

# Councils in charge

Making the case for electric charging investment



# Foreword

## Making the case for electric vehicles

The Government's Road to Zero strategy has set an ambition that no new conventional petrol or diesel cars will be sold by 2040, and there is growing pressure for the ambition to be met sooner. Meeting this ambition is going to require a step change in the availability of electric vehicles (EVs) charging infrastructure, also known as chargepoints. Chargepoints will have to become as ubiquitous as petrol stations to charge most vehicles.

Although it's difficult to say with certainty how the technology will progress over the next ten years, it seems likely that we will need a network of charging infrastructure to enable drivers to top up their battery when they are out and about and for use by drivers without off-street parking and therefore a chargepoint at home. However, the bulk of charging will take place at homes and workplaces where vehicles are parked for longer periods and because it is generally cheaper and more convenient.

We do not anticipate that councils either want, or need, to become the long-term default provider for electric vehicle chargepoints. For the transition to be successful, the chargepoint market will have to strengthen. This is the only way we will reach the level of coverage envisioned by Road to Zero. However, many councils are already showing that they have a role to play in catalysing this market and helping in its early stages.

There are both powerful economic and environmental reasons for councils to encourage the adoption of EVs on our road networks, including reducing emissions of carbon dioxide and harmful air pollutants.

There will also be an expectation from residents and visitors that places will have adequate coverage of convenient and affordable electric vehicle charging infrastructure available to use.

However, the electric vehicle charging landscape can be a daunting area for many councils and councillors. There are many chargepoint providers out there, the technology involved can appear complex, and the potential role for councils unclear. It is also a non-statutory service and many councils, given current budgetary pressures, may find it challenging to invest in charging infrastructure.

This publication is intended as a guide for councillors to help them understand the current landscape for electric vehicle charging infrastructure and engage with their officers, colleagues and the wider public with more confidence.

I am certainly excited by the prospects that EVs will bring, to help improve air quality and reduce our dependency on fossil fuels and in future alongside connected technologies and automation to radically change the way we travel. However, if all this technology doesn't ultimately lead to better outcomes for our residents and business, including better health and environment impacts, then we will have missed an important opportunity. Therefore, the LGA will continue to play a role in working with central government and major stakeholders to ensure we make the most of new transport-related technologies.

### **Cllr Martin Tett**

Chairman of the LGA's Economy, Environment, Housing and Transport Board.

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# The case for electric vehicles

It is widely accepted that electric vehicles (EVs) will have lower running costs, are quieter, better for the environment and simpler to repair. National government policy is encouraging a transition away from internal combustion engines and towards ultra-low emission vehicles, including EVs, over the next 20 years. Below we set out some of the key reasons why many councils are already promoting EVs and charging infrastructure.

## Air pollution

We are still discovering new ways in which polluted air affects our health but it has been shown to cause or worsen a range of lung and heart conditions including: asthma, chronic bronchitis, chronic heart disease (CHD), and stroke.

As a result of suffering from these conditions, many people are less able to work and need more medical care. In this way, air pollution costs our economy and our NHS millions of pounds every year.

As a result of these conditions many people also die earlier than they otherwise would. In 2018, a committee of health experts brought together by the Government estimated that at least 28,000 people die prematurely in the UK every year as a result of poor air quality.<sup>1</sup>

Road transport is a major source of air pollutants, including 34 per cent of Nitrogen Oxide (NOx) (contributing to 80 per cent of concentrations at the roadside), 12 per cent of particulate matter (PM) and four per cent of non-methane volatile organic compounds (NMVOCs).

Full EVs have zero exhaust emissions. This means they do not release NOx emissions or carbon dioxide. However, they still generate some PM from wear on brakes and tyres.

Given current concerns about air pollution, especially Nitrogen Dioxide levels which are above EU legal limits in many towns and cities, transitioning a council's fleet would show that it is leading by example.

## Carbon reduction and climate change

Today, transport is the largest greenhouse gas-emitting sector in the UK, accounting for 28 per cent of greenhouse gas emissions.<sup>2</sup> Road transport accounts for 87 per cent of this. If we are to meet our commitments to reduce carbon emissions there will have to be a switch to much greater use of active travel for short journeys. However some journeys will inevitably need to be taken in cars and, in the future, EVs will ensure those journeys are taken in a way that minimises carbon emissions.

<sup>1</sup> Association of long term average concentrations of nitrogen dioxide with mortality, COMEAP, 2018 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/734799/COMEAP\\_NO2\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734799/COMEAP_NO2_Report.pdf)

<sup>2</sup> Committee on Climate Change Report to Parliament 2018 [www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf](http://www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf)

Battery EVs have significantly lower carbon dioxide emissions than conventional petrol and diesel vehicles, even when taking into account the emissions from producing electricity.

In the UK, a battery electric car is estimated to have greenhouse gas emissions which are 66 per cent lower than a petrol car and 60 per cent lower than a diesel, when recharged using electricity from the national grid.<sup>3</sup> As the proportion of renewable and low carbon electricity supplied via the grid continues to grow, electric vehicle emissions will continue to fall in parallel.

To realise the maximum reduction in emissions, drivers or organisations can choose to recharge their EVs using renewable energy, for example through generating energy on-site or at home, selecting a renewable energy tariff or using chargepoint companies that have committed to only using renewable energy for their networks.

## Reduced motoring and fleet costs

Switching to EVs can be economically advantageous for fleet operators, in both the public and private sector, and car drivers more widely. As electricity is cheaper than petrol and diesel per mile, EVs are cheaper to operate. EVs are also mechanically simpler than conventional vehicles so are likely to be more reliable and need less servicing, lowering costs for consumers and businesses.

The Energy Saving Trust (EST) is able to offer free, in-depth Ultra Low Emission Fleet Reviews to both private and public sector organisations. This analysis helps fleets to identify when EVs would be appropriate and cost-effective for them. More information can be found in 'Next Steps'.

3 Road to Zero, HM Government 2018  
[http://data.parliament.uk/DepositedPapers/Files/DEP2018-0683/The\\_Road\\_to\\_Zero.pdf](http://data.parliament.uk/DepositedPapers/Files/DEP2018-0683/The_Road_to_Zero.pdf)

## Resident and business demand

In the Government's social attitude survey on motorists' views on upgrading to EVs, the two most important issues raised after the purchase cost were the distance that could be travelled on a single charge and the availability of charging infrastructure.<sup>4</sup>

Councils can help release the latent demand for EVs by providing EV charging infrastructure in their areas, increasing driver confidence. Councils can also encourage drivers to switch to electric cars in a range of ways, including by identifying an EV champion or committing to free or discounted parking permits for EVs, following the example of Milton Keynes.<sup>5</sup>

## Noise

Road traffic is the single biggest contributor to noise pollution according to analysis done by the European Environment Agency.<sup>6</sup> Noise from conventional vehicles affects human health and damages the environment. The World Health Organization estimates that the noise impact of road traffic is second only to pollution as the biggest environmental impact of vehicles.<sup>7</sup> In England alone, the annual social cost of urban road noise is estimated to be £7–£10 billion.<sup>8</sup>

Although the noise of vehicles travelling above 12 mph is principally due to tyres and road surface noise, at the lower speeds typically found in urban centres engine noise is the main contributor.

4 Public attitudes towards electric vehicles: 2016 ONS  
[www.gov.uk/government/statistics/public-attitudes-towards-electric-vehicles-2016](http://www.gov.uk/government/statistics/public-attitudes-towards-electric-vehicles-2016)

5 Local Measures to encourage the uptake of low emission vehicles: good practice guide. Low Carbon Vehicle Partnership (LowCVP), 2015  
[www.lowcvc.org.uk/assets/reports/LEVs.pdf](http://www.lowcvc.org.uk/assets/reports/LEVs.pdf)

6 'Managing exposure to noise in Europe', EEA, 2017  
[www.eea.europa.eu/themes/human/noise/sub-sections/noise-in-europe-updated-population-exposure](http://www.eea.europa.eu/themes/human/noise/sub-sections/noise-in-europe-updated-population-exposure)

7 Burden of disease from environmental noise, WHO, 2011  
[www.euro.who.int/\\_\\_data/assets/pdf\\_file/0008/136466/e94888.pdf](http://www.euro.who.int/__data/assets/pdf_file/0008/136466/e94888.pdf)

8 Noise pollution: economic analysis, DEFRA 2014  
[www.gov.uk/guidance/noise-pollution-economic-analysis](http://www.gov.uk/guidance/noise-pollution-economic-analysis)

At low speeds, vehicles driven by electric motors are significantly quieter than those powered by conventional engines.

The potential reduction in noise should be transformative for those living close to busy roads and city centres. A reduction of urban noise levels by 3dB can reduce annoyance effects by 30 per cent. At average central London speeds, the reduction in vehicle noise arising from the use of EVs is approximately 8dB.<sup>9</sup>

## Income generation

There are many different models for the deployment of charging infrastructure. This includes models where provision is left to private firms who will take on the commercial risks and the local authority exposure is minimal. There is also potential for charging infrastructure to raise revenue for councils or to be installed for little capital expenditure.

Different models will be appropriate for different areas. Higher-power chargepoints and chargepoints in busy locations are likely to be more profitable and the best choice will also depend on the council's appetite for taking on risk and the availability of government grant funding.<sup>10</sup> Some councils have already shown that charging infrastructure can be a revenue generating opportunity for councils. Transport for Greater Manchester and Oxford City Council have been looking at how they can generate income and you can find out more in their case studies.

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<sup>9</sup> Road to Zero, HM Government T 2018  
[http://data.parliament.uk/DepositedPapers/Files/DEP2018-0683/The\\_Road\\_to\\_Zero.pdf](http://data.parliament.uk/DepositedPapers/Files/DEP2018-0683/The_Road_to_Zero.pdf)

<sup>10</sup> For example, the On-street Residential Chargepoint Scheme  
[www.energysavingtrust.org.uk/transport/local-authorities/street-residential-chargepoint-scheme](http://www.energysavingtrust.org.uk/transport/local-authorities/street-residential-chargepoint-scheme)

# What's going on out there?

## Uptake

One of the greatest challenges in encouraging widespread adoption of EVs is the “chicken and egg” relationship between EVs and charging infrastructure. Charging infrastructure needs to be in place to give consumers and businesses the confidence to purchase an EV. Yet, to provide appropriate numbers of chargepoints, there needs to be an understanding of the level of demand from potential EV users.

Published in July 2018, The Road to Zero<sup>11</sup> describes the Government's ambition to end the sale of new conventional petrol and diesel cars and vans by 2040. By 2030, the Government's ambition is that at least 50 per cent, and as many as 70 per cent, of new car sales – and up to 40 per cent of new van sales – should be ultra-low emission.

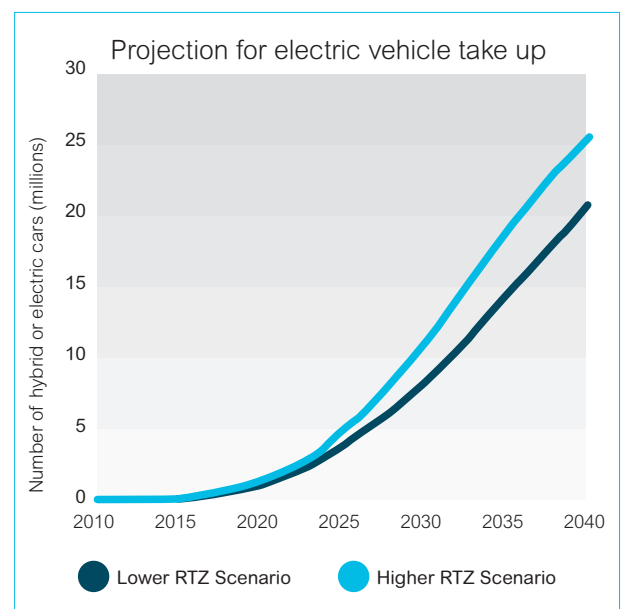
Ultra-low emission vehicle (ULEV) is the term used to describe any vehicle that:

- uses low carbon technologies
- emits less than 75g of CO<sub>2</sub>/km from the tailpipe (this will be reduced to 50g from 2021 recognising advances in technology)
- is capable of operating in zero tailpipe emission mode for a range of at least ten miles.

Based on this ambition, Energy Saving Trust (EST) have forecast the number of electric and hybrid vehicles up to 2040 that can be expected to join the UK's roads.

For context, the total number of cars on the UK's roads was 31.2 million in 2017.<sup>12</sup>

By 2030, it is anticipated that there will be between approximately 8 million and 11 million hybrid or electric cars in the UK, if uptake is aligned with the Road to Zero (RTZ) targets. By 2040, the number of hybrid or electric cars could reach 25.5 million. Whilst conventional hybrid vehicles (that cannot be plugged in) will initially form many of these sales, it is expected that plug-in hybrid and EVs will make up an increasing proportion as technology develops.



Source: EST

<sup>11</sup> HM Government, 2018, The Road to Zero, p2 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/739460/road-to-zero.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf)

<sup>12</sup> HM Government, 2018, Vehicle statistics [www.gov.uk/government/collections/vehicles-statistics](http://www.gov.uk/government/collections/vehicles-statistics)

## What are the different types of chargepoint?

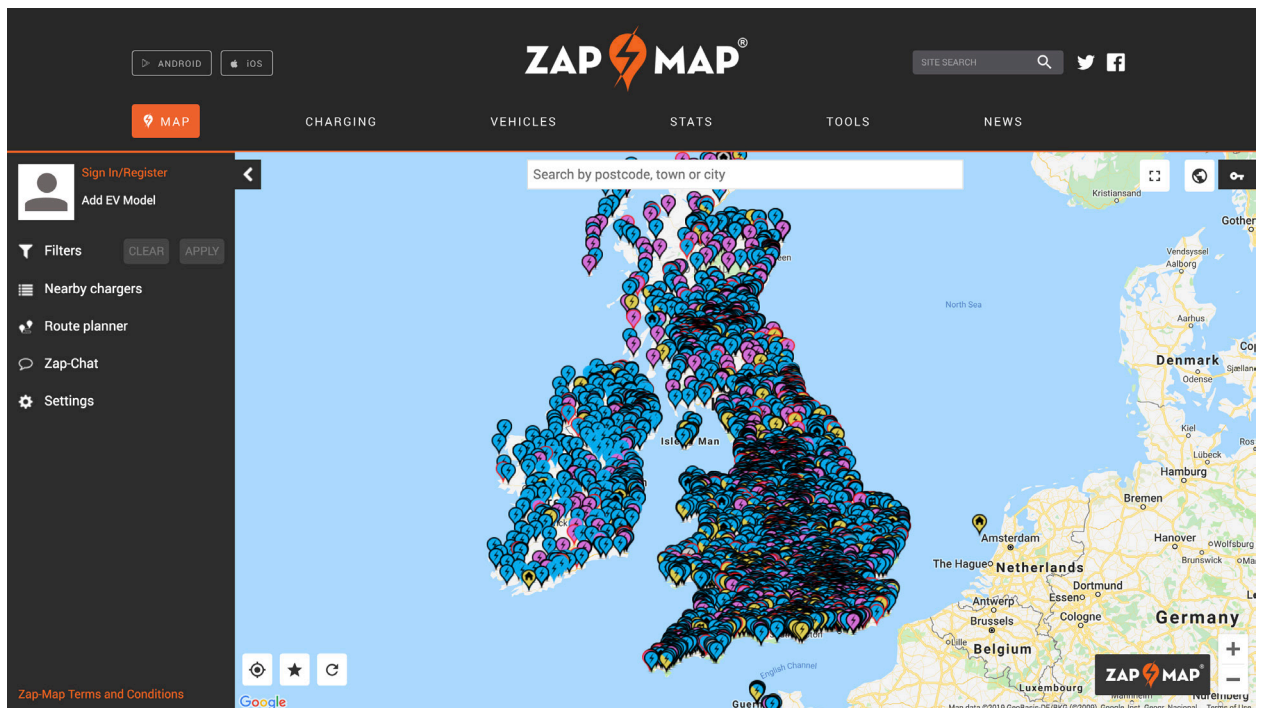
Chargepoint technologies are developing quickly, increasing in power and reducing in cost. Chargepoints are primarily categorised by their power, measured in kilowatts (kW), reflecting the speed at which they can charge an EV. The most common categories are:

- Slow/standard
  - 7kW or lower
  - typically available in 3.5kW and 7kW power
  - four to eight hours to fully recharge, depending on the vehicle and its battery size
  - add between 10-25 miles of range per hour
  - useful in locations where EVs are parked for a long time or overnight.
- Fast
  - between 7-22kW
  - most fast chargepoints are 22kW
  - two to four hours to fully recharge, depending on the vehicle
  - provide up to around 75 miles of range per hour
  - useful at destinations where EVs are parked for a few hours (eg shopping centres).
- Rapid
  - between 43-50kW
  - most rapid chargepoints are 50kW
  - 25-40 minutes for 80% recharge, depending on the vehicle
  - provide around 100 miles of range in half an hour
  - useful for EVs parked for a quick break (eg service stations, taxis, commercial vehicles).
- Ultra-rapid
  - over 50kW
  - most ultra-rapid chargepoints are 100kW or 150kW, more powerful units available
  - provide around 200 miles of range in half an hour
  - at present, few EV models can accept an ultra-rapid charge
  - many EVs on sale from 2020 onwards are likely to accept 100kW charging
  - useful for EVs that need to refuel without a break, as if refuelling at a petrol station.

Chargepoints take a variety of forms and can be placed at on-street or off-street locations. Many public chargepoints are integrated into a free-standing column, similar in size to a bollard, whereas rapid chargers are more like a large parking payment machine. Chargepoints can also be integrated into some streetlights.







## Where should chargepoints go?

Understanding where chargepoints should be sited can be an important strategic consideration. The type of charger will determine where it should go. Rapid chargepoints will be needed where vehicles do not stay long whereas slower trickle charging is more appropriate for residential areas. You can see where chargepoints are sited near you by accessing zap map, an interactive map of chargepoints.

You can find it at [www.zap-map.com/live](http://www.zap-map.com/live)

## Planning policies

Planning policies facilitate the future growth and development of a place. Long term planning strategies should incorporate policies that facilitate the transition to ultra-low emission vehicles. There are many different appropriate approaches, including planning conditions, permitted development and new parking standards in local plans.

The Government has amended permitted development rights to allow the installation of chargepoints in some situations.

Amendments to building regulations are currently being consulted on to ensure that all new developments with parking have chargepoint provision. Councils will need to be aware of how their local plans can help shape the transition towards a low emission future. Given the diversity of the size, location and operation of charging infrastructure it is difficult to say how planning policy should be formulated in all circumstances, however there is an increasing amount of guidance which is included in our further resources section.

# Case studies



## Fleet transition to zero-emission – Home Charging

### Case Study provided by Leeds City Council and the Energy Saving Trust

Leeds' Fleet Replacement programme is designed to identify the lowest emission vehicle available when needing to be replaced. Where possible, this means electric vehicles (EVs) as the default option, however this requires appropriate charging point facilities to support this change. When vehicles are identified as suitable for EV replacement, details of their depot locations are mapped and collated and they're then replaced, however this was not always straightforward. Site surveys often revealed that locations would only be able to accommodate chargepoints for two to four vehicles, unless expensive upgrades to the electrical capacity were undertaken. This created a challenge to the plan for accelerated transition to a zero-emission fleet.

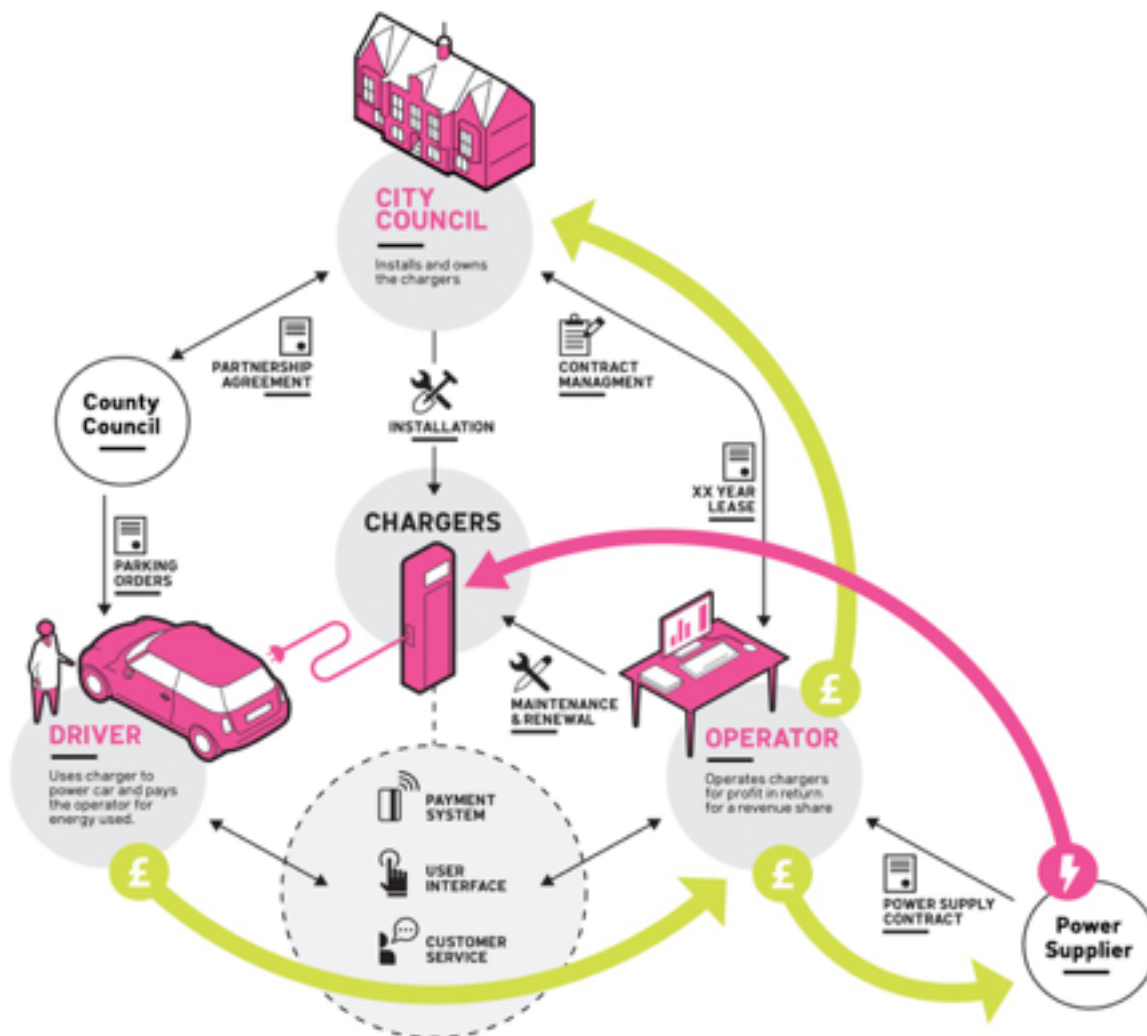
It was determined that a home charging scheme could enable the adoption of more EVs in the fleet to overcome this barrier. A home charging scheme pilot was launched involving 10 vehicles, to trial the operational feasibility of vehicles being taken home rather than stored at council sites overnight. This would require chargepoints being installed at officers' homes with a mechanism to repay them for the energy consumption of

vehicles being charged, this can be done at a significantly lower cost than embarking on depot energy capacity upgrades.

The pilot proved successful, generating highly positive feedback from drivers. Crucially, it also informed the development of the council's policy for fleet replacement enabling us to embark on ambitious plans to rapidly increase the number of EV's in our fleet.

Leeds City Council has invested significantly in low emission vehicles following its comprehensive fleet reviews and the implementation of a home charging scheme. This has led the acquisition of over 95 EVs and more than 110 chargepoints to date, with the number of points projected to double across the council estate and up to 250 points being installed at officer homes – therefore enabling us to build rapidly on what is already believed to be the largest public sector fleet of EV's in the UK.

It is estimated that the fleet of EVs will travel up to one million miles a year, offering significant fuel savings as electricity is cheaper than diesel (4p for electricity compared to 7p for diesel). The investment also hugely reduces the carbon, NOx and PM emissions of our fleet as well as demonstrating exemplar status of the council to key stakeholders across the city. These benefits will continue to aggregate as the fleet of EVs as projected to grow significantly in the next two years and beyond.



## Go Ultra Low Oxford

### Case Study provided by the Energy Saving Trust

Run by Oxford City Council and Oxfordshire County Council, the Go Ultra Low Oxford project is trialling six types of charging infrastructure over 12 months to assess their suitability for on-street charging in residential areas. The project was awarded £816,000 from the Office for Low Emission Vehicles (OLEV), which covers the capital costs of the trial and the subsequent roll-out of around 100 chargepoints.

Oxford City Council developed a bespoke concession framework, which reflects the time and resource intensiveness of this innovative trial. Their framework also considers relatively lower income typically generated by on-street residential chargepoints, when compared to rapid chargers, for example.

Using OLEV funding, Oxford City Council fully covered all capital costs (including equipment and installation) and therefore retains ownership of the chargepoints. The chargepoints are then leased to commercial chargepoint operators for four years, with the option to extend the contract by a further four years.

The council do not pay a monthly fee to cover operational costs. Instead, the operator is responsible for the maintenance and operation of the chargepoints, including customer service, collection of payments and the power supply contract. They operate the chargepoint for profit, returning a revenue share to the council once the chargepoint is profitable. All units are Open Chargepoint Protocol (OCPP) compliant, which ensures they are compatible with a single back-office system provider, New Motion.



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## Case Study Greater Manchester

### Case study provided by TfGM and Energy Saving Trust

Transport for Greater Manchester (TfGM) established the Greater Manchester Electric Vehicle (GMEV) Network in 2013. The network offers free charging for a nominal membership fee, with the costs being absorbed by TfGM.

It was decided that the network required a technological renewal and strategic expansion if it were to support the mass adoption of electric vehicles (EVs) across the region and play a central role in improving air quality. It would have to transition to provide a more stable revenue stream to support ongoing operation and proactive maintenance.

TfGM undertook extensive research and identified that time and cost savings could be made by developing a procurement framework for the entire Greater Manchester region. A regional framework also avoids market fragmentation, takes advantage of economies of scale and results in a more attractive private sector investment opportunity. The GMEV framework contract is available to all Greater Manchester authorities

and private landowners in the region. TfGM developed an in-house Geographic Information Systems Electric Vehicle Charging Infrastructure Location Model to assist in identifying suitable locations for charging infrastructure. Public and private landowners have been invited to put forward charging infrastructure requests for mapping. TfGM have nearly completed procurement with a supplier to be mobilised in due course.

The framework will last seven years (with options for two or three year extensions). It is structured into several sections:

- GMEV (publically owned) infrastructure: covers the existing network and additional public-sector funded and owned chargepoints. Suppliers will be expected to upgrade, operate and maintain new and existing infrastructure, and collect payments on behalf of GMEV, at prices set by GMEV.
- Supplier-owner infrastructure: GMEV will facilitate a 'host agreement'. Locations will be identified collaboratively, and the supplier will be expected to fully fund, install, operate, maintain and market the infrastructure and pay a 'landlord rent' if on public land. In return, the supplier will set pricing and collect all revenue.

- Electricity supply: an opportunity to supply the GMEV (publically-owned) infrastructure at a capped kWh rate. There is a renewable energy stipulation.

As part of their bids suppliers were expected to describe how they would support innovation and social value. This aimed to enhance the quality of the network and reduce adverse impacts on the electricity network.

The project makes use of the Joint Air Quality Unit (JAQU) awarded Early Measures Intervention Funding (£1.8 million), £1.8 million awarded through the OLEV ULEV Taxi Infrastructure scheme and £1.89 million for bus charging infrastructure. Operational and electricity supply costs are expected to be £2 million a year.

The procurement exercise is nearing completion and has an ambitious contract which has strong potential to enable the development of a strategic, high-quality charging infrastructure, blending public and private sector finance and expertise.

## How can your council develop an EV strategy?

Several councils, such as the Go Ultra Low Cities<sup>13</sup>, have led the way in developing comprehensive EV strategies.

Not all councils will require such a detailed strategy, but it is still important to consider who needs, and will use, public charging infrastructure for it to have maximum value. Where resources are limited, a council may wish to focus their efforts on providing public chargepoints where they are likely to be most needed, such as the following circumstances:

- where drivers do not have access to off-street parking to charge at home

- for drivers who need to recharge during the day without returning to a depot or home (eg businesses or taxi/private hire drivers)
- at destinations, such as park and rides or train stations, where people might wish to recharge after longer journeys
- where drivers are in transit to another destination, but need to stop to recharge their vehicle to continue their journey.

Other drivers may 'top-up' at public chargepoints eg whilst shopping for hours at a town centre but this will typically not be their everyday practice as it is likely to be more expensive than charging at home.

Once a council has decided which users or priority locations to target, decisions can be made about the relative numbers of slow, fast and rapid chargepoints that are required. In general, where vehicles are likely to be left for long periods or overnight, slow or fast chargepoints are likely to be enough.

EVs still contribute to congestion and many councils and businesses have targets to reduce personal vehicle use. However, many journeys and deliveries will still require vehicles, and EVs offer a 'clean' way to meet this need. EVs and charging infrastructure provision should be considered as part of a sustainable, holistic mobility strategy that also encourages walking, cycling, car-sharing and public transport use.

Local government will also need to reflect upon the different challenges that will be faced in rural areas, for example; greater concerns about range anxiety where chargepoints are further apart.

<sup>13</sup> Four UK cities were awarded £40 million by OLEV in 2016, and have major, multi-year initiatives underway: Nottingham, Bristol, Milton Keynes and London. £5m was also awarded for specific initiatives in Dundee, Oxford, York and the North East region.  
[www.gov.uk/government/news/40-million-to-drive-green-car-revolution-across-uk-cities](http://www.gov.uk/government/news/40-million-to-drive-green-car-revolution-across-uk-cities)

# Next Steps

## Energy Saving Trust

To produce this publication, the LGA is grateful to the Energy Saving Trust (EST). They have provided us with extensive technical guidance and have produced their own more detailed guide to EV infrastructure for councils which can be accessed at [www.energysavingtrust.org.uk/resources/reports](http://www.energysavingtrust.org.uk/resources/reports)

They also provide a Local Government Support Programme with tailored support available. The Local Government Support Programme focuses on building and strengthening EST's relationships with councils. Funded by the Department for Transport, it enables EST to provide the most effective and tailored support possible to improve local air quality and reduce CO2 emissions.

## How can EST help?

1. Supporting the development of baseline knowledge: keeping officers and councillors fully informed of the industry by running workshops and masterclasses on low emission transport policy, market status, technology and innovation and wider Mobility as a Service (MAAS).
2. Supporting the sharing of best practice: developing more effective and well-rounded strategies through observing findings and experience of similar projects run by cities and authorities.

3. Helping to identify transport programmes at a local and regional level that will help make a real difference in air quality, and support the development of current programmes to see greater project outcomes and impact.
4. Helping to join the dots: linking existing programmes and initiatives to develop a stronger strategy for broader regional plans or wider strategies that support MAAS and the Smart City agenda.

More information can be found at [www.energysavingtrust.org.uk/transport/local-authorities/local-government-support-programme](http://www.energysavingtrust.org.uk/transport/local-authorities/local-government-support-programme)

## Fleet Support

Energy Saving Trust offers in-depth, fleet reviews for organisations to help organisations make financial and environmental savings. With funding provided by the Department for Transport (DfT), EST's services are provided at no cost to the organisation.

A range of reviews are available, including one which focuses on identifying the potential and cost-effectiveness of adopting EVs.

For more information, see [www.energysavingtrust.org.uk/transport/fleet/fleet-support](http://www.energysavingtrust.org.uk/transport/fleet/fleet-support)

## Further Resources

Further resources on EVs and charging infrastructure are available:

BEAMA, 2015. BEAMA Guide to Electric Vehicle Infrastructure [www.beama.org.uk/resourceLibrary/beama-guide-to-electric-vehicle-infrastructure.html](http://www.beama.org.uk/resourceLibrary/beama-guide-to-electric-vehicle-infrastructure.html)

Electric Vehicles Technical Briefing for Fleet Operations- Institute for Engineering and Technology [www.theiet.org/publishing/iet-standards/transport/electric-vehicles-technical-briefing](http://www.theiet.org/publishing/iet-standards/transport/electric-vehicles-technical-briefing)

House of Commons, 2018. Business, Energy and Industrial Strategy Committee. Electric vehicles: driving the transition. Fourteenth Report of Session 2017–19. <https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/383/383.pdf>

Go Ultra Low Cities, 2016 [www.goultralow.com/news/consumer/go-ultra-low-cities-winners-announced](http://www.goultralow.com/news/consumer/go-ultra-low-cities-winners-announced)

Low Carbon Vehicle Partnership (LowCVP), 2015. Local Measures to encourage the uptake of low emission vehicles: good practice guide [www.lowcvp.org.uk/assets/reports/LEVs.pdf](http://www.lowcvp.org.uk/assets/reports/LEVs.pdf)

Renewable Energy Association (REA), 2018. Taking Charge: How Local Authorities can champion electric vehicles [www.r-e-a.net/upload/rea\\_publication\\_june\\_2018\\_-\\_taking\\_charge\\_-\\_how\\_las\\_can\\_champion\\_electric\\_vehicles\\_report\\_-\\_f.pdf](http://www.r-e-a.net/upload/rea_publication_june_2018_-_taking_charge_-_how_las_can_champion_electric_vehicles_report_-_f.pdf)

HM Government, 2018, Road to Zero Strategy. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/739460/road-to-zero.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf)

UK Electric Vehicle Supply Equipment Association (EVSE), 2015. Making the right connections, general procurement guide for EV chargepoints. Download at: <http://ukevse.org.uk/resources/procurement-guidance>

Zap-Map, an interactive map of all public chargepoints in the UK [www.zap-map.com](http://www.zap-map.com)

## Contact Us

The LGA intends to continue to work on providing more information, case studies and policy support to our members on EVs and charging infrastructure. If you would like to comment on our work, raise questions or provide examples of innovative practice in your council please contact:

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