

Caerphilly County Borough Council Electric Vehicle Strategy

March 2018

Executive Summary

This strategy presents the Council's first Electric Vehicle Action Plan which is designed to develop an innovative and strategic approach for electric vehicles across the county borough. This will develop the infrastructure for, and encourage uptake of, electric vehicles in Caerphilly county borough. This will ensure not only that the Council is up to date with developments but also that we are maximising the benefits and opportunities for electric vehicles.

Caerphilly County Borough Council will show leadership through delivering this Electric Vehicle Strategy to support our residents and staff to invest in electric vehicles, by providing the required infrastructure, while also encouraging visitors who drive electric vehicles to visit the county borough.

This strategy focuses on all types of electric and hybrid vehicles including cars, vans, buses, mopeds and bikes.

The Key Aims of this strategy are to:

- Provide electric vehicle infrastructure across the Caerphilly County Borough.
- Lead by example incorporating electric vehicles into our fleet and trial new technologies as they evolve.
- Work with private developers to incorporate electric vehicle infrastructure into new builds and developments.
- Work with our partners and local businesses to encourage them to adopt a similar approach to electric vehicles and their infrastructure.

The Key Objectives are to:

- Support an integrated network of EV charge points;
- Trial new technologies as they evolve to ensure that charging infrastructure keeps pace with vehicle technology and the needs of residents and businesses;
- Maximise the benefits of Welsh Government funding opportunities;
- Encourage private developers and landowners to provide EV charging points to facilitate the public to switch to low carbon vehicles;
- Encourage private sector organisations to deliver electric vehicle charging points;
- Raise awareness of the electric vehicle market so people can understand the options for and benefits of EV ownership, including electric cars, mopeds and E-bikes;
- Increase deployment of electric vehicles within the Council's own fleet to reduce the Council's own carbon emissions whilst carrying out its business;
- Encourage our employees to switch to low carbon vehicles (full battery or hybrid);

- Address air quality issues that have, or will arise, due to transport related issues;
- Inform and complement the County Borough Council's wider policies on transport contained in the Local Transport Plan;
- Take a coordinated approach across the council for the electric vehicle agenda;
- Work with PSB partners on joint actions to share good practice and maximise assets.

1. Introduction

The majority of vehicles on the streets of Caerphilly County Borough today run on either petrol or diesel fuel. However, the situation is changing due to the advances in new technology and the issues surrounding current technology. Petrol and diesel are known to cause pollution which is dangerous to public health and contributes to climate change.

For these reasons the UK Government recently announced its plans to ban new diesel and petrol vehicles from sale in the UK from 2040. Due to this, vehicle manufacturers are working to advance technology in electric vehicles along with other alternative fuel vehicles and to build consumer interest.

Electric vehicles is a growing market, albeit slowly. The number of new electric and hybrid vehicle registrations in Wales rose by 35% in 2017, compared to the previous year. Wales is ahead of the UK average of 27% growth (figures from Go Ultra Low Partnership). Recent figures released by the Department of Transport for the Caerphilly County Borough indicate that in September 2016, there were 64 electric vehicles registered. By September 2017 there were 82, which is an increase of 18 new electric vehicles or 28 %.

Although the figures are increasing, they represent a tiny fraction of total car use. Overall there are about 2,500 plug-in vehicles in Wales and 439 charge points across Wales. Looking at the bigger picture, there are 4,476 charge points across the UK with 12,849 individual connectors, with electric vehicles representing 1.83% of all UK traffic. There are currently no public electric vehicle charge points in Caerphilly County Borough.

Therefore a strategy to support the implementation of electric vehicle charge points in Caerphilly County borough, along with the provision of fleet electric vehicles is required to progress this important work. This will put into place the infrastructure to support our residents to invest in electric vehicles and encourage visitors who drive electric vehicles to visit the county borough.

The profile of electric vehicles is now growing and is seen as a contributor to reducing carbon emissions and improving air quality. Road transport is responsible

for over 90% of the UK's domestic transport emissions. Although we cannot stop people using their cars, we can encourage them to travel in low emission vehicles, provided the infrastructure is in place to support this. This strategy also includes the promotion and installation of infrastructure to support electric bikes (E-bikes), electric mopeds and other electric vehicles that contribute to the overall aims of the strategy.

There are many benefits from electric vehicles. Compared to conventional cars they emit substantially less carbon emissions. The vehicles are also cleaner with far less exhaust emissions and deliver direct air quality improvements. However, electric vehicles should be viewed as part of a solution with respect to overall transport objectives, alongside promoting a modal shift to public transport, active travel, walking and cycling, as they all support the wider sustainable transport and low emission transport agenda.

We need to use the various levers available to us, such as: the planning process, infrastructure opportunities on council owned property, diversifying our own fleet and work with partners to lead by example on this area of work.

This strategy presents the Council's first Electric Vehicle Action Plan which is designed to develop an innovative and strategic approach for electric vehicles across the county borough. This will develop the infrastructure for, and encourage uptake of, electric vehicles in Caerphilly county borough. This will ensure not only that the Council is up to date with developments but also that we are maximising the benefits and opportunities for electric vehicles.

2. Vision:

Introduce an electric vehicle infrastructure across Caerphilly county borough, to maximise the economic, social and environmental benefits and opportunities that the electric vehicle agenda will provide.

Take a coordinated approach across the council to introduce electric vehicles as a fundamental part of our fleet to reduce the council's own carbon emissions whilst carrying out its business.

3. Aims:

Our key aims are to:

- Provide electric vehicle infrastructure across the Caerphilly County Borough.
- Lead by example incorporating electric vehicles into our fleet and trial new technologies as they evolve.
- Work with private developers to incorporate electric vehicle infrastructure into new builds and developments.

- Work with our partners and local businesses to encourage them to adopt a similar approach to electric vehicles and their infrastructure.

4. Objectives:

Caerphilly County Borough Council will show leadership through delivering this Electric Vehicle Strategy to achieve the following to:

- Support an integrated network of EV charge points;
- Trial new technologies as they evolve to ensure that charging infrastructure keeps pace with vehicle technology and the needs of residents and businesses;
- Maximise the benefits of Welsh Government funding opportunities;
- Encourage private developers and landowners to provide EV charging points to facilitate the public to switch to low carbon vehicles;
- Encourage private sector organisations to deliver electric vehicle charging points;
- Raise awareness of the electric vehicle market so people can understand the options for and benefits of EV ownership, including electric cars, mopeds and E-bikes;
- Increase deployment of electric vehicles within the Council's own fleet to reduce the Council's own carbon emissions whilst carrying out its business;
- Encourage our employees to switch to low carbon vehicles (full battery or hybrid);
- Address air quality issues that have, or will arise, due to transport related issues;
- Inform and complement the County Borough Council's wider policies on transport contained in the Local Transport Plan;
- Take a coordinated approach across the council for the electric vehicle agenda;
- Work with PSB partners on joint actions to share good practice and maximise assets.

5. Policy Context:

5.1 National Policy

The UK Government recently announced its plans to ban new diesel and petrol vehicles from sale in the UK from 2040. This supports the Air Quality Plan for Nitrogen Dioxide in the UK published by the Department for Environment, Food & Affairs and the Department for Transport.

The Queen's Speech in June 2017 referred to the advance in electric vehicles as part of the Automated and Electric Vehicles Bill. If this Bill is approved, this will release an £800m fund for investment in new technology for zero emission and driverless vehicle technology.

The UK Government announced a £255m fund in 2017 to help councils tackle emissions, including the potential for charging zones for air polluting vehicles.

The UK Government published 'Making the Connection: the Plugged in Vehicle Infrastructure Strategy' in 2011. At the time of this strategy, the Government envisaged most electric vehicles being recharged overnight, at homes or in fleet depots. This would have enabled the demand for electricity to be balanced across day and night, increasing energy savings and the uptake of electric vehicles.

Range anxiety was one of the key barriers to the uptake of electric vehicles identified in the strategy. The provision of charge point infrastructure across Wales would remove this barrier and help to increase the uptake of electric vehicles across Wales and in Caerphilly County Borough.

5.2 Regional Policy

Office for Low Emission Vehicles:

Making the Connection, the Plug-in Vehicle Infrastructure Strategy 2011 identifies that low and ultra low emission vehicles are a vital part of the Government's plans for a modern transport system that promotes economic growth while delivering on its climate change targets. The strategy sets out a vision for recharging infrastructure in the UK and the steps that we, and other industry players, will need to take to make it a reality in the years ahead. It identifies the need to shift to low emission vehicles to reduce transport emissions and decarbonise road transport, with an emphasis on plug-in electric vehicles.

Welsh Government:

Welsh Government has not produced a specific policy on electric vehicles as yet, although their 'Achieving our low Carbon Pathway to 2030' is out for consultation until October 4th 2018, as part of their Decarbonisation Programme, which includes a section on transport and makes reference to electric vehicles and to electric vehicle charging networks. Welsh Government also have a £2 million fund available for electric vehicle charging infrastructure, with a spend profile of £1million for 2018/19 and £1 million for 2019/20.

The Well-being of Future Generations (Wales) Act 2015:

As part of the Well-being of Future Generations Act, public bodies will need to take account of the issues around health, resource consumption, the environment and biodiversity etc. on our future generations as well as the impacts of climate change when developing their well-being objectives. Addressing the issues around health, well-being, resource consumption along with the climate change impacts and

decarbonisation are crucial to achieving the objectives of the Act. By introducing a greener energy infrastructure we would be contributing to achieving emission reductions and improved air quality, as well as reducing unsustainable resource consumption and helping to mitigate the impacts of climate change in Caerphilly county borough and beyond.

Introducing electric vehicles into the county borough would meet several of the well being goals including:

- A prosperous Wales – using our resources sustainably to support the local economy and switching to alternative energy sources to help prevent rising costs of decreasing fossil fuels.
- A resilient Wales – supporting a rich and healthy environment that enhances biodiversity and helps us deal with decreasing fossil fuels. Embracing new technologies and improved management of our assets will all contribute to a resilient Wales.
- A healthier Wales – providing an environment that enhances health and well-being with reduced pollution levels and improved air quality.
- A Wales of cohesive communities – providing opportunities for communities to benefit from sustainable technology and environmentally friendly based schemes.
- A globally Responsible Wales – reducing our carbon footprint and increasing our use of renewable energy sources to reduce greenhouse gas emissions and have a positive impact on our local environment, which will have a wider impact both locally and globally..

The Environment (Wales) Act:

The Environment (Wales) Act puts in place the legislation needed to plan and manage' the natural resources of Wales in a more proactive, sustainable and joined up way. Decarbonisation of the transport sector is essential if the Environment Act (Wales) 2015 target to deliver 80% carbon reductions by 2050 is to be met and in delivering on obligations set out in the Air Quality Standards (Wales) Regulations 2010.

The Air Quality Standards (Wales) Regulations 2010:

These regulations bring into the law in Wales the limits set out in European Union Directives on Air Quality. The regulations require that Welsh Ministers divide Wales into air quality zones.

Since the introduction of the Environment Act 1995 and the National Air Quality Strategy (NAQS) all local councils have a duty to review and assess the local air

quality and, if necessary, take steps to improve air quality at any location where national standards are not met. There are two air quality management areas in the county borough causing exceedances of National Air Quality Objectives. These are Caerphilly Town Centre and Hafodyrynys for nitrogen dioxide, the main source of which is vehicle emissions.

5.3 Local Policy

Caerphilly PSB Local Well-being Plan:

The Local Well-being Plan highlights the four well-being objectives for the Caerphilly Public Services Board, which are:

- Positive Change - A shared commitment to improving the way we work together;
- Positive Start – Giving out future generations the best start in life;
- Positive People – Enabling our communities to be resilient and sustainable;
- Positive Places – Enabling our communities to be resilient and sustainable.

The Well-being Delivery Plan identifies four enablers and five action areas to ensure we meet the four Well-being objectives, while taking into account the seven well-being goals and the five ways of working. The objectives are integrated and so coordinating our resources and activity will have the greatest effect on achieving them.

Introducing electric vehicle charge points into Caerphilly county borough and electric vehicles into the Council's fleet would contribute to the resilient communities, health and well-being and environment action areas and the asset management, procurement and working together enablers. By working together collaboratively across partner organisations, the actions will help to bring about long term improvements in well-being for our residents.

Caerphilly County Borough Council 2017 Air Quality Progress Report:

This report identifies five different locations within the non-automatic tube data across the local authority that exceeds the National Air Quality Objective for Nitrogen Dioxide (NO₂). Of the five exceedances identified, two locations are situated within Caerphilly Town and 3 within Hafodyrynys Air Quality Management Areas.

There are a large number of proposed housing developments in Caerphilly that are currently going through the planning process which will need to be assessed in terms of their impact on local air quality. A Developers Guide is currently being drafted with regard to air quality and what information should be considered when a planning application is submitted and assessed. Introducing the requirement for electric vehicle charging infrastructure into all new developments and across the county

borough could help reduce the impact of traffic emissions and pollutants of new developments within the county borough.

The report also identifies a series of actions, which includes 'investigating the potential for the use of electric vehicles in the Council's fleet to reduce vehicle emissions'.

There are also actions in the report promoting active and sustainable travel, along with improving walking and cycling routes, which supports the suggestion that electric vehicles should be seen as part of a solution with respect to reducing transport emissions. This links to the work the authority is undertaking on Active Travel Routes, demonstrating a joined up approach.

A Foundation for Success, Regeneration Strategy 2018-2023:

The strategy concentrates on four strategic themes, namely, Supporting People, Supporting Businesses, Supporting Quality of Life and Connecting People & Places.

A variety of actions detailed within the strategy support the introduction of electric vehicles and charging infrastructure including the following:

- Improve access to affordable and variable transport;
- Explore and support energy efficiency initiatives and renewable energy generation;
- Ensure that green energy infrastructure is an integral issue in the development of all plans and strategies;
- Increase the use of electric vehicles and provide the necessary infrastructure to support them.

Biodiversity Duty:

Caerphilly County Borough Council has a legal duty to maintain and enhance biodiversity and in doing so promote the resilience of ecosystems under the Environment (Wales) Act. The Caerphilly Biodiversity Plan highlights using the green infrastructure approach as a means of delivering multiple benefits, by reducing pollution and improving site management, to increase the resilience of our natural environment.

CCBC Carbon Reduction Strategy:

Caerphilly's Carbon Reduction Strategy aims to reduce carbon emissions by 45% on 07/08 emissions levels. There are four key themes established to achieve this,

Good Housekeeping, Invest To Save, Asset Management and Renewable Technology. The strategy focuses on buildings and street lighting and the primary objective is to reduce carbon emissions that are a direct result of Gas and Electricity usage.

The authority has a legal requirement to display Display Energy Certificates (DEC) which show how efficiently a building and its occupants is using energy. It is important not to add to a building's energy consumption. With this in mind the authority will try whenever possible to separate road emissions by installing independent billing and metering supplies, and to not add to the buildings existing electrical usage through electric vehicle charging. This will help prevent DEC ratings increasing and follow the principles of the Carbon Reduction Strategy.

Local Authority Transport Plan (South East Wales Valleys Local Transport Plan, January 2015):

The plan aims to target investment, support economic growth, reduce economic inactivity, tackle poverty and encourage safer, healthier and sustainable travel. The wider goals of the plan includes: to protect the environment, by minimising transport emissions and consumption of resources and energy, by promoting walking, cycling, quality public transport, modal shift and minimising demand on the transport system.

Unfortunately there is no mention of electric vehicles or electric vehicle infrastructure in the plan, but this might be due to the technology of electric vehicles and charge points during the development of the plan. With the advances in technology over the past few years, electric vehicles should be included as a priority within the plan. The plan does include actions on sustainable and active travel and makes reference to environmental benefits.

S106 Obligations and the Community Infrastructure Levy:

Planning obligations, also known as Section 106 agreements are private agreements made between local authorities and developers and can be attached to planning permission to make a development proposal acceptable in planning terms that would not otherwise be acceptable. They are focused on site specific mitigation of the impact of development. S106 agreements are often referred to as 'developer contributions' along with highway contributions and the Community Infrastructure Levy.

Section 106 funding could be used to support the implementation of electric vehicle charge point infrastructure in town centres and villages across the Caerphilly county borough.

Future Generations Advisory Panel (FGAP):

The FGAP have received reports and regular updates on sustainable transport and electric vehicles. The draft CCBC Electric Vehicle Strategy was endorsed by FGAP at its meeting on the 8th March 2018.

6. Technology

6.1 Vehicles

The UK has seen a gradual increase in ultra-low emission vehicles, including electric vehicles, with a 35% increase in Wales. Electric vehicles represent 1.83% of all UK traffic, but with development in technology and the provision of charging infrastructure this is expected to increase significantly in the future.

Electric vehicles are broken down into three types, Pure Electric Vehicles, Plug-in Hybrid Vehicles (which includes extended range vehicles) and Hydrogen Fuel Cell Vehicles

- Pure Electric Vehicles (EV) – rely solely on battery power. Electric cars can travel between 100 and 250 miles on a single charge. There are a variety of electric car types available from a most vehicle manufactures. In addition there are E-Bikes, electric mopeds and other electric vehicles.
- Plug-in Hybrid Vehicles (PHEV) – have a conventional petrol or diesel engine alongside an electric motor. They have a short range on electric power (up to 40 – 50 miles) but can extend their distances using the conventional engine. Again there are a variety of vehicles available.
- Extended Range Plug-in Hybrid Vehicles (E-REV) – have a plug-in battery pack and an electric motor, as well as a combustion engine. The electric motor always drives the wheels, with the internal combustion engine acting as a generator to recharge the battery when it is depleted. Range extenders can have a pure electric range of up to 100 miles, although they are not as fuel efficient as the EV's or PHEV's
- Hydrogen Fuel Cell Electric Vehicles (FCEV) – are still at the development stage with limited production due to the difficulties of hydrogen production, storage and refuelling. These will not be included in the CCBC Electric Vehicle strategy, but depending on developments, these could be a suitable alternative to larger vehicles in the foreseeable future.

6.2 Charge points

There are currently three different types of charge points, with different power levels associated to them. These are the slow 3Kw charge point, the fast 7Kw charge point and the rapid 22Kw to 50Kw charge point.

- The 3Kw slow charge point can be either a standard household 3 pin plug on a dedicated circuit or via a home charge point. A typical full charge will take between 7 and 8 hours, although on newer vehicles with increased battery life, this charge time could be doubled. It is usually used for overnight charging at work or home due to the slow charge times. These are relatively inexpensive to install and funding is available towards the cost of home charge points
- The 7Kw fast charge point requires a dedicated power source and connecting cable. It usually takes between 3 to 4 hours to charge an electric vehicle to full capacity. This type of charge point is becoming popular in many on-street or public car park charge points, super markets and work places due to its relatively quick charge time. These are relatively inexpensive to install depending on the location and electricity supply.
- The 22Kw to 50Kw rapid charge points will charge a vehicle in around 30 to 50 minutes. These are usually seen on motorway service stations due to their fast charge times as many users can benefit from them during the day. These are very expensive to install and require a high power supply.

6.3 Challenges

The EV industry has made big technological advances in the past few years to address issues such as range anxiety, battery power and charging times. There are still some challenges and issues in moving the EV agenda forward. Some of these include the ongoing development of charge points and their cost, the electrical grid constraints and the costs to connect to the grid. The EV agenda is constantly moving forward so it's difficult to keep ahead of the game or know how the technology will move forward or when it will halt.

7. Funding:

National Funding

The UK Government has made a commitment to support the development of Ultra Low Emission Vehicles (ULEV's) and announced its plans to ban new diesels and petrol vehicles from sale in the UK from 2040. Government support for electric vehicles exists in the form of the Plug-in Vehicle Grant towards the purchase of vehicles, and the Electric Vehicle Home charge Scheme to assist with costs of installation of a home charger.

Other grant schemes are available to local authorities. £4.5 million funding is available until 31st March 2020 through the OLEV On-Street Residential Chargepoint Scheme and the Work Place Charging Scheme. The On-Street Residential Chargepoint Scheme to increase the availability of plug-in vehicle charging

infrastructure for residents who do not have access to off street parking, and it can also be used in public car parks (run by the local authority or other public body). The Work Place Charging Scheme is a voucher based scheme that provides support of up to £300 per unit towards the up-front costs of the purchase and installation of up to 20 work place charge points.

Charge point companies can provide the 25% match funding for Local Authorities applying for the OLEV funding. The procurement process would need to ask for the business model to be included, to determine how this would work in regards to income generation, ownership and maintenance of the charge points.

If there is plans for upgrading the street lighting, and the application included plans to install charge points on street lighting then the budget used for the upgrade could also be used towards the 25% match funding required.

Regional Funding:

Welsh Government announced a £2m fund for Electric Vehicle Charging Infrastructure, with a spend profile of £1m for 2018/19 and £1m for 2019/20. Their aim is to have a strategic approach throughout Wales and they are meeting with key contacts from all 22 Welsh Local Authorities to ensure they achieve this approach.

8. Overview of current situation in Caerphilly County Borough

CCBC Electric Vehicle Trial project - Pool vehicle and Meals on Wheels service vehicle

For an annual mileage of around 10,000 miles, switching from a conventional vehicle to an electric vehicle would save around £800 in fuel costs alone. Based on this, an electric vehicle trial project was approved by CMT in February 2017 to install slow electric vehicle charge points and to lease three electric vehicles, one for the Meals on Wheels Service, one for the Countryside Service and one to be used as a pool vehicle. The vehicles would be leased on a 3 year basis allowing the authority to take advantage of ongoing improvements to electric vehicle technology in a few years time.

The pool vehicle will be available for individual employees to use as well as for service areas to use to determine if they could deliver their service using an electric vehicle.

Six slow charge units have been installed at Penallta House and five at Tir y Berth Depot.

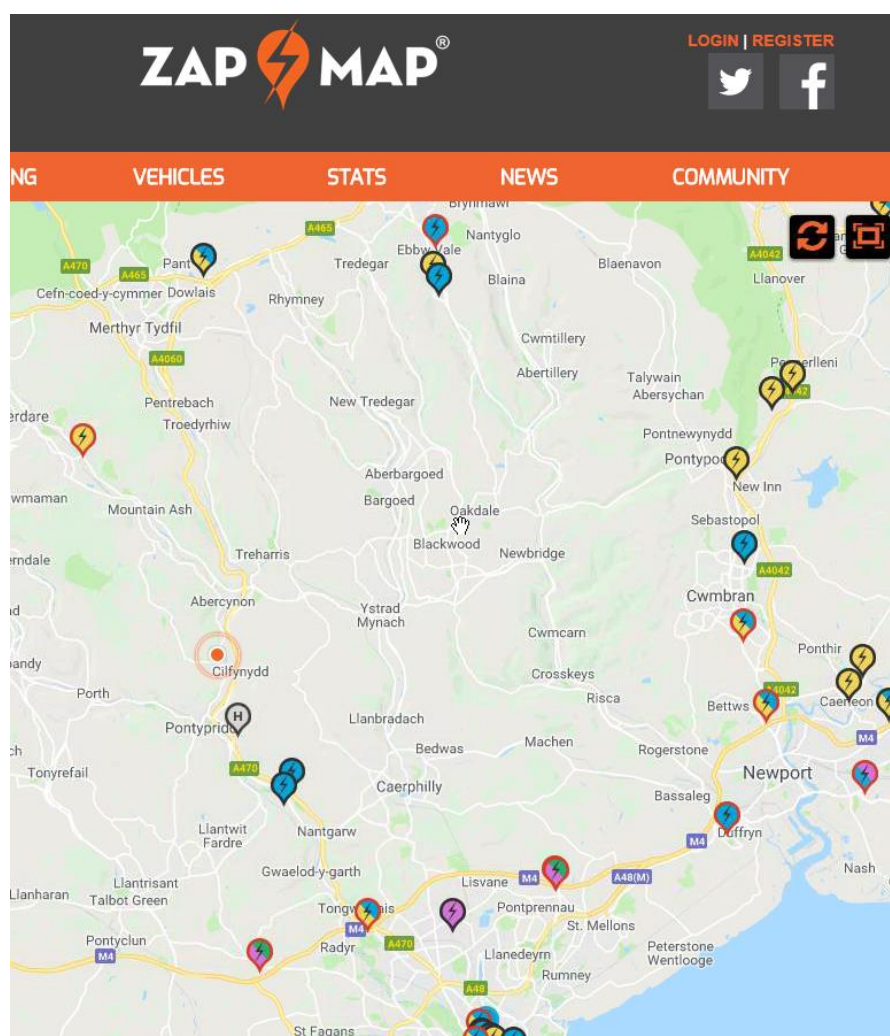
Fast charge units are also being installed to support the trial project and provide the necessary infrastructure for future EV projects.

CCBC Electric Vehicle Strategy Group

An electric vehicle strategy group has been established by the Head of Policy & Public Protection with representatives from Policy, Air Quality, Planning, Engineering and Regeneration. This group will have the remit to oversee the Action Plan through a co-ordinated approach to ensure that there are robust mechanisms and processes in place to deliver the Action Plan.

Charging Infrastructure in the Caerphilly County Borough

There is insufficient provision for electric vehicle charge points in Caerphilly county borough to support or encourage electric vehicle users. There are currently no public charge points in Caerphilly County Borough for residents and/ or visitors to use. The Zap Map (<https://www.zap-map.com/>) is used by electric vehicle users to identify charge points accessible to them.



Zap Map for the Caerphilly County Borough, showing charge points in the surrounding area, but none in the Caerphilly County Borough.

Expected Demand

Recent figures released by the Department of Transport show that in September 2016, there were 64 electric vehicles registered in the Caerphilly County Borough. By September 2017 there were 82, which is an increase of 18 new electric vehicles or 28 percent.

It is difficult to project the expected growth of electric vehicles in Caerphilly County Borough, but the growth could be increased by the provision of an electric vehicle charging infrastructure. The critical factor supporting electric vehicle uptake is the network size, speed and availability of suitable charge points. Too few options will delay the growth of electric vehicle usage and ownership as well as discourage visitors and potentially impact on local businesses. Although having too many charge points could result in charging spaces left empty, which would have a negative impact on other parking.

It is impossible to determine usage for electric vehicles at this stage as it will vary according to each vehicle's journey and owner's lifestyle. As the uptake increases and charge points are installed, and then their usage can be monitored for future developments and expansion of the infrastructure, if and when required.

Challenges

There are also a number of challenges to be overcome in order to provide an electric vehicle charging infrastructure:

- Controlled parking zones – would require Traffic Regulation Orders
- Location of charge points
- Power requirements – grid connections for charge points (access and cost)
- Payment by users
- Other utilities
- Change in technology – will the vehicles and/ or infrastructure become outdated before the end of their lifetime?
- Number of charge points
- Potential for adding electricity usage onto the carbon footprints of buildings
- Projected growth/ demand
- CCBC Air Quality

Opportunities

There are also a number of opportunities for installation of electric vehicle charge points, including:

- Council owned car parks
- Visitor centres

- Town centres
- Supermarkets
- New builds/ developments in the county borough
- Private developers – include in all plans and new developments
- Partnership working – private sector organisations/ local organisations
- Work with charge point installation companies to ensure they fund the 25% match funding required for the OLEV funding
- Link funding applications to planned upgrades (street lighting and EV charge points on street lighting), to maximise how you provide match funding
- Work with PSB partners to share assets (vehicles and charge points) to introduce and expand the EV Charge point infrastructure and vehicle usage

Action Plan

This Electric Vehicle Strategy is accompanied by an Electric Vehicle Action Plan that sets out the programme of actions that the Council intends to take to achieve the aims and objectives of this strategy.