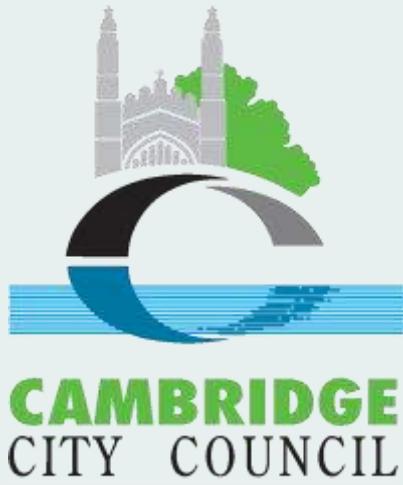


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Electric Vehicle and Infrastructure Strategy

September 2019

Cambridge City Council



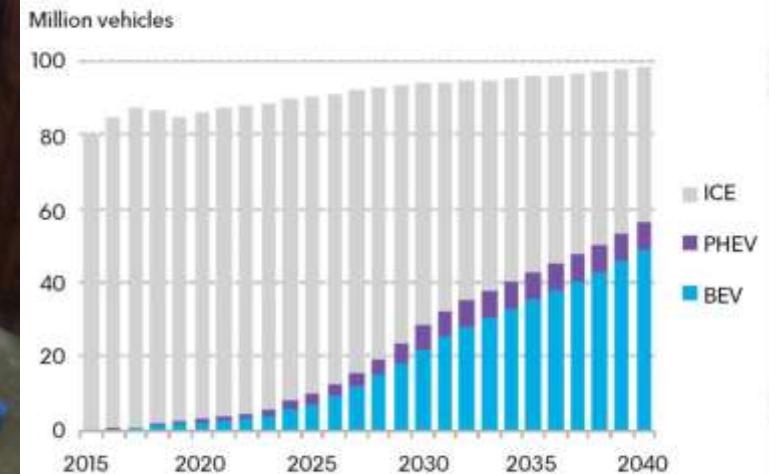
**An Overview of the Issues, Actions and
Key Contacts for the support of the
transition to Electric Vehicles in
Cambridge**

Executive Summary

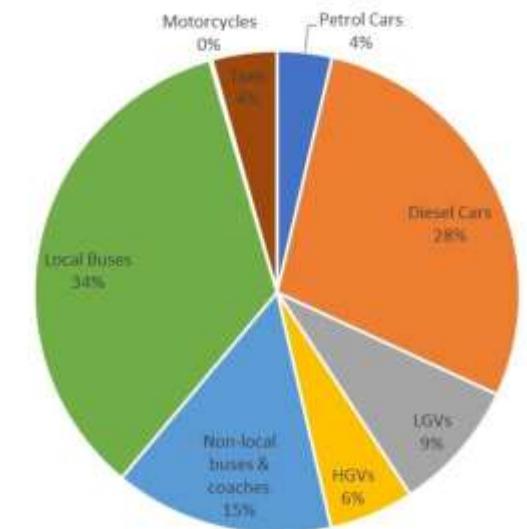
- Government have set the direction for the electrification of motor transport by banning sales of internal combustion engine cars by 2040 to deliver cleaner air and reduce carbon emissions.
- As a result demand for electric vehicles and charging infrastructure is growing daily.
- The move to ultra-low emission vehicles is necessary to meet our own climate change commitments to be net zero carbon by 2050 and to meet air quality objectives set out in the Cambridge Air Quality Action Plan.
- Electric vehicles are the current, established technology for effecting those improvements in emissions alongside modal shift to walking, cycling and greater use of public transport.
- Moving to an EV future presents many challenges both technical and social and as a second tier authority Cambridge City Council only has control over some aspects of the transition.
- Key areas where we can act and those where we are taking action are identified in this document and include Taxi Licencing; Fleet; Planning; and the management and operation of our car parks and housing developments.
- Those areas we can influence or where other public and private bodies have a role to play and current actions are identified in the document and range from small pilot charge point projects to strategic changes to the local electricity grid.
- This strategy confirms Cambridge City Council's commitment to supporting the uptake of electric vehicles and, where able, actively installing or requiring installation of the necessary infrastructure to support the transition.



Global long-term passenger vehicle sales by drivetrain



Source: BloombergNEF



Source: apportionment of road traffic NOx emissions in 2017 inside the inner ring road, Cambridge 2017

Strategic Aims

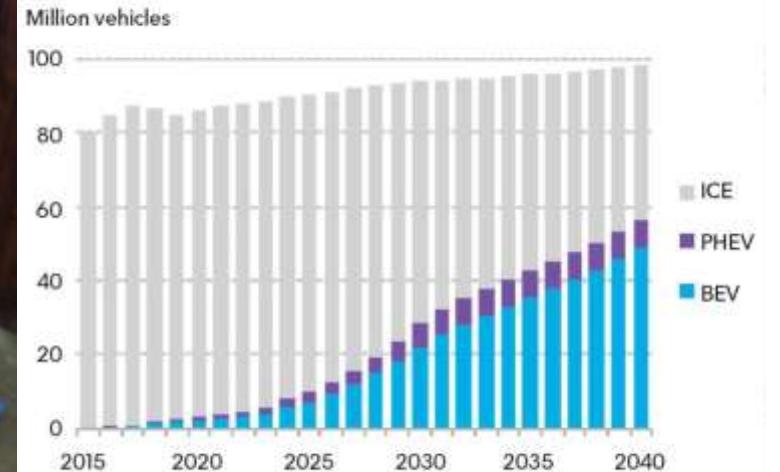
Four main aims have been identified to support the uptake of Electric Vehicles in Cambridge:

1. To identify sources of funding to develop and install EV Charging infrastructure and where appropriate pursue that funding.
2. To robustly consider EV as a preference for all City Council fleet replacement and new vehicle purchase where appropriate vehicles are available and meet our operational needs.
3. For the City Council to develop a commercial project to deliver charge points in our car parks in the short term and wider property holdings in the medium term.
4. To promote funding opportunities and provide support for partner organisations to deliver EV charging infrastructure where they are the most appropriate lead (e.g. County Council / on street charging).

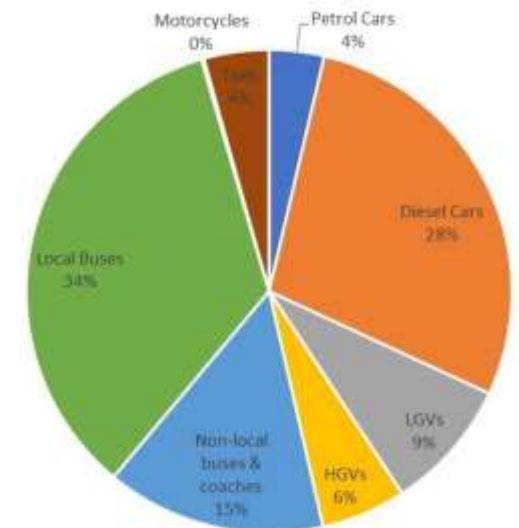
The summary action table on the following page sets out how some of these aims are being met and how others will be met.



Global long-term passenger vehicle sales by drivetrain



Source: BloombergNEF



Source: apportionment of road traffic NOx emissions in 2017 inside the inner ring road, Cambridge 2017

Current and Prospective Actions Summary Table

Initiative	Brief Description	Lead Organisation & partners	Lead Team	Funding Bodies	Status (Underway, Funded, In Development, Required)
Rapid Chargers for Electric Taxis	Installation of 20+ 43/50kw rapid chargers to support the transition to EV Taxis	Cambridge City Council	Environmental Quality & Growth Team	OLEV; Cambridge City Council; Greater Cambridge Partnership	Underway Completion in 2021
On Street lamp post charge point trial	Up to 18 3/7kw chargers trialled in suburban Cambridge installed on street lamp posts	Cambridgeshire County Council (in partnership with Balfour Beatty / Ubitricity)	Highways	Balfour Beatty / Ubitricity	Underway Surveys carried out Delivery in 2020
Commercial Charge Point Strategy	Concession contract to deliver rapid and fast destination charging for City Council Car parks and other property assets	Cambridge City Council Commercial Partner(s) to be procured	Commercial Services	Commercial Investment	In Development Target for initial installations in Multi Storey Car parks in 2020
Fleet Review	Full review of the costs, use and operation of the City Council fleet to inform future fleet strategy including use of EV	Cambridge City Council	Commercial Services	Cambridge City Council	Underway
Parish charge point project	Public accessible fast chargers for villages	Cambridgeshire County Council	Energy Investment Unit	OLEV / Parish Councils	In Development
Greater Cambridge (& East Cambridgeshire): Energised for Growth	Wide ranging project to investigate and facilitate smarter energy provision and network support across Cambridgeshire through integrated policy development	Cambridgeshire County Council Key Partners: UK Power networks; Other Cambridgeshire District Councils; Other commercial investors	Energy Investment Unit	INNOVATE UK UK Power Networks & others TBA	In Development Bid submission to Innovate UK in August 2019
Electric Vehicle Planning policy & Guidance	Measures to ensure delivery of suitable EV Infrastructure in new developments	Cambridge City Council	Shared Planning Service	Cambridge City Council	Underway Supplementary planning document out to consultation
At Scale on street charging solutions for Residents without Parking	To follow from on street lamppost trial and parish project. Tackling the need for those living in flats and terraced housing	Local authority Partners	Highways / Districts	OLEV / Local Authorities TBA	Required
Electrification of public transport	Ensuring that future public transport fleets are zero emission potentially through the implementation of a Clean Air Zone or other traffic regulation	Greater Cambridge Partnership Bus operators Transport Authorities (county Council / Combined Authority)	City Access (GCP)	GCP / Bus operators	Required
Signposting residents to relevant grant funding and information	Domestic Charge points Vehicle subsidies Commercial grants	Cambridge City Council	Environmental Quality & Growth Team	na	Underway
Identifying sources of funding and commercial partnerships for EV development		All Authorities	Environmental Quality & Growth Team	As identified	Underway – Networks established

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PO Box 700, Cambridge



CAMBRIDGE
CITY COUNCIL

Electric Vehicle and Infrastructure Strategy

Cambridge City Council

Contents

1. Introduction and Format
2. Background
3. National Context
4. Key Stakeholders—Cambridge City Council
 5. EV Taxis
 6. Planning
 7. Commercial & Car Parks
 8. Fleet
 9. Electric bikes
10. Cambridgeshire County Council
 11. Highways and On-street Charge Points
 12. Strategic Energy—Energy investment unit
13. Greater Cambridge Partnership
14. South Cambridgeshire District
15. The Combined Authority
16. Office for Low Emission Vehicles
 17. Legislation
18. Distribution Network Operator—UKPN
19. Public Transport operators

Appendices:

- i. OLEV Grant / Subsidy schemes
- ii. Guide to Domestic Charge Points
- iii. Example Planning Conditions to support EV



1. Introduction and Format of this Document

The transition to electric vehicles is a significant and complex undertaking which requires the coordination of public bodies at all levels, industry specialists, businesses and the public.

It has the greatest potential in the near term to have the most significant impact on the decarbonisation of transport and to improve air quality.

Making this happen however will require multiple stakeholders to play their part and this document sets out the role of Cambridge City Council in the wider context and the areas of action departments within the City Council will need to develop.

FORMAT

The Document is organised in to sections defined by key stakeholders and their distinct roles and areas of influence.

For each stakeholder the roles and responsibilities are clearly identified as are the linkages to areas of work on electric vehicles and charging infrastructure.

Stakeholder work areas are then further detailed on individual subject pages which identify the key officer contacts and highlighted panels setting out action which is underway as well as work being developed.

The Development of work on electric vehicles in Cambridge

- Cambridge City Council has supported the move to electric vehicles (EV) for many years first introducing charging infrastructure in to car parks more than 10 years ago, and trialling electric fleet vehicles as early as 2006
- However mass adoption has not become mainstream until now as both a reliable mature vehicle and charging infrastructure market has developed.
- In 2015 (updated 2019) the City Council's Air Quality Action Plan was first considered which set out that in order to meet our air quality objectives a significant move away from Internal Combustion Engine (ICE) vehicles was needed and that EV would play a significant role in achieving this.
- As a result the first significant step was to use taxi licencing and central government funding through the Office For Low Emission Vehicles (OLEV) to effect a transition to zero emission electric taxis
- Alongside this we have invested in electric fleet vehicles where this meets our operational needs, and now run 11 small electric vans
- More recently we have developed planning policies through the local plan and supplementary planning documents which require EV infrastructure in new developments
- However there is much more action needed if the transition is to be effectively delivered over the next 10 years

Key Actions :

Are detailed in panels like this

Key Contacts: Are set out in panels like this

AREA of Work:

Name—Job Title

Email contact details



Car park provision of slow chargers



2. Background

- This piece of work has been produced to acknowledge the scale, complexity and the need for coordinated action, within the Council and with external partners, to implement a move to an electrified Transport System.
- This document sets out the current state of work within the City Council, and the current local and national work to support the transition to electric vehicles, It aims to help provide the public, businesses and public transport operators the confidence and information to invest in and successfully manage this transition.
- It identifies the key stakeholders in the transition to electric vehicles ranging from those who will provide supporting infrastructure and finance to the end users who will be using electric vehicles and the locations, types and technology of infrastructure needed.
- It also sets out key areas of action both underway and where further work plans are needed for Cambridge City Council, other Cambridgeshire Districts, the County Council, Greater Cambridge Partnership and the Cambridgeshire and Peterborough Combined Authority with a view to ensuring that we support this transition in a coherent, competent and functional way whilst taking advantage of the significant opportunities for income, investment and technology development.

- It identifies why the City Council and other Cambridgeshire authorities should be active in this area and the role each needs to play in the transition and the gains for environment, productivity and investment that will flow from a positive and supportive approach to this strategic work.
- This Electric Vehicle and Infrastructure Strategy sets out what our actions and ambitions are to support work in this area over the medium term and identifies where others need to act to support this area of work.

Key Stakeholders

- **Cambridge City Council**
- **Cambridgeshire County Council**
- **South Cambridgeshire District Council**
- **Greater Cambridge Partnership**
- **Cambridgeshire and Peterborough Combined Authority**
- **UK Power Networks**
- **Local Businesses**
- **Residents and Visitors**
- **Public Transport Operators**

Key Actions (Underway)

- Taxi policy and dedicated Charging Provision
- Car parks - destination charging
- Planning Policy and Guidance
- New, City led, housing development
- On street charging trial

Key Actions (Developing)

- Fleet Review (City)
- Commercial Charge Point Strategy for Car Parks and Council Assets
- Building regulations
- Smart grids and network support R & D
- Funding for provision of on street charging infrastructure



Car park provision of slow chargers



3. National Context

- Central Government have clearly indicated that a transition to Electric Vehicles (EV) is necessary in order to improve air quality and improve the sustainability of the transport sector to meet its climate change targets.
- This is underlined by the long term policy of phasing out the sale of internal combustion engine cars by 2040 as set out in the 'Road to Zero' policy document, and the support for EV in the government's industrial strategy.
- This transition however presents a significant challenge in that it is the biggest change to transport behaviour and technology in a hundred years. At the heart of this is the need for an EV charging infrastructure that serves all stakeholders allowing residents, workers, public transport operators and businesses to have confidence to make the successful transition and invest appropriately for the future.
- At the same time the opportunities afforded by this major disruption in the transport fuelling sector are enormous with many new players entering the market and a significant move away from central provision and market domination by the global petrochemical industry.

- There are significant dangers of failure also if there is a lack of direction and leadership during these early stages in the transition.
- Central Government is currently adopting an approach of setting the broad policy direction and funding some key R & D but allowing the market to largely respond to the changes required. There is no centrally driven plan to ensure the coherent and uniform deployment of charging infrastructure to support the change and therefore there is somewhat of a leadership deficit which is currently causing a lack of confidence in the uptake of vehicles and the slow and piecemeal deployment of infrastructure to support EV.
- There are already apparent a number of practical, infrastructure and technology barriers emerging which need to be tackled. The electricity network will be severely challenged by the level of demand generated by a wholesale shift to EV and this will require the identification of bottlenecks in the network and a series of smart and local solutions to overcome. The need to match local renewable supply and provide storage and buffering solutions to avoid network shocks
- Government do recognise that there is a need for the encouragement of the market and are providing several charge point and vehicle funding programs largely through the Office for Low Emission Vehicles (OLEV). This is a £1.5 billion program which consists of R & D funding; subsidies and funding programs for charging infrastructure as differing scales and EV vehicle subsidy schemes

- Cambridge City is one of a fairly small number of authorities which has taken advantage of this funding to support a transition to EV Taxis and is currently rolling out a £626000 program for a 21 strong rapid and fast charge point network for taxis but this is just a very small part of the picture and much greater ambition is needed to ensure a confident and successful transition to a fully EV future.
- A few authorities London, Oxford, Dundee, Nottingham, Bristol, Milton Keynes and York were awarded funding ranging from £5-13 million to become 'ultra-Low Cities' in 2016, acting as exemplars for the roll out of EV on a significant scale. Each of these Cities is currently looking at differing aspects of the EV transition, testing charge point equipment, and policy support through subsidy, transport and financing initiatives. Therefore there is a growing body of information available to help guide others to competent and successful action in this area.



Car park provision of slow chargers



4. Stakeholder— Cambridge City Council:

Environmental Health

The Environmental Quality & Growth Team (EQG) team in Environmental Health have three key roles which impact on the EV transition: Delivery of cleaner air; professional consultation on the environmental impacts of development; and delivery of environmental projects

- Clean air is a significant driver for the move to EVs in Cambridge
- Planning policy and condition development and the expert scrutiny of applications in the team ensure the delivery of EV infrastructure and provision in to new developments
- The team have a good track record in winning funding and delivering environmental and energy projects and are currently delivering rapid charging infrastructure for Taxis for the Greater Cambridge Area
- Because of its early experience and expertise in EVs this team is assisting other services with the City Councils contribution to the EV transition

Commercial Services

- Commercial Services cover both **car parks and fleet** and are therefore fundamental to this agenda. They are also the lead service for procurement which is vital to the City Council's role in taking EV forward
- Developing our car parks to support EVs will be necessary to support their continued success and to ensure that Cambridge remains a viable and desirable destination for EV users
- In terms of providing community leadership as a public body it is vital that our **fleet** reflects our commitment to EVs and that our air pollution impacts and carbon footprint are reduced to support our wider policy commitments.
- Commercial services is taking a lead in developing a route to a commercial partnership approach to providing comprehensive charging infrastructure provision not only for our car parks but across our property assets

Planning

- Planning is key service for ensuring the adequate provision of EV infrastructure and supporting policies in new developments
- The joint City and SCDC planning services have most recently consulted on a 'Sustainable Design & Construction' supplementary planning document which has the most progressive EV guidance for new developments to date

Housing Development Agency

- The City Council is through its CIP delivering new housing projects in the City
- Through these developments we are able to demonstrate our commitment to EV.
- Both the Mill Road and Cromwell Road developments are exemplars and will have significant EV charge point provision ahead of any national mandate and the emerging local planning policies.

City Homes

- Cambridge owns and manages a significant portfolio of Council Homes.
- Our Council Tenants will need access to EV Charging points.
- Preliminary work is underway to identify suitable sites within our housing assets for EV infrastructure.



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Newmarket Road Rapid Charger for Taxis

Key Contacts:
Charge Points for Taxis Project Manager:
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Taxi Licencing:
Wangari Njiiri— Licencing Team Leader
 wangari.njiiri@cambridge.gov.uk

5. EV Taxis

Cambridge City Council have taken a significant lead in promoting the transition to Electric Taxis

We are one of a few local authorities committed to an ultra low emission taxi fleet through our licencing policy.

The transition is driven by a significant evidence base on the sectors contribution to poor air quality in the City Centre through the operation of high mileage, larger, diesel vehicles under business as usual.

Care has been taken in developing policies to involve the taxi trade in designing incentives, infrastructure support and the timing of regulation to move to a fully ultra low emission taxi fleet by 2028

RAPID CHARGER NETWORK FOR TAXIS

In 2017 Cambridge City Council secured £426k in capital funding from the Office for Low emission Vehicles to support a rapid charging network for taxis.

Supported by a further £100k each from City Council and Greater Cambridge Partnership funding over 4 years a network of 20+ Rapid 50kw chargers are being rolled out.

Six Chargers are now operating at three locations: Adam and Eve Car park; Arbury Court Car park and Newmarket Road.

Two chargers are currently installed awaiting connection at Castle Hill Car Park and a site has been secured within the Eddington development.

Three sites with in South Cambridgeshire—Cambourne, Sawston and Waterbeach are at the feasibility stage and three further locations in the City are under development.

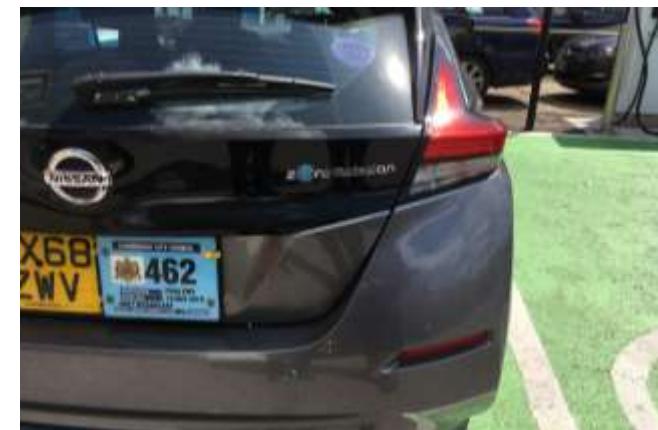
The current infrastructure is supporting 30 licensed electric taxis and the number is growing quickly with one new EV taxi joining the fleet every 2 weeks over the past year.

This project is expected to be completed in 2021 and it is forecast that all City and South Cambridgeshire taxis will be ultra-low emission by December 2028

LICENCING CHANGES

The following licencing requirements were introduced in June 2018 for Cambridge City and equivalent conditions are currently out for consultation for South Cambridgeshire District to support and deliver an ultra low emission fleet locally:

- **License Fee Exemption for Zero emission, Vehicles**
- **License Fee Discount (50% of fee) for Ultra-Low Emission Vehicles**
- **Extended Age Limit for Zero Emission Vehicles—15 years**
- **Extended Age Limit for Ultra-Low Vehicles 12 years**
- **A set date for all new Licensed Saloon Vehicles to be Zero or Ultra-Low Emission 1st April 2020**
- **A set date for all Licensed Saloon Vehicles to be Zero or Ultra-Low Emission April 2028**
- **A set date for all Wheelchair Accessible Vehicles to be Ultra-Low or Zero Emission as and when the market allows by Dec 2028**



A Cambridge Electric Taxi—Charging at the Adam And Eve Car Park



Key Contacts:
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Air Quality & Planning—
Environmental Quality & Growth Team:
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6. Planning

Cambridge City Council have taken a significant lead in requiring new developments to include EV charge points

Using actions to improve air quality as a policy spur, planning conditions have been developed requiring developers to ensure new developments have adequate charge point provision

Currently the City, South Cambs. Joint Planning service is consulting on its most ambitious Supplementary Planning Document for Sustainable Design and Construction to date.

The SPD document sets out what is expected from developers regarding charge point provision for both domestic and commercial developments (currently contained in Table 3.13 and 3.17)

Details of standard planning conditions can be found in Appendix iii of this document

SUPPLEMENTARY PLANNING DOCUMENT FOR SUSTAINABLE DESIGN AND CONSTRUCTION

Charge Points Provision

- Any new or replacement car park will have EV Charge Points
- Any increase in vehicle trip generation related to the intensification of use at a site will require additional EV Charge Point provision at an appropriate scale
- A site-wide EV charging strategy for large-scale Major sites – detailing the location and phasing of the charge point installations
- One slow EV Charge Point for each dwelling with allocated parking
- At least one slow EV Charge Point for every two dwellings with communal parking (at least half of all non-allocated parking spaces to have electric vehicle slow charging points)
- At least one slow EV Charge Point for every two parking spaces in non-residential developments
- At least one rapid EV Charge Point for every 1,000m² non-residential floor space (as per Institute of Air Quality Management guidance) or one fast EV Charge Point for every 1,000m² non-residential floor space (if the installation of a rapid charge point is technically impossible due to grid supply constraints (evidence must be provided)
- At least one rapid EV Charge Point for large-scale Major developments, or at least one fast EV Charge Point (if the installation of a rapid charge point is technically impossible due to grid supply constraints (evidence must be provided)
- Installation of passive charge points - electric vehicle charging infrastructure for

<https://democracy.cambridge.gov.uk/documents/s46399/Consultation%20Draft%20Sustainable%20Design%20and%20Construction%20SPD.pdf>

Home Chargers

Around 40 manufacturers provide charging units suitable for residential use – examples of popular models are shown below. Typically the units are wall-mounted, and available either with a tethered Type 1 or Type 2 cable, which can be plugged straight into the car, or with a Type 2 socket for use with the vehicle's charging cable.

Most suppliers provide two power rating options: 3 kW or 7 kW. Expect to pay more for the 7 kW option which reduces charge time significantly if the car has a fast on-board charger. For example, a Nissan LEAF (with optional 6.6 kW on-board charger) on a 3 kW home charge unit will provide a full charge in 6-8 hours, whereas a 7 kW unit will give a full charge in 3-4 hours.





Key Contacts: - Strategy

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Delivery

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7. City Council Public Car Parks

The City Council operate five multi storey car parks and five smaller street level car parks on a commercial basis.

We recognise the demand for electric vehicle charging support both locally and for car parks as a destination.

Whilst there is minimal provision at present with just four spaces serviced by relatively slow chargers, work is underway to ensure much more comprehensive provision in the near future.

The redevelopment of Park Street multi storey car park is an opportunity for planned expansion of EV charger provision.

Retrofitting of both rapid and fast charging in our other car parks is being pursued through potential partnership

EV CHARGE POINT COMMERCIAL STRATEGY

- The aim is to secure a commercial partner to provide a fully installed, serviced and maintained publicly accessible electric vehicle charging point network involving the design, installation, operation (including the provision of energy) and, the marketing and maintenance of the new charge points
- Finding (where possible) a solution to any grid constraint problems
- The initial stage is for provision of EV charging across multi storey parking portfolio it is hoped however that this project will provide the basis for a wider ranging delivery of ULEV charging infrastructure across Cambridge. The first phase forecast to be delivered by the end of 2020

CURRENT PROVISION

Currently Cambridge car parks have very limited charge point provision with two spaces and one dual 7kw charger at Queen Anne Terrace car park and two 3kw chargers available at Grafton Centre East Car Park.

<https://www.cambridge.gov.uk/recharge-your-electric-car>

PLANNED PROVISION

- The Rebuilding of Park St Car park will see active provision of 3/7kw chargers in at least 25 spaces with passive provision (cabling) for all spaces.
- The commercial strategy aims to secure provision of both fast and rapid, destination charging initially at all multi storey car parks and enhanced provision at surface car parks to follow.



7kw charge point Queen Anne Terrace car park Cambridge



Key Contacts:

Fleet Manager—David Cox

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Head of Joint Waste Services

Trevor Nicoll

Trevor.Nicoll@cambridge.gov.uk

8. City Council Fleet

The City Council operates a fleet of vehicles ranging from small vans to refuse freighters.

Currently we operate eleven Nissan E-NV200 small vans which are fully electric

Our fleet managers recognise the significant benefits both in reduced environmental impacts and significantly lower whole life costs of electric vehicles

This has to be balanced currently with high upfront costs and the availability of vehicles to meet service operational needs.

FLEET REVIEW

We are preparing to review our vehicle fleet usage using a three-month data collection period. This review will cover every vehicle that we operate, from ride-on mowers to the largest lorries.

There is no predetermined reduction or savings target for the review - its overarching aim is to gather the data to allow a greater understanding of how our vehicles are used, are they correct size and type and are they in the right place.

The first step in this process is to complete a detailed examination of what the vehicles actually do. To enable that, services will need to monitor usage via the tracking system in the vehicle. The system that we use to do that is called Quartix. It provides the ability to track in both real-time and to collate reports over a given period, allowing visibility of how we use our vehicles.

This review will give service managers robust data that could help in the development of new ways of working across the council. Additionally, the review is hoped to formalise the route to an wholly electric fleet, how and in what timeframe we can move to delivering that wider strategic aim.

CURRENT FLEET PRACTICE

- Electric vehicles are considered for all new vehicle purchases
- The availability and cost of suitable electric alternative vehicles are sought
- The operational range, payload and daily activity of the vehicle to be purchased is considered in the process.
- The market for electric commercial vehicles is developing fast with new models coming to market regularly but cost, supply and lead times are a cause for concern.
- Whole life costs are considered to ensure that the long term benefits of electric vehicles are considered when purchasing vehicles.



Fully Electric refuse freighter on trial in Cambridge on Clean Air Day



Key Contacts:

Electric pool bikes Andy Wood:
Email: andy.wood@cambridge.gov.uk

**Zedify Delivery Cycle/Van Courier
(formally Outspoken)**
Email: cambridge@zedify.co.uk

9. EV Cycles and Deliveries

The transition to electric vehicles will not be enough alone to deliver on national carbon reduction emission ambitions.

A significant shift away from traditional motor transport modes for shorter journeys will also be required.

Electric bikes, cargo bikes and delivery trikes merit a special mention in this regard.

They are zero emission at the point of use, and can be more than 25 times as carbon efficient as an electric car:
(Nissan Leaf 4 miles/ kwh)

(Electric bike 50-100miles /kwh)

The City Councils Air Quality Action Plan 2018-1023, under measure 20 and 21;
and the Cambridge Local Plan 2019 in policy TI/3
both encourage and support the provision of infrastructure for electric bikes

DELIVERIES

- The City Council uses the local courier firm Zedify which offers a national zero emission delivery service.
- Zedify use electric power assisted cargo bikes and trikes for the last leg of deliveries in Cambridge (and elsewhere)
- They can carry loads up to 250 kg

ELECTRIC POOL BIKES

- We now have two new electric pool bikes available for staff to use on council business. One is based at Mandela House and one at the Guildhall.
- This is enabling those who need to travel a little further on council business within the city or for whom cycling could be a challenge to undertake visits without using a car.
- This is saving both money in mileage claims and carbon and polluting emissions.



Zedfy Cargo trike



10. Stakeholder— Cambridgeshire County Council:

Cambridgeshire County Council is the Local Transport Authority and as such are very important for any work on supporting Electric vehicles.

The County also has a lead role in strategic planning for transport, education, minerals, waste and energy infrastructure.

At a more practical level County Highways Services are responsible for the on street environment an area that is pivotal to a successful EV Strategy.

The County Council also own and run Park and Ride sites for Cambridge which have significant potential as places to charge EVs and smart grid development

The authorities **Energy Investment Unit** and **Smart Cambridge** are also vital services driving innovation and economic development in energy provision, management and the smart networks required to make a success of the EV transition . They are driving this through exemplar projects and engagement with a broad range of business and public sector players.

The County Council own and manage a large property portfolio which has the potential to host and develop EV assets.

This Strategy focusses on the Highways function and the work of the Energy



Energy Investment Unit

- **Develop major renewable energy projects that deliver positive economic investment opportunities for the Council .**
- **Works with partners to identify and implement solutions to local grid capacity and network**
- **Promotes research and development of smart, local energy solutions bringing together, renewable generation of electricity, storage and consumption including EV Charging .**
- **Takes a strategic approach to current and future energy provision**

Highways—key roles

- Responsible for the local road network.
- Regulate street works
- Manage road space and on street infrastructure and signage through traffic regulation orders (TROs)
- Responsible for parking enforcement in Cambridge

Other key roles

- Park and Ride
- Development of property assets across the County





Cambridgeshire County Council highways

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Gary Baldwin—

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11. On Street Charge Point Provision —

One serious barrier to residential uptake of Electric Vehicles is lack of access to off street parking in towns and cities. In Cambridge much of the City has terraced housing with on street parking for residents who therefore cannot install their own dedicated charge point. For overnight charging at home

The Highway authority is responsible for the on street environment in this case Cambridgeshire County Council. The City Council are engaged with the County highways team to take forward on street provision

This is both a practical and technical challenge to deliver and in recognition of this OLEV do provide up to 75% funding for on street charger installation. Both councils are working together to explore ways to make use of this funding.

County officers are also facilitating an on street trial with their contracted street light operator (see panel)

LAMPOST CHARGING TRIAL

- 6 months trial being funded by Ubitricity and Balfour Beatty (PFI Contractor for County Council for lamp posts).
- 6-7 sockets will be installed free of charge at Cambridge City locations
- The first locatiobn have been identified by the council and site surveys have been carried out
- At the end of the 6 months feedback from trial participants, the council and Balfour Beatty would be collated and reviewed
- The purpose of the trial is to:
- Facilitate joint working with Ubitricity and Balfour Beatty as their first project together
- Training of Balfour Beatty staff for installations and maintenance so that this becomes a standard service offering
- This is our first joint project together and Balfour are keen to use this as a first step to evaluate the technology before potentially offering to other Balfour Beatty PFI projects
- Allow Cambridge to evaluate the technology and potential future revenue streams from use of the sockets at zero cost to the council
- Allows information to be gathered ahead of any future potential larger scale rollout utilising funding such as the OLEV on-street residential scheme

ON STREET ISSUES FOR CHARGE POINTS

- Lack of adequate electricity supply in the street
- Lampposts at the back of footway
- Narrow pavement (no room for post)
- Parking conflicts (who has the charging space)?
- Significant regulatory burden to installations
- A wide range of available charging solutions of varying quality available
- Unlikely to be commercially viable due to low return on investment



Dedicated street post charger

12. Smart Grids and the Electricity Network

The transition to Electric Vehicles presents a significant challenge to our strategic electricity infrastructure, both the generation capacity and the distribution network.

It also presents a huge opportunity to support a more distributed and renewable electricity network as each EV battery is a significant energy storage asset which could be used to support the grid during renewable intermittency.

Local Authorities have a role to play in coordinating research and development, demonstrator projects and developing solutions to tackle traditional grid constraints which are a significant barrier to full scale EV uptake in Cambridge.

The City Council are supporting a number of initiatives in this area led by the County Councils Energy Investment unit.

Rapid progress and investment will be needed in this field for to support the full uptake of EVs

ST IVES PARK AND RIDE SMART ENERGY GRID

Cambridgeshire County Council is developing a highly innovative smart energy grid project for a park and ride site. The project will install carports above the car parking, to which solar panels will be fitted. These panels will power the site, electric vehicle charge points and also sales of off-grid energy to local businesses. The project will be underpinned by battery storage to take the site completely off-grid.

Part funded by the European Regional Development Fund, this demonstrator will test new revenue generating business models for the Council, see the integration of energy and transport solutions, help develop local cleantech businesses, and build resilience to local energy grid capacity challenges.

More information available here : <https://www.mlei.co.uk/projects/renewable-energy-&-storage/st-ives-park-&-ride-smart-energy-grid/>



PROJECTS IN DEVELOPMENT

- **Greater Cambridge & East Cambridgeshire: Energised for Growth**

- **Planning for a Smart Future**

Reviewing all smart energy opportunities and identifying and market-testing the range of technologies and business models that can be deployed

- **An Integrated Energy Transition Plan**

Developing a strategic plan for the whole energy system, integrated with local development plans and the Local Energy East Strategy to design the least cost energy system

- **Financing & Investment Strategies**

Identifying investment needs across the plan, exploring new and revamped financing strategies and commercial models, securing investment from public and private sources to deliver change

- **Policy & Regulatory Impacts**

Identifying and addressing policy and regulatory barriers to mobilising funding and delivering the energy transition plan

- **Parish Charge Point Project**

Facilitating the purchase of publicly accessible charge points in Cambridgeshire villages and built up areas with no off street parking

Providing procurement support and OLEV grant application support to parish councils

Cambridgeshire County Council

Energy Investment Unit

Sheryl French -Project Director

Emily Bolton— Energy Projects Officer

mlei@cambridgeshire.gov.uk

13. Stakeholder—

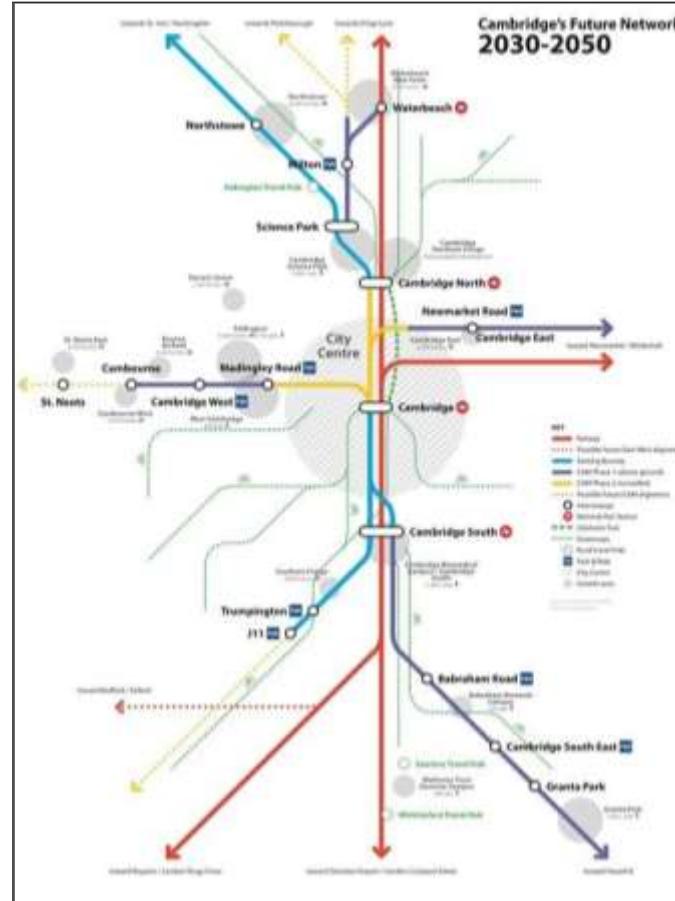
Greater Cambridge Partnership: GCP

The Greater Cambridge Partnership is the local delivery body for a City Deal with central Government, bringing powers and investment, worth up to £1 billion over 15 years, to deliver vital improvements in transport infrastructure, supporting and accelerating the creation of 44,000 new jobs, 33,500 new homes and 420 additional apprenticeships.

The four GCP partners :

- [Cambridge City Council](#)
- [Cambridgeshire County Council](#)
- [South Cambridgeshire District Council](#)
- [University of Cambridge](#)

It is the largest of several City Deal programmes taking place in the UK and brings key partners together to work with communities, businesses and industry leaders to support the continued growth of one of the world's leading tourism and business destinations.



Walking & Cycling

- The GCP are promoting and supporting the expansion of walking and cycling through strategic urban cycle links like the Chisolm Trail and a network of Greenways linking Villages and towns around Cambridge to the Cities.
- In Terms of an EV strategy this has the potential to increase the uptake of electric bicycles and encourage the shift away from petrol and diesel cars as well as wider modal shift

Transport Infrastructure

- The Greater Cambridge Partnership aims to develop a sustainable transport network for Greater Cambridge that keeps people, business and ideas connected, as the area continues to grow; to make it easy to get into, out of, and around Cambridge by public transport, by bike and on foot.
- Through a range of projects, it will create a transport network fit for a small, compact city served by a growing network of rural towns and villages.

Cleaner Air

- The GCP is committed to improving air quality and through its transport investments and policy influence it has great potential to move the electrification of transport forward.
- One possible mechanism is to develop a Clean Air Zone or Low Emission Zone. A feasibility study has been done and is being considered as part of a package of measures looking at how to tackle congestion, air quality and carbon emissions
- **Cambridge City Council is working to support GCP on Air Quality issues through detailed modelling of potential intervention scenarios and**





14. Stakeholder—

South Cambridgeshire District Council:

As our neighbouring district and greater Cambridge partner South Cambridgeshire is important in the electrification of transport in Cambridge.

Clearly as a second tier authority they have similar roles and powers to Cambridge City Council.

Of relevance to this strategy is that many South Cambridgeshire residents travel to Cambridge for work and leisure and so ensuring they have access to electrified travel options will have a significant impact on emissions within the City

As a taxi licensing authority with a high number of private hire vehicles servicing the Cambridge area working with our neighbouring district to harmonise policy is helping to deliver on air quality and climate change commitments.

Taxi Licensing

- South Cambridgeshire have a high proportion and number of private hire taxis in their licensed fleet when compared to Cambridge City.
- They have committed to work towards harmonisation of their taxi licensing conditions around vehicle emissions and ultra low emission vehicles with Cambridge.
- Cambridge City Council though their OLEV funded Taxi Charge point project will be supporting this policy transition by installing rapid chargers at three South Cambridgeshire

Key Contacts:
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Siobhan.Mellon@scambs.gov.uk
Development Officer
Soraya.Hashemi@scambs.gov.uk
Air Quality Officer



15. Stakeholder—

Cambridgeshire and Peterborough Combined Authority

Partners

The Combined Authority (CA) is made up of eight founding members across Cambridgeshire and Peterborough under the leadership of a Directly Elected Mayor. Each partner is represented by their leader at Combined Authority meetings.

Key ambitions for the Combined Authority include:

- doubling the size of the local economy
- accelerating house building rates to meet local and UK need
- delivering outstanding and much needed connectivity in terms of transport and digital links
- providing the UK's most technically skilled workforce
- transforming public service delivery to be much more seamless and responsive to local need
- growing international recognition for our knowledge based economy
- improving the quality of life by tackling areas suffering from deprivation.

The Cambridgeshire and Peterborough Mayor for the Combined Authority can also exercise certain powers and functions devolved from Central Government including bus regulation.

The CA is also the strategic transport authority for the region

The local Transport Plan

The Combined Authority is currently consulting on an Authority wide Local Transport Plan having taken that role from Cambridgeshire County Council. In terms of the EV agenda this is important at a strategic level because:

- The LTP sets out investment and policy priorities for the local strategic road network.
- It identifies long term investment priorities for public transport.
- This includes proposals for a Cambridge Autonomous Metro (CAM) envisaged to be an electrified public mass transit system

Bus Services Review

- The Combined Authority is currently reviewing the regulation and provision of bus services
- The CA has the powers to instigate bus franchising or quality bus contracting in the future which could set the standards for future operations
- This could include emissions standards and potentially an EV standard for buses



16. Stakeholder Central Government—Office For Low Emission Vehicles

Central Government is playing a supportive role in enabling the vehicle market to transition to Electric Vehicles.

Through the creation of the Office For Low Emission Vehicles in 2009 the government has progressively invested in the EV sector from supporting research and development and manufacturing to the direct subsidy of both vehicle purchase and charge points and capital investment in key sectors such as EV Taxis and battery research. It provides independent advice on the market availability of vehicles and charging equipment.

The Office for Low Emission Vehicles (OLEV) is a team working across government to support the early market for ultra-low emission vehicles (ULEV). They are providing over £900 million to position the UK at the global forefront of ULEV development, manufacture and use. This will contribute to economic growth and will help reduce greenhouse gas emissions and air pollution on our roads.

OLEV is the main distributor of capital support, through local authority competitions for charge point infrastructure in areas not currently supported by commercial markets. It also is directly subsidising both the commercial and private purchase of Electric vehicles



Grant Schemes

OLEV is currently operating a number of grant and subsidy schemes including:

- Domestic charge points grant (up to £500)
- On street charging grant (up to 75% of the cost)
- Workplace charging grant for employers
- Private (£3500 discount) and commercial (£8000 discount) electric vehicle subsidies
- Details of current grant schemes are set out in [appendix i](#)

Information

- Under the Go Ultra Low brand consumers and fleet managers can access up to date information on Electric vehicles
- www.goultralow.com
- It includes an interactive EV Car Selector
- Information on cost savings including an interactive journey cost calculator
- Owning an EV
- Available grants
- Charging and range
- Types and technologies for ultra low emission vehicles
- Business and fleet information

Consultations

- OLEV runs consultations on new standards and regulations
- It is looking to mandate chargepoint provision in new developments through the Building regulations.

Standards

- Minimum standards for grant funded, domestic chargers have been introduced
- A comprehensive set of technical and data collection requirements have been set out for grant funded public charging infrastructure.





Key Contact:

Office for Low Emission Vehicles:

<https://www.gov.uk/government/organisations/office-for-low-emission-vehicles>

17. Legislation

The Seriousness with which central government is pursuing the transition to Electric vehicles is evidenced across numerous initiatives and by the passing of relevant legislation.

The Cross Departmental Office for Low Emission Vehicles (OLEV) is implementing legislation on a number of fronts:

Setting out minimum standards for charge point infrastructure they are prepared to fund;

Looking at regulations on access and payment for charging services ;

Approved Electric Vehicle dealerships and;

Consulting on changes to building regulations to ensure all new developments are supporting the transition to EV

AUTOMATED AND ELECTRIC VEHICLES ACT 2018 (PART 2)

Electric Vehicles

Since 2009 UK governments of all parties have sought to provide a framework in which electric vehicles, or 'ultra low emission vehicles' (ULEVs) can grow. The decarbonisation of both private cars and goods and passenger carrying vehicles is seen as critical to helping the UK achieve its climate change obligations and to improving air quality, particularly in cities such as London.

The measures in the Act are intended to help deliver the aim in the commitment for almost every car and van to be a zero emission vehicle by 2050. Taken together, the powers would allow Government to regulate if necessary in the coming years, to improve the consumer experience of electric vehicle charging infrastructure, to ensure provision at key strategic locations like Motorway Service Areas (MSAs), and to require that charge points have 'smart' capability.

The legislation is in essence a framework to give relevant departments the ability to introduce regulations to ensure infrastructure support and good standards for electric vehicles and chargers an example of this is the proposed changes to Building Regulations.

<http://www.legislation.gov.uk/ukpga/2018/18/contents/enacted>

BUILDING REGULATION CONSULTATION

Government are proposing to alter building regulations for new:

- residential buildings to include requirements for electric vehicle charge points
- non-residential buildings to include requirements for electric vehicle charge point infrastructure
- introduce requirement for existing non-residential buildings to have electric vehicle charge points

A new build charge point installation costs on average less than £1000 per property, whilst retrofit is closer to £2000.

<https://www.gov.uk/government/consultations/electric-vehicle-chargepoints-in-residential-and-non-residential-buildings>



Dedicated street post charger



18. Stakeholder—

UK Power Networks (UKPN)

UKPN is the local Distribution Network Operator (DNO) for the East of England. It owns and maintains electricity cables and lines across London, the South East and East of England. It maintains and upgrades power equipment, move and connect new electricity cables.

To deliver the transition to EV at scale UKPN are a critical partner for ensuring that charging infrastructure is supported and delivered in the right places

Cambridge City Council works closely with UKPN through its Critical Friends Panel alongside our County Council colleagues at the Energy Investment Unit to ensure relevant connection constraints are identified and managed.

UK Power networks are active in developing their service to cope with the electrification of transport and have published relevant information:

<https://www.ukpowernetworks.co.uk/internet/en/about-us/documents/Future-Smart-What-our-stakeholders-said.pdf>

Connections

- All charge points require an adequate electricity supply, demand can vary considerably depending on the power output required
- For public charging on street and rapid chargers over 22kw a new direct connection to the local network is likely required by the statutory undertaker (Usually UKPN in Cambridge).
- Local capacity is often a constraint and can render a location impossible or economically unviable.
- UKPN are able to advise on the detail of their network for EV Charge point connections

19. Stakeholder—

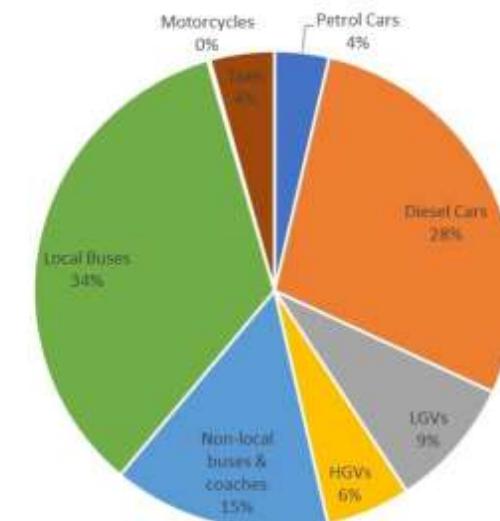
Bus operators

.Buses are the primary form of public transport in Cambridge and the current operating fleet is 100% diesel internal combustion engine powered.

- In Cambridge city centre buses are the largest single local source of oxides of Nitrogen (NO₂) and with plans to improve and enhance bus service, frequencies and the number of routes.
- Greater Cambridge Partnership forecast that 100% increase in the bus operations will be required to alleviate congestion in Cambridge and accommodate the growth in employment, housing and associated travel.
- As big emitters of both carbon and pollutants electrification of the bus fleet is a priority identified in the Cambridge City Council Air Quality Action Plan

Stage Coach East

- Currently operates the majority of bus services for Cambridge
- Has in the past made significant investments in new bus technology to improved air quality in the City by running a modern fleet of Euro IV, V and VI standard diesel buses
- Stagecoach will need to accelerate uptake of low and zero emission bus technologies to maintain and improve the air quality as the City and its bus services grow.
- Greater Cambridge Partnership and Stagecoach are currently running a trial of a fully Electric bus and a Hybrid drive bus on their no. 6 route



Source: apportionment of road traffic NOx emissions in 2017 inside the inner ring road, Cambridge 2017

Performance indicators and Monitoring

The success of the four main aims will be assessed on a project by project basis using the following headline criteria:

Aim 1—To identify sources of funding to develop and install EV Charging infrastructure and where appropriate pursue that funding.

Metric: Amount of external funding applied for (reported annually)

Aim 2—To robustly consider EV as a preference for all City Council fleet replacement and new vehicle purchase where appropriate vehicles are available and meet our operational needs.

Metric: Number of EV fleet vehicles purchased (reported Annually)

Aim 3 For the City Council to develop a commercial project to deliver charge points in our car parks in the short term and wider property holdings in the medium term.

Metric: a. Contract let for EV infrastructure (End of financial year 2020/2021)

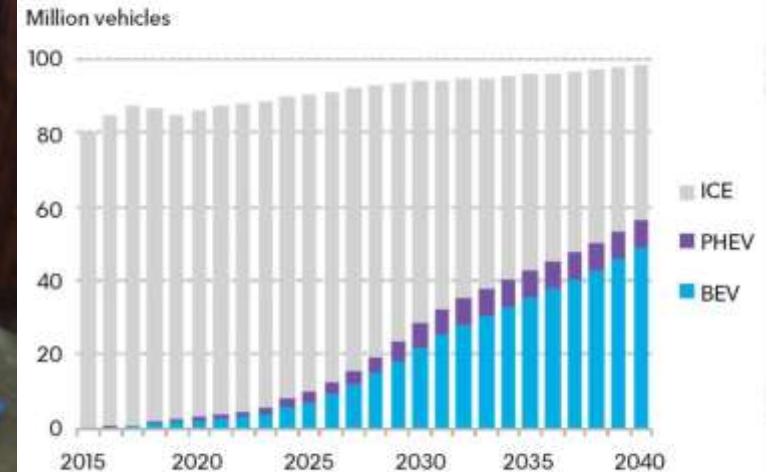
b. Number of car park spaces with access to a charger (reported Annually)

Aim 4 -To promote funding opportunities and provide support for partner organisations to deliver EV charging infrastructure where they are the most appropriate lead

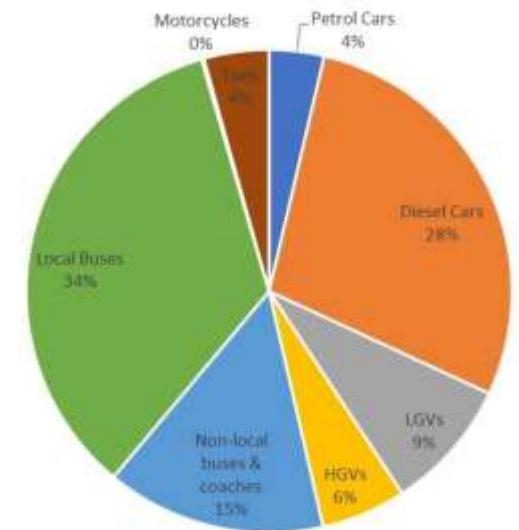
Metric: Number of charge points provided by partner organisations.



Global long-term passenger vehicle sales by drivetrain



Source: BloombergNEF



Source: apportionment of road traffic NOx emissions in 2017 inside the inner ring road, Cambridge 2017



Links And Appendices

OLEV Grant / Subsidy schemes — <https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles>

- i. Electric Vehicle home charge Scheme— <https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles#electric-vehicle-homecharge-scheme>
 - ii. Workplace Charging Scheme—<https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles#workplace-charging-scheme>
 - iii. On Street Residential Charge point Scheme - <https://www.gov.uk/government/publications/grants-for-local-authorities-to-provide-residential-on-street-chargepoints>
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- i. Guide to Domestic Charge Points
 - ii. Example Planning Conditions to support EV