employment and improving public health.
- **Planning:** Ensuring new-build houses are fit for the future, retaining value as the UK transitions towards 100 per cent electric forms of mobility.
- **Business growth:** Creating new cost savings in local businesses that can support growth and create jobs.
- **Skills and employment:** Increasing demand for skilled labour to install and maintain EV charging infrastructure
- **Tourism and trade:** Developing an environmentally friendly image, attracting eco-conscious individuals and businesses to visit and trade.
- **Inward investment:** Encouraging the organisations of the future to invest in the local area by providing infrastructure essential to operating EVs.

Improving place

EVs and EV charging infrastructure can contribute to improving place. By reducing emissions associated with petrol and diesel vehicles, EVs can reduce air pollution, which is thought to cause between 28,000-36,000 premature deaths every year and reduces UK economic productivity by £2.7 billion per annum.³ EV charging infrastructure can also contribute to urban regeneration, both by creating an additional incentive to visit and support local businesses and by improving access to affordable, sustainable mobility.

Regeneration

EV charging infrastructure influences where people stop to park their vehicle. In the 2019 Zap-Map EV Charging Survey, 90 per cent of respondents stated that the availability of EV charging infrastructure 'always' or 'often' influenced their decision on where to park their vehicle.⁴ By installing EV charging infrastructure in locations close to local businesses – particularly retail and leisure – EV owners may be attracted to visit locations they may not have otherwise visited. Whilst slow recharging times are often considered to be one of the key drawbacks of EVs, the duration of charge creates opportunities for EV owners to spend time exploring local retail and leisure attractions while their vehicle recharges. This has the potential to increase patronage of local businesses.

EV charging infrastructure can support the roll out of electric car clubs and, in doing so, provide inclusive access to a sustainable and affordable means of travel. For residents who cannot afford to purchase their own vehicle, an electric car club offers a means of travel to destinations not covered by public transport, potentially contributing to improved access to employment, family or community. For those who drive infrequently, an electric car club can increase disposable income by offering a cheaper alternative to vehicle ownership, as flat-rate costs such as insurance, road tax, MOT and servicing are replaced by use-based fees.

3 Public Health England, 2018. 'Health Matters: Air Pollution', www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution

4 Zap-Map EV Charging Survey, 2019. Survey sample of 1,617 electric vehicle owners.

InclusivEV, Solihull Metropolitan Borough Council

InclusivEV is a pan-European EU funded (Climate-KIC) project, demonstrating the potential for EVs to be used for car sharing schemes in low income, urban neighbourhoods. Cenex and E-Car Club worked in partnership with Solihull Metropolitan Borough Council to install electric car club vehicles in more deprived areas of Solihull. Through the scheme, 18 electric Renault Zoe car club vehicles were deployed alongside EV charging infrastructure at nine locations in North Solihull. These vehicles were made available on a pay-as-you-go basis at a rate of £3.50 an hour – a cost that included fuel (electricity) and insurance.

Providing EV charging infrastructure and electric car club vehicles can also mitigate the impact of vehicle penalties enforced through emission control zones such as clean air zones (CAZ), ultra-low emission zones (ULEZ) and zero emission zones (ZEs). Whilst these initiatives have been proven to have a positive impact on urban air quality, imposing charges on more polluting vehicles is often considered to disproportionately impact poorer residents and small businesses who cannot afford to purchase newer, cleaner vehicles. Providing access to EVs through either electric car clubs or through provision of affordable charging infrastructure can help residents to avoid the costs associated with running older vehicles following the implementation of an emission control zone.

Leeds City Council, Clean Air Zone Support

In 2020, Leeds City Council will implement a clean air zone (CAZ) that will charge operators of non-compliant taxi & private hire vehicles and heavy vehicles £12.50 and £50 per day to enter respectively. To assist local businesses and taxi/private hire vehicle operators in adapting to the requirements of the CAZ, Leeds City Council has utilised Department for Environment, Food, & Rural Affairs (DEFRA) funding to:

- Offer a top-up grant of £1,000 per business to support the installation of their own EV charging infrastructure. This is additional to a UK Government grant allowing businesses to claim up to £500 per charging socket.
- Introduce an EV and e-bike trial scheme, allowing local businesses and taxi and private hire operators to test an EV or e-bike for up to two months and at no charge in order to ensure the technology meets the needs of the business before making an investment.

Planning

Through the implementation and enforcement of effective planning guidelines, councils can ensure that new residential developments are equipped with an appropriate number of EV chargepoints. The UK Government is currently proposing to change national Building Regulations⁵ to specify that:

- all new residential buildings, or buildings undergoing material change to residential use, with an associated parking space must include an EV chargepoint
- all new residential developments with more than ten car parking spaces should have electrical cable routes for EV chargepoints to every parking space.

⁵ HM Government, 2019. Electric Vehicle Charging in Residential and Non-Residential Buildings

It is estimated that currently around 80 per cent of all EV charging takes place at home.⁶ The benefits of being able to charge at home include the convenience of being able to fully charge an EV overnight for the following day and having access to domestic electricity tariffs at costs often below 10p per kilowatt hour. As a result, many of the key benefits of owning an EV – such as lower running costs – are dependent on access to charging at home.

In comparison, those without the ability to charge at home are typically required to pay between 25-35p per kilowatt hour to use public EV charging infrastructure, without the confidence that EV charging will be available as and when required and often without the convenience of being able to charge overnight. For this reason, access to affordable EV charging infrastructure in residential locations is key to ensuring that the benefits of EV ownership are distributed fairly across all areas of society.

With housing developments having lifespans of several decades, it is important that the long-term needs of residents are met in developments being planned at the present day. The predicted transition to EVs suggests that, within two decades, prospective vehicle owners will no longer have the option of purchasing a brand-new petrol or diesel vehicle, but the availability of residential EV charging is still likely to have a significant impact on vehicle running costs.

Long-term property values should therefore be a present consideration of councils and developers when deciding upon the levels of EV charging infrastructure to be included in new developments. It is likely that availability of EV charging will increasingly impact property values, as property buyers begin to factor-in the additional ongoing costs associated with not having access to a domestic chargepoint – much the same way that ground rents are factored in by those purchasing leasehold properties.

By comparison, driveway conversions are presently thought to add up to 10 per cent to property values, according to Virgin Money.⁷

In exploring possible changes to local planning guidance, consideration should also be given to reducing the requirement for private car parking in new developments. Provision of car club vehicles, bike sharing schemes (such as London's Santander bicycle docks) and other means of public transport can contribute to removing the need for private vehicle ownership. Factoring this in at the development stage can maximise the amount of housing that is able to be provided at a site, as space that may have been occupied by parking can instead be used to add additional dwellings to a development.

⁶ HM Government, 2019. Electric Vehicle Charging in Residential and Non-Residential Buildings

⁷ Virgin Money, accessed February 2020. 'How to add value to your home', <https://uk.virginmoney.com/virgin/living/article/how-to-add-value-to-your-home/>.

Developing the local labour market

Providing EV charging infrastructure has the potential to develop local labour markets by both unlocking business growth and opening up new employment opportunities.

Business growth

EVs can reduce business operating costs through savings in fuel costs and lower tax requirements. Depending on the size of fleet an organisation operates and the number of miles driven, the exact amount of cost savings varies from one business to another. The International Council for Clean Transportation estimates that, in the UK, EVs are already approximately 5 per cent cheaper to own over a four-year period⁸ and these savings will grow as EVs become more affordable. Savings made by using EVs can be used to support business growth, potentially resulting in job creation or reducing the number of businesses going into administration.

EV chargepoint installations can add value to multiple other areas of the supply chain. The installation of EV charging infrastructure typically requires the involvement of civil and electrical engineers to mount the equipment and connect it to the grid. EV charging infrastructure installations are also increasingly being designed to include additional technologies such as solar panels and battery storage. These additional technologies can reduce impact on the grid and generate free electricity, and they also create business opportunities across a broader supply chain.

City of York Council, Public Electric Vehicle Charging Strategy 2020-2025

In March 2020, City of York Council adopted and published its Public EV Charging Strategy, covering the years 2020 to 2025. This strategy outlines the city's plans to:

- install fast chargers at 5 per cent of parking bays within their own long-stay car parks
- use funding from the UK Office for Low Emission Vehicles and the European Commission to install ultra-rapid chargers in HyperHubs at strategic locations around York
- provide competitive tariffs to minimise the costs of using an EV for local residents and businesses.

In its assessment of the strategy, City of York Council considered that the strategy will have a positive impact on the business community in York by encouraging EV drivers to visit the city. This accompanies anticipated benefits for public health, the local environment, reduced carbon emissions, and improved access to services for those most in need.

⁸ ICCT, 2018. 'Using Vehicle Taxation Policy to Lower Transport Emissions', https://theicct.org/sites/default/files/publications/EU_vehicle_taxation_Report_20181214_0.pdf

With the opportunities for business growth spanning different areas of the supply chain, councils can seek to maximise the value added to their local economy by encouraging the involvement of local suppliers. Whilst the number of specialist EV charging infrastructure providers is small – comprised mostly of companies with a national or international client base – there are a greater number of local suppliers providing supporting technologies such as solar panels and battery storage. Councils can assist these local suppliers by running EV charging infrastructure procurement processes that foster the creation of cross-sector partnerships between local and national suppliers. The creation of these partnerships can be facilitated by, for example, running market engagement days as part of a procurement process.

Skills and employment

As of February 2020, data suggests that there are just over 30,000 public EV chargepoint connectors available in the UK⁹, shared between around 230,000 plug-in vehicles.¹⁰ If present provision were to be maintained, over 4 million chargepoints would be required to support the wholesale transition to EVs for all 32 million cars registered in the UK. Whilst improvements in technology could mean the actual number of EV chargepoints required may be less than this, considerable growth in the scale of UK EV charging infrastructure will inevitably be required.

The scale of growth required in the UK's EV charging network will generate additional demand for skilled labour, likely focussing on the civil and electrical engineering disciplines. These skills will be in demand to install, maintain, repair and replace EV charging infrastructure. With potentially millions of EV chargepoints to install and maintain, local recruitment will have considerable advantages in reducing the time and cost

needed to provide an ongoing service that meets the needs of customers.

Unlike other newly emerging industries, such as software and web development, the fundamental engineering skills required to install and maintain EV charging infrastructure have been practised for generations. The education and training infrastructure is therefore well developed and highly accessible to individuals from all backgrounds.

By co-ordinating with training providers, councils can prepare the local labour market to supply future demand for the skilled labour associated with EV charging infrastructure. This will ensure that any capital investment in EV charging infrastructure made by the council – or any other local organisation – is contributing to the creation of high-value, long-term employment opportunities within their local area.

⁹ Zap-Map Charging Point Statistics, accessed 19th February 2020, www.zap-map.com/statistics

¹⁰ UK Department for Transport, 2019. VEH0131 dataset, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/853462/veh0131.ods

Attracting trade and investment

As the number of EVs on UK roads increases, the provision of effective EV charging infrastructure is likely to become a key factor that individuals and businesses consider when choosing to visit, trade and invest in local areas.

Tourism and trade

Providing an adequate amount of EV charging infrastructure can play a role in building a clean, environmentally friendly image; avoiding the perception of a poor local environment. This may contribute to maintaining and growing levels of trade and tourism as the UK population continues to become more concerned for the environment and for public health.

Encouraging the use of EVs has the combined effect of improving local air quality and reducing carbon emissions, both of which are increasingly important issues for UK voters. By improving urban air quality, EVs also contribute to improving public health and reducing risk of premature mortality. In light of the COVID-19 pandemic of 2020, harmful emissions from road transport may become a greater factor considered by individuals when choosing to visit a location for tourism or trade.

The European Public Health Alliance (EPHA) has stated that long-term exposure to air pollution causes underlying health conditions

that make respiratory diseases more deadly.¹¹ This is backed up by research conducted into previous coronavirus outbreaks, which found that those contracting the SARS virus during the epidemic of 2002 were at least 84 per cent more likely to die if they lived in areas of moderate to high air pollution.¹² Following the widespread disruption to life caused by the COVID-19 coronavirus outbreak in 2020, the visibility of air pollution as a determinant of public health is likely to increase, prompting individuals and businesses to increasingly consider the air quality of locations they choose to take holidays and/or trade with businesses.

The COVID-19 pandemic in 2020 also illustrated the extent to which society can improve air quality by addressing emissions from road transport. Within days of the UK Government issuing guidance for UK residents to avoid leaving home for all but essential reasons, evidence showed that air pollution had reduced by half in some urban locations.¹³ This demonstrates that a transition to EVs will yield a near-instant positive impact on air quality.

Inward investment

The number of large national and multinational organisations committing to transition to EVs is growing. In the future, inward investment decisions may be influenced by provision of public EV charging

11 European Public Health Alliance, 2020. Coronavirus threat greater for polluted cities, accessed March 2020, <https://epha.org/coronavirus-threat-greater-for-polluted-cities/>

12 Cui, Y., Zhang, Z., Froines, J. et al. Air pollution and case fatality of SARS in the People's Republic of China: an ecologic study. *Environ Health* 2, 15 (2003). <https://doi.org/10.1186/1476-069X-2-15>

13 Air Quality News, Thomas Barrett, 2020. Air pollution halves during first day of UK coronavirus lockdown, accessed March 2020, <https://airqualitynews.com/2020/03/25/air-pollution-halves-during-first-day-of-uk-coronavirus-lockdown/>

infrastructure and existence of a local supply chain able to install, operate and maintain EV charging equipment. This is particularly likely to be the case for companies operating high-mileage light vehicle fleets.

The Climate Group, EV100

Over 60 organisations are members of EV100, a global initiative set up by The Climate Group to speed up the transition to EVs. Their membership includes companies with significant UK influence such as BT Group, Centrica, HP Inc., Lloyds Banking Group and The Royal Bank of Scotland. As of February 2020, the UK members of EV100 have committed to purchasing and operating 56,859 EVs and all members of EV100 have committed to operate 100 per cent electric fleets by 2030.

As of January 2020, EVs represent less than 1 per cent of light vehicles on UK roads and account for just under 3 per cent of all light vehicle sales. The industry is therefore at its early stages, presenting opportunities for innovation both in vehicle technology but also in charging infrastructure technology.

In the EV charging infrastructure industry, there are several key challenges that innovative organisations across the world are endeavouring to overcome.

- Providing scalable high-power charging infrastructure, capable of recharging an EV in a matter of minutes.
- Identifying an affordable and scalable means to provide overnight charging facilities to residents who do not have access to dedicated off-street parking.
- Hardware and software solutions reducing impact of EV charging on the electrical grid.
- Hardware and software solutions that improve ease of use.

The areas of innovation listed above are not entirely new fields of industry. Instead, they draw upon skills from traditional sectors including electrical engineering, design engineering and software development. The simplicity of EV charging equipment – in comparison to petrol and diesel refuelling systems – has enabled several UK suppliers to establish themselves in the industry.

Oxford City Council, Go Ultra Low Oxford

Innovative technologies are being developed to provide residents without off-street parking with a means to charge an EV at home. In 2017, Oxford City Council was awarded £800,000 by the UK Government Office for Low Emission Vehicles to trial several of such technologies. The first phase of the trial looked at installing EV chargepoints in lampposts and bollards, as well as installing covered channels in pavements to allow residents to run electrical cables from their EV to a socket installed in their property. The first phase culminated in a report that identified and compared the strengths and weaknesses of each technology, with lamppost chargepoints and cable channels being recommended.¹⁴ Based on these learnings, the second phase of the project aims to install a total of up to 100 EV chargepoints in residential areas. As of February 2020, Oxford City Council are now gathering expressions of interest from residents to target the most ideal locations for residential EV infrastructure.

¹⁴ Oxford University TSU, 2019. Go Ultra Low Oxford, Monitoring and Evaluation of Phase One, <https://www.tsu.ox.ac.uk/pubs/2019-GULO-Phase-1-Final-Report.pdf>

It is important to acknowledge that, whilst the EV industry is currently a relatively small segment of the UK's overall motor industry, its growth is widely anticipated to be all but certain. The opportunities for innovation are therefore of potentially high value.

Councils can attract and encourage companies to innovate in this sector by offering a supportive environment to demonstrate and trial innovative new technologies in real-world environments.

Additional resources

The following documents are made publicly available and provide useful additional information on electric vehicles and electric vehicle charging.

UK Government Road to Zero Strategy, 2018

UK Government strategy concerning the decarbonisation of road transport.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

UK EVSE Association Procurement Guide, 2019

Technical advice and guidance on electric vehicle charging infrastructure procurement, including specification and installation.
<http://ukevse.org.uk/content/uploads/2018/12/Updated-UK-EVSE-Procurement-Guide.pdf>

Energy Saving Trust guidance for local authorities, 2019

Government sponsored advice to councils concerning the planning, procurement and installation of electric vehicle charging infrastructure.
<https://energysavingtrust.org.uk/transport/local-authorities/developing-electric-vehicle-charging-infrastructure>

Renewable Energy Association 2018 Taking Charge: How local authorities can champion electric vehicles

Guidance for councils on the benefits of encouraging electric vehicle use and the measures that can be employed to unlock these benefits.
www.r-e-a.net/wp-content/uploads/2019/10/REA_taking_charge_final.pdf

Go Ultra Low

Campaign group, jointly run by UK Government, the Society of Motor Manufacturers and Traders (SMMT) and energy sector organisations, providing industry-backed information and interactive tools to support the transition to electric vehicles.

www.r-e-a.net/wp-content/uploads/2019/10/REA_taking_charge_final.pdf

Zap-Map

Private-run free-to-use map of current electric vehicle chargepoint locations, with high-level statistics on the number and type of electric vehicle chargepoints available in the UK.

www.zap-map.com



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