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Electric Vehicle Strategy 2019-2030

west sussex county council

December 2019

Foreword

Deborah Urquhart
Cabinet Member for the Environment

Under the Automated and Electric Vehicles Act 2019, the Government plans to ban new petrol and diesel cars by 2040, and the Office for Low Emission Vehicles aims for all vehicles to be low emission by 2050. There is growing pressure that this ambition should be met sooner.

Meeting this ambition will require a step change in the provision of electric vehicle infrastructure. The council needs to start preparing for this transition and although it is difficult to say how the technology will progress over the next 10 years, it seems likely that we will need a network of charging infrastructure across the county so that our businesses and residents, particularly those without access to off road parking, are not disadvantaged, and the area remains accessible and attractive to visitors.

There are both powerful economic and environmental reasons for Council's to encourage and support the adoption of electric vehicles on our road networks, including reducing the emissions of carbon dioxide and harmful air pollutants. I am excited by the prospect of the benefits electric vehicles will bring, improving local air quality, and reducing our dependency on fossil fuels, and in future alongside future technologies and automation radically changing the way we travel.

Although ambitious, this strategy takes a cautious approach in investing our limited funds in this rapidly evolving area, and recognises that the Council is not best placed to stay on the cutting edge of technology development. We will therefore be looking for a market based supplier to work with us to deliver our ambition across the County.

Achieving the ambition in this strategy will need us all to act, and I look forward to working alongside our future supplier, district and borough councils, parishes and communities and other key partners to realise it.

Introduction

Our overall transport vision for West Sussex remains one based on sustainable transport. We recognise the many benefits of sustainable transport, both to individuals, places and the environment more widely, and want to reduce car use overall across the county in favour of public transport and active travel.

However, we recognise that for certain activities and individuals, cars and vans remain an appropriate mode of transport. Moving these vehicles from petrol and diesel to ultra-low emission vehicles is critical, to reduce the impact of those journeys, and help us achieve our climate change and air quality ambitions.

Our vision for the County is that when residents travel by car and small van they choose ultra-low emission vehicles, and travel in a carbon neutral way.

This strategy focuses on the role of electric vehicles across the county to deliver this vision, and the interventions we will be taking to support West Sussex residents to a transition to electric. It looks forward to 2030, but as electric vehicles, and electric vehicle charging, is very much an emerging technology it is important for us to be able to adapt to changes and ensure a flexible approach to delivery of the strategy. Therefore, the actions within the strategy focus on the next five years and will be reviewed regularly to ensure adaptability to changes in technology, trends in mobility and financial considerations.

This strategy forms one part of the overall transport strategy for the County and should be considered alongside and read in conjunction with other strategies such as the West Sussex Transport Plan, the Bus Strategy and the Walking and Cycling Strategy.

Background

Replacing existing petrol or diesel vehicles with electric vehicles (EVs) brings the environmental benefits of lowering carbon emissions and reducing air pollution.

Users also often achieve savings in vehicle running costs, with some research showing a typical electric vehicle saving its owner roughly £100 in fuel for every 1,000 miles driven, when compared to petrol or diesel.

There are more than 100 fully or part EVs already available to buy or lease in the UK. Car manufacturers are investing heavily in EVs, and many have committed to including substantial numbers of EVs across their model ranges within the next 3 to 10 years.

Although EVs currently cost more to buy than a petrol or diesel car, research predicts[1] that EVs will achieve cost parity with conventional vehicles in the UK as early as 2021. From this point, cost will no longer be a barrier to purchase, and owning an EV will become a realistic, viable option for more people.

Currently modern EVs are available that can drive for over 250 miles, making them suitable for the majority of users. When EVs require refuelling, they must be connected to a charging infrastructure that, depending on the type of the charging point, can fully refuel the vehicle in anything from half an hour to 10-12 hours. The adequate provision of this charging infrastructure is essential to allowing individuals to own and operate EVs. Road to Zero is the Governments strategy in relation to ultra-low emission vehicles. It sets out how they plan to meet their commitment to end the sale of the new conventional petrol and diesel cars and vans by 2040.

Their strategy sets out ambition for at least 70% of new car sales to be ultra-low emission by 2030. These are referred to as high and medium ambition scenarios.

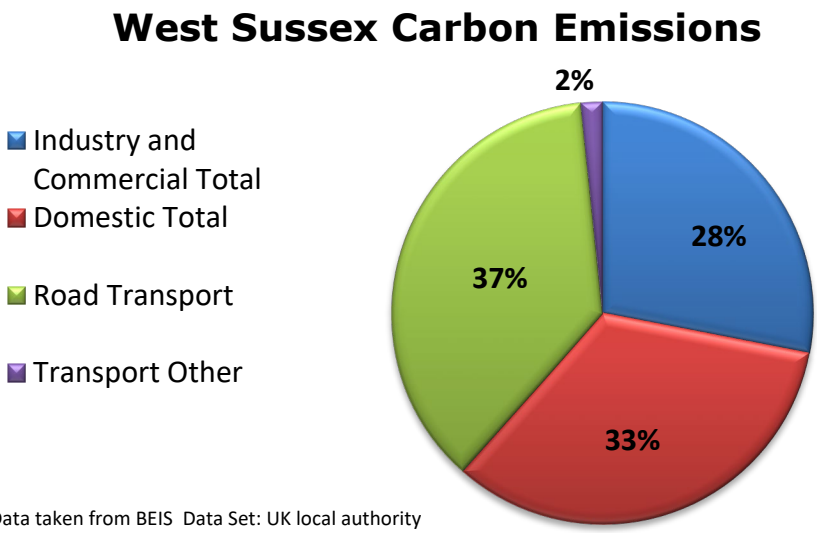
[1] Battery Electric Vehicles: New markets. New entrants. New challenges. Published by Deloitte, January 2019

Why are electric vehicles important to us?

There are three reasons why we want to support EV take up in the County.

Carbon

Our main, and foremost priority, is to reduce the carbon emissions of the County. We are committed to do what we can to combat climate change.



Data taken from BEIS Data Set: UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2016. Published in June 2018

Across the County, 37% of our total carbon emissions are due to road transport,[2] and over half of these emissions are due to car travel.

Enabling and accelerating the move to EVs will help us to reduce our emissions significantly.

Air quality

We want to safeguard and improve air quality across the County. There are currently 10 Air Quality Management Areas[3] (AQMAs) in West Sussex. These AQMAs are locations where Nitrogen Oxide levels exceed, or are likely to exceed, the national maximum threshold. The main cause of this pollution is vehicle emissions.

With our District and Borough partners we are implementing an Air Quality Action Plan but again, enabling and accelerating the move to EVs will help reduce air pollution and improve local air quality.

Revenue, with minimal risk

Finally, we are mindful of the revenue generation opportunity EVs present. The capital costs of installing this charging infrastructure can be considerable but, once installed, the usage of this infrastructure could have significant revenue potential. Alongside this, however, we are aware of the rapid pace of change in this innovative and evolving technology. We are cautious about investing taxpayers' money in infrastructure that may become obsolete and a redundant asset before it has paid back on the investment to install it. It is crucial to us that tax payers' money is protected from this risk.

[2] Data taken from BEIS Data Set: UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2016. Published in June 2018

[3] For a list of these sites, see the air quality pages on the West Sussex County Council website

Aims

To achieve this vision, we have three highly ambitious aims:

- At least 70% of all new cars in the county to be electric by 2030.
- There is sufficient charging infrastructure in place to support the vehicles predicted to be reliant on public infrastructure to charge.
- Ensure a renewable energy source for all charging points on County Council land or highway.

Our methodology

We have worked with a consultant to model what different EV uptake scenarios looked like across the county. We sought to understand both the number of vehicles that would be involved and the number of charging points that might be required to support them.

We have included both battery electric vehicles – vehicles relying solely on battery power and plug-in hybrid electric vehicles – conventional petrol or diesel working alongside an electric motor when carrying out this work.

We drew on the experience of UK Power Networks (UKPN), who had carried out significant modelling and thinking around EV uptake. We used a model, tested by UKPN that draws on models used by the Department for Transport to inform EV policy decisions with predictions including vehicle attributes, expected increases in battery range, energy prices and supporting infrastructure. The model also factors in the results of their substantial charging patterns study.[4] Where we have deviated from the approach of UKPN is to ensure that the local characteristics and behaviours within West Sussex were taken into account. Our model has included local information about access to off-road parking and information about travel patterns, including the number of commuters in an area. We have applied the model to the smallest geographical area that we could get data for. This is MSOA level.[5]

In applying the model we have assumed that where people have access to off-road parking they will be able to install their own charging point, and will not be solely reliant on publicly accessible charging infrastructure.

Our predictions for the number of charging points required is based on a high home, low work charging scenario. This scenario most reflects both our overall sustainable transport ambitions, (we don't want to be encouraging more journeys by making work the primary place where people can charge) and also the results of our local EV survey,[6] and other national studies,[7] where home charging is the preferred option.

[4] Recharge the Future - UKPN charging patterns study

[5] MSOA is a geographical geographic hierarchy designed to improve the reporting of small area statistics in England and Wales. The minimum population is 5000 and the mean is 7200

[6] WSCC Electric Vehicle Residents' Survey Dec18-Jan19

[7] Recharge the Future - UKPN charging patterns study

We are focusing primarily on providing charging points for West Sussex residents. The mix of infrastructure proposed will also meet the needs of small businesses and visitors to the area.

Key findings

The modelling work we have done estimates that across West Sussex we need to see 3,305 public charging points by 2025, and 7,346 by 2030.

High Uptake Scenario: 70%

Number of EV's	Now	2025	2030
Total EVs in West Sussex car stock	1,593	66,236	161,583
Number of EVs that will rely on public infrastructure	<10	17,890	44,048
Number of publicly accessible residential charging points required	0 home specific 80 destination	3,169	7,027
Number of publicly accessible rapid charging points required	9	136	319

These predictions are reliant on public uptake of EVs, which to a great extent is reliant on car manufacturers.

Our solution

We want to ensure that our solution tackles the barriers to EV uptake. Residents told us that lack of public charging points and range anxiety were significant factors that were preventing / discouraging them from switching to EVs[8]. Our solution addresses both of these issues.

To achieve the ambition that we have set out we want and need to encourage everyone to make the switch to EV as soon as possible.

Our solution therefore is two stranded:

1. **Encouraging –** focusing on communications and incentives.
2. **Enabling –** focusing on the provision of charging infrastructure.

1. Encouraging

a. Communications

We are aware that the EV market is still an emerging one, and in some cases people's perceptions around EV performance and availability of charging points is not current.

We wish to address this, and ensure our residents understand the options for, and benefits of, EV ownership; are aware of grants they can take advantage of (particularly the Government Home charger scheme (where customers can get 75% towards costs), and know where they can find charging points.

An element of our communications will particularly target local businesses to ensure they understand the options for their fleets, their workforce and visitors. It will include ensuring they are aware of grants they can take advantage of and how to apply.

b. Incentives

Although our options are limited when it comes to offering incentives, it is something we have been keen to explore. The form of these incentives is important. We do not want to penalise people who cannot currently make the switch to EV, and therefore ruled out options that created an incentive by negatively impacting others.

At a national level, grants are already available to support individuals to make the switch, and at a time of considerable pressure for our resources we do not think it would be appropriate to offer any grant over and above this.

Although we do not control the majority of public car parks across the county, we do operate controlled parking zones and have authority to set parking charges for these areas. We will explore different charging mechanisms, including differential charges for residential parking permits for low emission vehicles.

[8] WSCC Electric Vehicle Residents' Survey Dec18-Jan19

2. Enabling

a. New development

Although we are not the primary planning authority, we see the integration of electric vehicle charging infrastructure into all new developments as critical to the future long term sustainability of a charging network.

Guidance on parking

It is important that developers consider the likely demand for electric charging points within new developments, and how this is likely to change over time. Our Guidance on Parking at New Development to developers states that developers should identify ways to cater for this demand within the design of new developments as part of the overall provision of parking facilities. This could include, for example, a mix of spaces with active charging facilities and passive provision, i.e. ducting to allow facilities to be brought into use at a later stage.

Our guidance also states the EV space allocations for active EV charging facilities expected between now and 2030. These are in line with the ambition within this strategy.

WSCC Local Design Guide

Our local design guide sets out our preferences on the application of national highway guidance and standards for residential development within West Sussex. We will update our guide to reflect the principles contained within this strategy.

Our buildings

We will also ensure that any new build projects that we undertake, where it is safe and appropriate for the public to have access to the site, will integrate publically available electric vehicle charging. At a minimum we will ensure charging is integrated for our own fleet vehicles.

b. Enable a comprehensive and cohesive charging solution on community land.

The County Council aspires to work in partnership with district and borough councils (the main owners of public off-street parking), parish councils and charities that run and maintain community land such as village halls and community centres to provide a comprehensive and cohesive solution on public land. We believe that if we can consider all community land when planning a charging network there would be significant benefits to our residents. We could:

- provide a joined-up solution, which looks, and is accessed in, the same way across the county making it easier for people to use;
- provide charging points in the best locations for the users, rather in the places we have the land / space to do it;
- enable charging points to be delivered faster across the whole county as the chances of finding more feasible and achievable sites will be increased if we maximise potentially "in scope" public land;
- avoid duplicating provision in a single area;

- access significantly more government funding than acting alone, and thereby deliver more infrastructure within the county;

Although a community land solution is our overall aspiration, we can only commit our own assets in this strategy.

We are the local Highway Authority, with control over the vast majority of public highways in the County. This includes roads and footways. Notable exceptions are some of the main strategic routes in the county – the M23, the A27 and most of the A23, which are managed by Highways England.

We also own a substantial number of buildings and land assets across the county from which we deliver our services. This can range from individual homes to large corporate office hubs, fire stations, care home and schools.

We are uniquely placed to enable the provision of this charging infrastructure, to enable the switch to EV.

When considering **charging point type and operation** we have some **general principles** that we will be adhering to:

Charging point equipment

- The charging points installed across the County will look and feel the same, with consistent signage.
- AC Charging points will use standard plugs (Type 2 connectors). We will not be using three pin plug connectors.
- Charging points will be at least 7KW. Modern EVs are, and will continue to be, produced with larger and larger battery packs. Anything less than a 7KW charging point will take an impractical amount of time for these larger vehicles to charge.

Charging point installation

- We want to minimise the amount of street furniture and clutter.
- Charging points should be at least dual connectors, or if this is not possible, demonstrate that they take up less space than a dual connecting charging point, and equally provide the same value for money.
- Installations will include the creation of charging bays with EV parking bay marking. These will be marked with green bay paint marking with 'Electric Vehicles Only' text.
- To maximise the accessibility of the charging points, they will have time related use restrictions, dependent on the location and charge provided.
- Signage, particularly in residential and destination locations will be kept to a minimum and show clear information about the costs to charge.

Payment

- Users will be charged for the energy that they use.

- Charging points will be easy for anyone to use with a contactless pay as you go system. In addition there will be an option for pre-registering for regular users if they prefer.
- To ensure that residents relying on our residential charging solution (more detailed explanation of this is set out on Page 10 onwards) are able to get a deal as close to being able to charge on their own property as possible, we will offer differential pricing to residents and identified public sector partners. through a membership scheme.
- We will consider, on a location by location basis, waiving or reducing parking fees in short and medium-term parking locations (this will be restricted to sites where we have control of the parking).

Charging point management system

- All our charging points will be supported by one branded back office system. Charging points will use the latest open charging point protocol, enabling the Council to transfer the back office function to another user if the back office system proves unfit for purpose, or if users are receiving an unsatisfactory level of service.
- Our charging points will be supported by an app and website to help customers locate available charging points. This will interact with other well-known and trusted website providers such as ZapMap. We will also provide a map of planned future charging point locations to keep residents up to date on our plans.

Energy supply

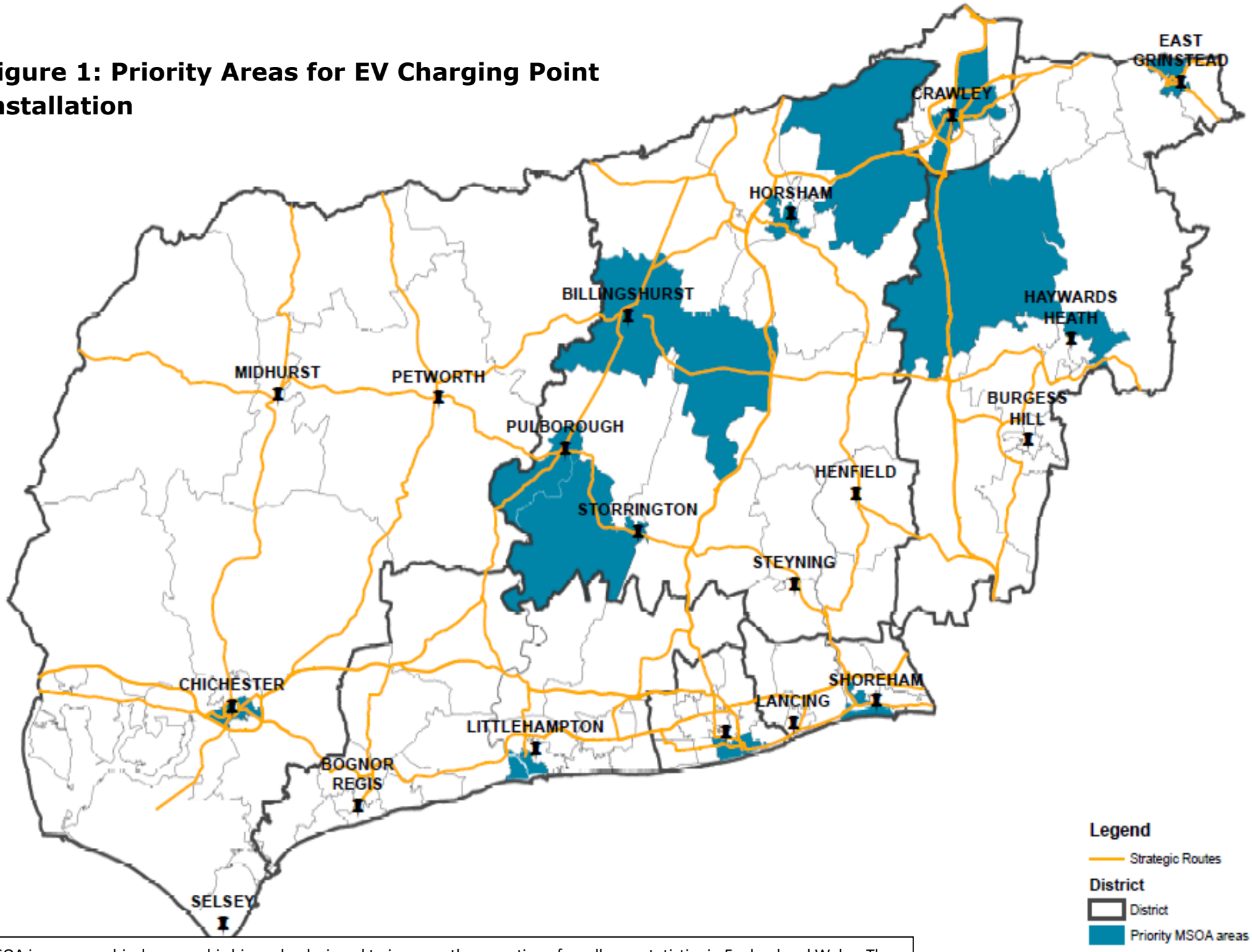
- We will maximise the carbon saving associated with the switch by ensuring that charging points we enable use renewable energy, either by generating and storing energy on site, or through a renewable / green energy tariff.
- WSCC will retain responsibility for the source of the energy used to operate the charging points in order to ensure that the benefits of competitive energy tariffs are passed onto local residents.
- We wish to explore how we can support smart charging, and reduce demand on the grid at peak times, and will investigate solutions for pricing incentives to encourage charging off peak, and the feasibility of vehicle to grid (vehicle to grid technology enables energy stored in EVs to be fed back into the national electricity network (or 'grid') to help supply energy at times of peak demand) for public charging.

We also have some general principles in relation to charging point locations:

- We want to provide charging points in the places that people need them, but not in locations that encourage additional car use.
- We will focus on areas where residents cannot make the switch to EV without access to a public charging network, but we want to ensure a good geographical spread across the county.
- We will ensure any charging points we enable are complementary to, and not in direct competition to others already operating in the area.

- Although efforts to engage with potential market providers (supermarkets, petrol station operators etc.) has proved difficult to date, we will work with our preferred supplier to attempt to engage with other potential private providers to encourage them to invest in charging infrastructure within the County and to ensure any additional public charging infrastructure is complimentary to privately owned charging points.
- Our initial efforts will focus in areas where we predict there will be more charging points required. The initial priority areas will the areas in blue and along strategic networks, as illustrated in Figure 1. These are areas where there is less access to off road parking, where uptake trends are fastest and where there are more commuter journeys happening. (Any individual sites will be subject to feasibility investigations and a clear business case).
- West Sussex residents will have the opportunity to suggest suitable specific sites for charging points to be installed.
- Individual sites will be subject to full feasibility investigations including an assessment of local grid capacity.

Figure 1: Priority Areas for EV Charging Point installation



MSOA is a geographical geographic hierarchy designed to improve the reporting of small area statistics in England and Wales. The minimum population is 5000 and the mean is 7200

Accessibility

- Charging points will be easily accessible and, where the primary user will be the general public, will be available 24 hours a day.
- Ideally charging points will be in busy locations with high footfall.
- Ideally urban sites will have CCTV and be well-lit for use at night.

Other highway users

- Parking for charging points will not remove parking designated for people with a disability, spaces for car club cars, bus bays or bicycle parking, although we will seek to ensure some disability parking is provided with charge points.
- Charging points and charging bays will only be installed in locations where it is safe to do so and where parked vehicles will not impede current and planned future highway works, as set out in local and strategic transport improvement plans, and pre-existing development agreements.
- On street charging points will be located on the kerbside of the footway, and be situated as close as possible to the kerb to limit the space they take up and reduce trip hazards.
- Charging points will not be installed in areas where installation will restrict access for other footway and road users.

We want to see three main types of charging infrastructure. These are listed below in priority order:

1. **Residential charging -** serving residents primarily for overnight charging. Addresses lack of public charging concerns
2. **Rapid hub charging -** serving all EV users, providing 20-30 minute charging. Convenient to as many users as possible. Addresses lack of public charging and range anxiety concerns.
3. **Destination (top up) charging -** serving all EV users, providing top up charging over a few hours. Addressing lack of public charging and range anxiety concerns.

Below is more detailed information on what our vision is for each of these charging types.

1. Residential charging

Where no off-street parking exists, we want to enable 2, potentially 3 types of residential charging:

a. Enabling charging on home charging point

We want to make it as easy as possible for residents to make the switch to EVs, and are aware of the benefits of charging from your own home charging point, for example it may be cheaper and allow easier vehicle to grid solutions). We are very mindful that we need to ensure that our pavements are safe for pedestrians and other highway users, and that we don't expose the County Council or individuals to excessive liability or risk.

We will continue to explore ways to enable this option for West Sussex residents, including keeping up to date with pilots running in other areas, for example channels for cables being trialled in Oxford.

b. Residential hub charging

Although we aspire to work with District, Borough and Parish Councils to deliver a community land solution in West Sussex, we can only commit our own assets. Therefore, hubs will be located on County Council owned land excluding:

- Residential homes;
- Schools, unless they specifically opt into to providing charging points;
- Care sites offering residential services, or services to vulnerable people;
- Leased properties, where tenants fully control the site services and operation;
- Agricultural land;
- Greenfield sites;
- Secure sites;
- Sites where public access might impede our service delivery, or put the public at risk.

Hubs will be located close to a residential area without access to off road parking. Ideally this will be less than 500m walk for the majority of users.

When charging in a County Council owned hub, overnight parking will be available for free.

c. Residential charging on street

We will not be pursing installing charging points located on/in street-lights. For a number of reasons:

- Power supply
  Street Light columns have a very low power supply. Most are in the region of 2Kw. With batteries in cars increasing in size, 2kw would be exceptionally slow to charge, and not fit for purpose.
- Trailing Cables
  WSCC lighting columns are in the main placed at the back of footway as this makes them less vulnerable to damage but this means charge leads would be going across the footway.
- Ownership / Responsibility
  It is the responsibility of a third party (Tay Valley Lighting) to maintain all our street lights under a 25yr PFI (Private Finance Initiative), this passes all the risk of the street lighting to Tay Valley Lighting. There are some complex and costly legal issues about providing another party access to the lights. Although these might potentially be overcome it will take significant time and resources to do so, and there is no guarantee they can be resolved. We have ambitious aims for EV in the County and need to be taking early action.

An example of on street charge point.
(picture from Zapmap)

- In areas where parking is already restricted for residents only, these parking restrictions will apply equally to the EV bays.
- Charging points should not be considered the personal charging point of any individual but will be an asset for the community to access. To support this, where practical the bay will not be located outside one particular property, but in the best location to serve an entire street.

2. Rapid hub charging
Charging points will:

- be at least 43kW AC or 50kW DC;
- be close to a strategic road network or other important route;
- be in locations that don't already experience significant congestion /
  don't attract additional trips into already congested areas;
- consist of at least 3 and ideally 6 charging units, so at least 3 cars with the same connector type will be able to charge at any one time;
- Charging on street, or in off street hubs will be considered.

An example of a Rapid Charge Point

3. Destination (top Up) charging
Charging points will be located:

- where short/medium term parking is available.
- in areas with existing car-based activity, with mixed use areas and destinations such as near high streets and transport hubs. (This will support the use of EVs for existing car trips)
- Charging on street, or in off street hubs will be considered.

How we will deliver

There are two main grant schemes available to us, the On-Street Residential Charging Grant, and the Workplace Charging Grant. These cover 75% and 50% of the installation costs of charging points. There is no provision in the grant for future maintenance.

We are cautious in investing our limited capital funds in an innovative and evolving technology. We lack the resources internally to stay on the cutting edge of developments and see the market as the main holders of this knowledge and expertise.

Therefore, our preferred option for delivery and ongoing management, operation and maintenance is the use of third party supplier.

Other than drawing down on Government Grants for electric vehicle charging, we do not intend to use any other Council funds to deliver this scheme.

ACTIONS

Aim 1: At least 70% of all new registered cars in the County are electric by 2030

Objective	Actions for WSCC
Ensure our residents and businesses understand the options for and benefits of EV ownership, are aware of grants they can take advantage of, and where they can find charging points	Develop and start delivery of a communication and engagement plan.
Offer incentives to encourage residents to make the switch to EVs as soon as possible	We will explore different charging mechanisms, including differential charges for residential parking permits for low emission vehicles.
	As charging point sites come forward, review the reducing parking fees in short and medium term parking locations.
West Sussex County Council will lead by example	Develop a phased fleet transition plan to move our fleet to electric.

Aim 2: There is sufficient charging infrastructure in place to support the vehicles predicted to be reliant on public infrastructure to charge

Objective	Actions for WSCC
Ensure the future long term sustainability of EV charging by integrating infrastructure into new development	Regularly review our Guidance on Parking at New Developments to ensure adequate provision for EV charging on new development.
	Revise our WSCC Local Design Guide to reflect our charging point principles.
	Revise our own new building design standards to include EV provision that meets our charging point principles.

	Lobby for more transparency from market providers regarding future development plans.
Provide a comprehensive and cohesive public charging solution on community land.	Collate a long list of sites for consideration for delivery by our delivery partner.
	Appoint a market-based partner to work with us to provide the charging point network.
	Develop a 5 year rolling delivery programme for charging points across the County. This delivery programme will include measurable targets.

Aim 3: Ensure a renewable energy source for all charging points on County Council land or highway

Objective	**Actions for WSCC**
Maximise the carbon saving associated with the switch to EV	Stipulate the requirement for renewable energy, either by generating and storing energy on site, or through a green / renewable energy tariff within our supplier specification.

All actions will be subject to clear business cases that demonstrate value for money, and availability of funding.