

Swindon Electric Vehicle Charge Point Roll Out

Strategy to 2030

April 2022



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Introduction

Under the Road to Zero Strategy, the Government plans to ban the sales of new petrol and diesel cars as early as 2030.

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 borough so that our businesses, residents and visitors, particularly those without access to off road parking, are not disadvantaged.

This strategy lays out the options available to Swindon Borough Council in terms of rolling out charging infrastructure to play its part in meeting the Government's targets. The strategy will be reviewed every three years to ensure it captures the latest forecasts, the technological advances and innovations. The action plan will be assessed and updated to ensure the strategy is being implemented effectively.

It is recognised that we must continue to reduce car dependence, and promote active travel, but cars will always have a role to play. There are both powerful economic and environmental reasons for councils to encourage and support the adoption of electric vehicles on our road networks, including reducing the emissions of carbon dioxide and harmful air pollutants. There are many benefits that electric vehicles will bring; improving local air quality, and reducing our dependency on fossil fuels, and alongside future technologies and automation, radically changing the way we travel.

We need to be visionary, ambitious and act with urgency. This strategy sets out the options available to Swindon Borough Council in rolling out electric vehicle charging infrastructure over the next decade in order to meet the low emission ambitions of Swindon by 2030.

Background and Policy context

There is a clear steer from both national government and Swindon's local policies to be investing in electric vehicles now.

National policy

The **Automated and Electric Vehicles Act 2018** received Royal Assent on 19th July 2018, the legislation forms part of the Government's Industrial Strategy to promote both automated and electric vehicles to achieve climate change targets.

The Bill deals with:

- a) Changes to insurance policy requirements to cover automated vehicles and;
- b) Covers electric and hydrogen powered vehicle charging infrastructure.
- c) The Bill covers issues such as availability, compatibility, reliability and standardisation of payments.

The **Road to Zero Strategy** outlines how the government will implement the electric and hydrogen powered vehicle charging infrastructure aspects of the Automated and Electric Vehicle Act 2018.

The strategy is long term in scope and ambition, considering the drivers of change, opportunities and risks to 2050 and beyond, but largely focused on what can be done now to achieve that goal. The Strategy sets out the requirements to realistically achieve the ban on the sale of petrol and diesel vehicles as early as 2030.

The strategy includes grants for the roll out of electric vehicle charging infrastructure, the reduction of vehicle excise duty on low emission vehicles and the instigation of the Road Transport Emission Advice Group to provide clear, factual information on new vehicles and powertrains on the market.

Department for Transport, Transport Energy Model

In light of the current challenges to road transport impacts and the current state of the climate, the **Transport Energy Model (TEM)** was developed over 18 months to assess the powertrain technologies and fuel choices available both now and in the future.

The model uses average vehicle emission data during the useful life of the vehicle (not manufacture or disposal, nor the impact of making batteries, albeit acknowledging that this has an impact on greenhouse gas emissions).

The TEM states that electric vehicles, across the five vehicle types tested, has the most significant improvement in environmental impact and reducing greenhouse gas and particulate emissions. The low emissions of electric vehicles are expected to drop further with the de-carbonisation of the electricity network.

A sensitivity test of the emissions associated with the production of electric batteries was undertaken, the results showed that even though the current production of a 35kWh battery suitable for a medium car (e.g. Ford Focus) is five tonnes of CO², this still delivers significant greenhouse gas savings over the life of the battery compared with conventional powertrains. Improvements are also expected in the future production of batteries to further reduce this impact.

Local plans and policies

The **Swindon Borough Council Vision for 2030** sets out four priorities. Priority one is to:

“improve infrastructure and housing to support a growing, low-carbon economy.”
Pledge two seeks to use the Council owned company, PPS, to explore technology and deliver opportunities to invest in renewable energy, including energy from waste, facilitate electrified transport and reduce carbon footprint.

Air Quality Management Plan

In February 2018 the Kingshill Road area was declared an Air Quality Management Area (AQMA) as concentrations of nitrogen dioxide breached the air quality directive. A range of behaviour change projects to reduce air pollution are underway, promoting active travel, and a Transport Vision supporting sustainable transport options. The 2018 Air Quality Annual Status Report refers to the development of electric vehicle charge points to promote the uptake of electric vehicles as a means of reducing air pollution.

Swindon’s emerging **Local Plan** policies will continue to encourage development that promotes and supports Low Carbon and Renewable Energy Infrastructure. Electric Vehicle Charging Points are actively promoted in the development process via these policies, such as the **2020 Parking Standards for New Development SPD**, which requires the provision of one EVCP per dwelling where parking is allocated. Minimum requirements are also set out for retail, leisure and employment uses.

Key objectives of rolling out EV charging infrastructure

The primary objective for expanding the network of electric vehicle charging points in the borough is to put the infrastructure in place to support the conversion from fossil fuel to electric powered vehicles. This will contribute to Swindon's efforts in tackling climate change, improving air quality for our residents and becoming a carbon neutral society; which will then give residents, visitors and employees in the borough the confidence to convert to an electric vehicle.

Secondary objectives include the ability of EV infrastructure to grow Swindon's economy. There are also social benefits such as equality considerations. As early adopters of electric vehicles, it is homeowners who are the largest share of electric vehicle drivers, with 78% of them having access to off street parking. As second hand EVs enter the car market and vehicle prices drop, ownership becomes more accessible to a wider demographic, and therefore affordable charging infrastructure needs to be in place to meet this demand.

The transition to zero emission vehicles will have a considerable benefit to the health of Swindon's population. Electric Vehicles have zero tailpipe emissions and therefore can contribute significantly to local air quality improvements.

Revenue generation for the council is possible from charging units, but it is not the primary driver for their roll out. Other local authorities have found that the value of charging infrastructure is in building the network to encourage the uptake of electric vehicle ownership, and therefore the charging units must be seen as the enabler for social change, not a revenue generator.

Demand Scenarios

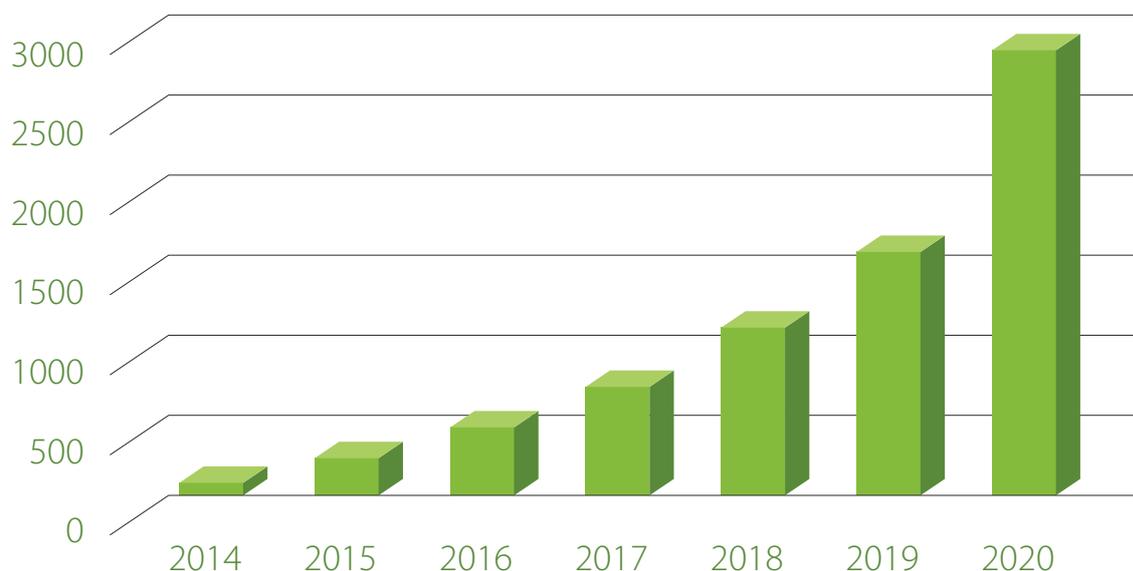
The electric car market is growing quickly, with more than 164,100 pure-electric cars on UK roads at the end of September 2020 - and over 373,600 plug-in models including plug-in hybrids (PHEVs). Registrations for pure-EVs in the first nine months of 2020 are up 127% compared to 2019.

If the uptake is sustained, 1 million EVs are forecast to hit UK roads by 2025 and projections by National Grid suggest that the UK stock of EVs could reach between 2.7 and 10.6 million by 2030 as consumers increasingly purchase EVs over conventional vehicles. However, with 33 million cars currently on the roads in the UK, EVs will represent a third of all vehicles by 2030, based on the higher prediction.

Forecasts by Regen - a not-for-profit centre of energy expertise and market insight - suggest that by 2030, Swindon could have around 56,000 EVs in the borough. This is likely to be a conservative figure, and we will review the projections, and the strategy, every three years. Over the past five years, EV registrations in Swindon postcodes have risen year on year. Figure 1 below shows the registrations for battery only electric vehicles (BEV) and plug in hybrid vehicles (PHEV) across SN postcodes¹ between 2014 and 2020. As we have a large car leasing company based in SN5, the registrations from SN5 have been omitted so as not to skew the figures.

Figure 1

BEV and PHEV registrations in SN postcodes without SN5



Research by the Field Dynamics² found that 32% of households in Swindon (equating to 31,419 homes) have no garage, nor off road parking, and therefore no ability to charge an EV at home. Whilst the early adopters of electric cars will have the ability to charge their cars at home, Swindon needs to increase its provision of publically available charging points if it is to encourage the uptake of electric vehicles.

¹ As we have a large car leasing company based in SN5, the registrations from SN5 have been omitted so as not to skew the figures.

² <https://onstreetcharging.acceleratedinsightplatform.com/>

SSE have mapped the forecasted demand for non-domestic EV chargers between 2020 and 2040. This will help to plan an expansion in car park, workplace, en-route and destination charging. For Swindon Borough, the results are as follows:

Figure 2 – Swindon non-domestic EV chargers 2020

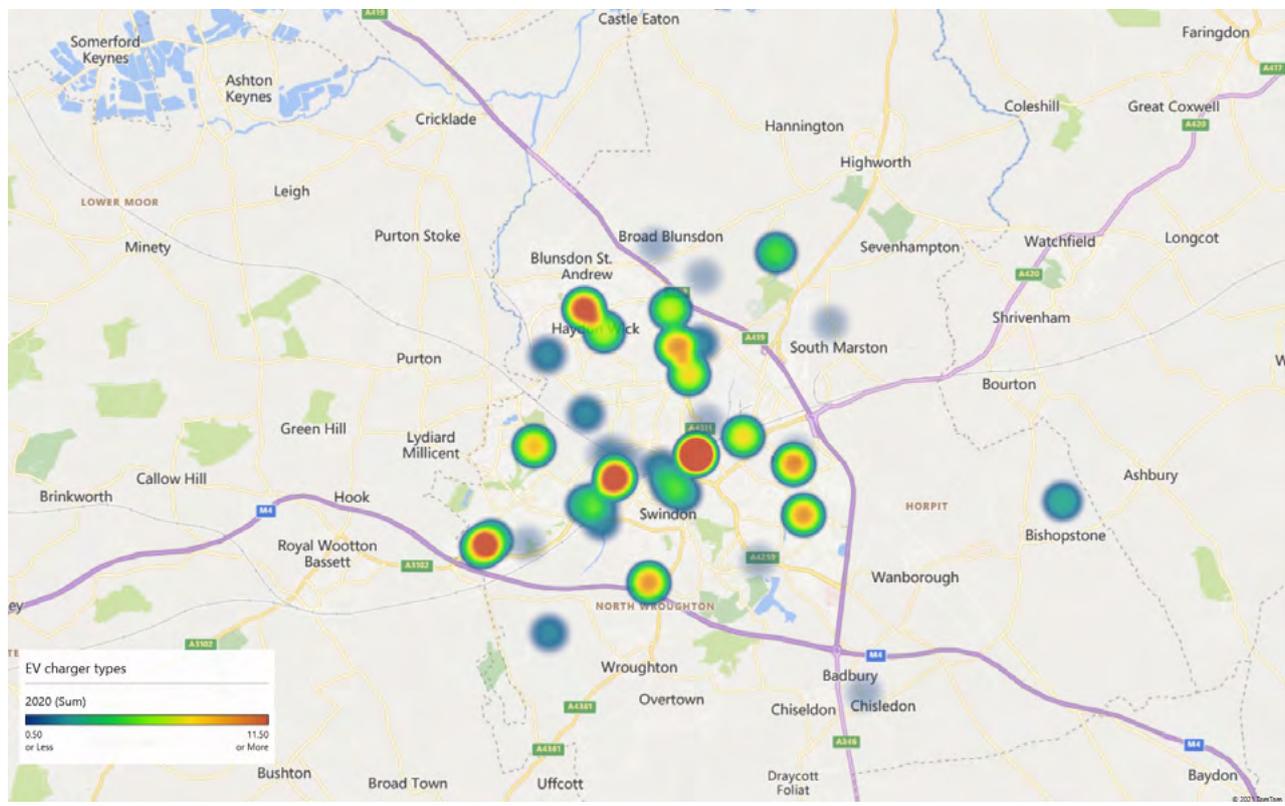


Figure 3 – Swindon non-domestic EV chargers 2030

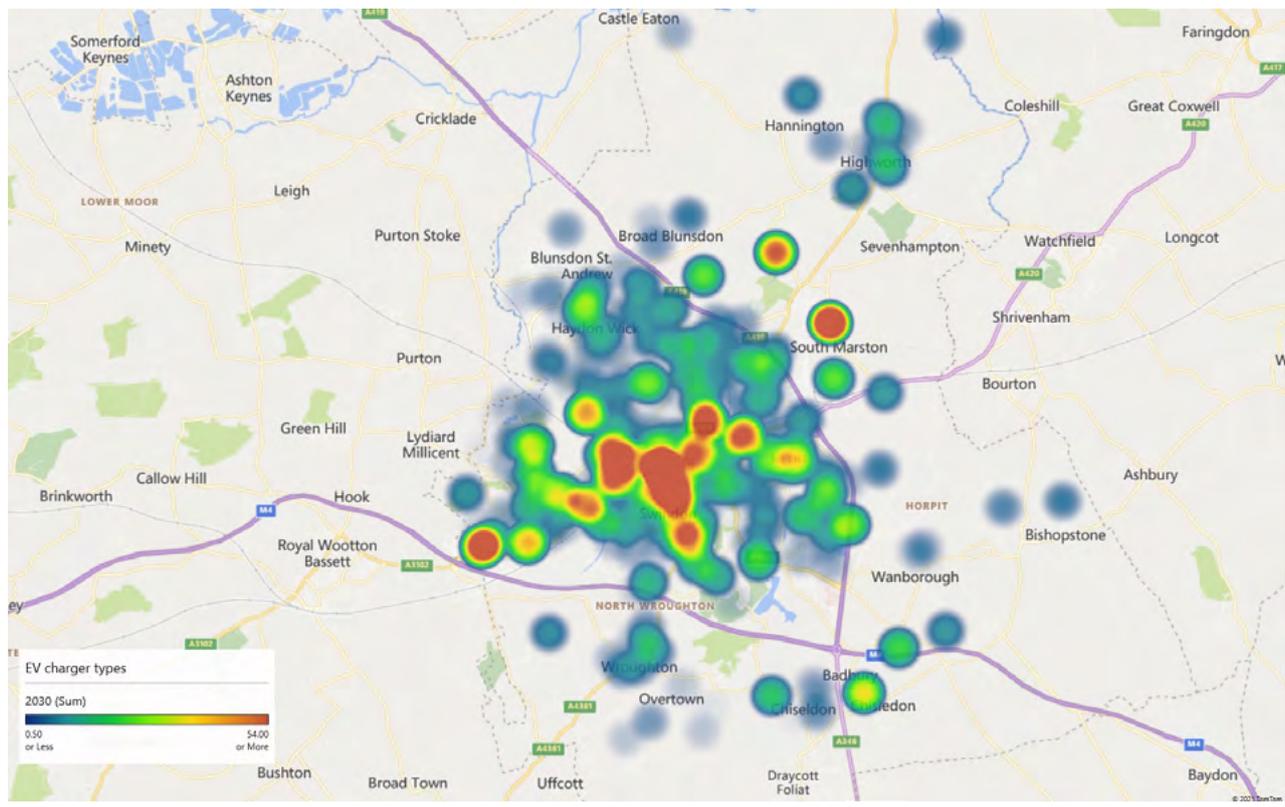
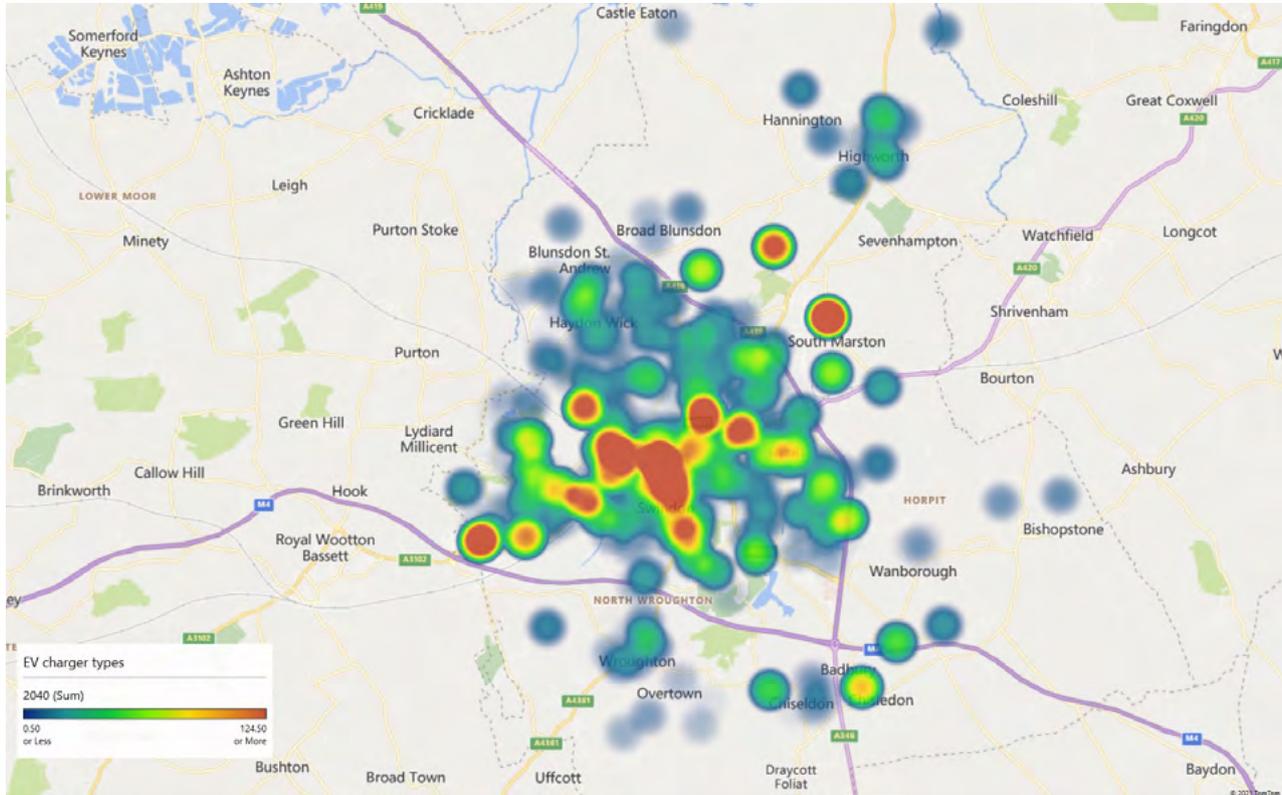


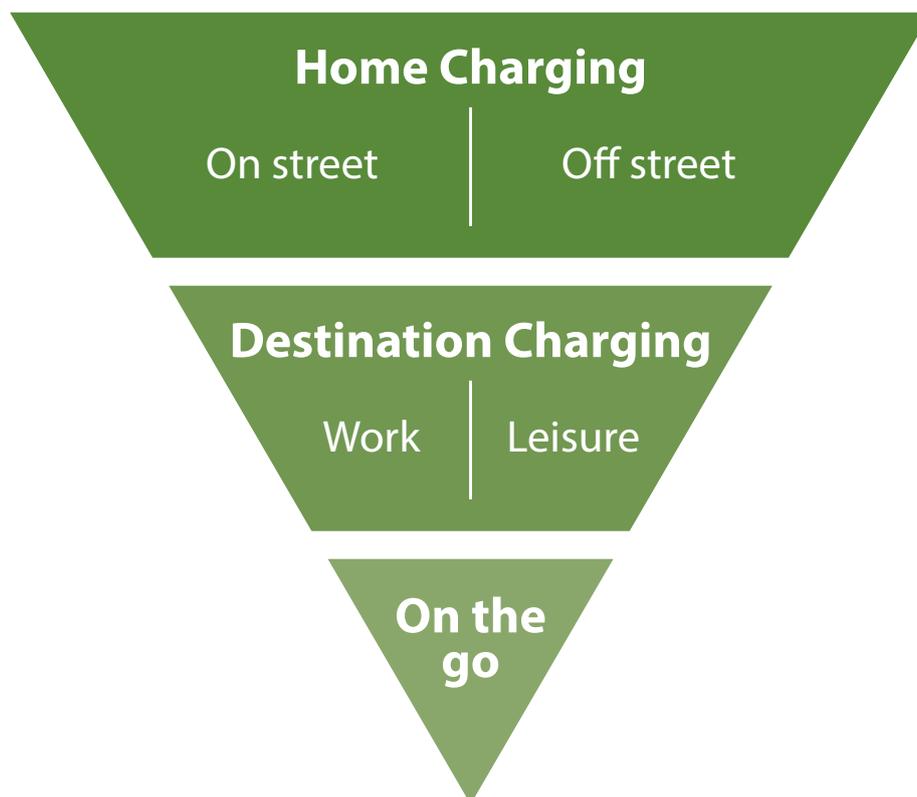
Figure 4 – Swindon non-domestic EV chargers 2040



Infrastructure options and measures

Swindon will need to consider a wide range of users, the most appropriate locations and charging infrastructure, as well as an even distribution across the borough to both encourage a switch to cleaner vehicles and minimise the distance that drivers need to travel to top up. Figure 5 below shows the way that electric car owners will charge their vehicles, and through this strategy we will discuss these options and demonstrate where the local authority has a part to play.

Figure 5



Charging speeds

There are currently three “speeds” of charging, defined by ranges of kW; slow, fast and rapid. The rapid category can be split into “ultra rapid” and rapid.

Slow charge point units (up to 3 kW) are best used for overnight charging and can take up to 16 hours to charge from empty to 80% charge of a 60kWh battery. Away from home charging, it is not recommended practice to install slow chargers.

Fast charge point units (7kW to 22kW) are best used for car park, on street and workplace charging as they take 2–7 hours for a pure-EV to charge fully depending on the battery size of the car.

Rapid charge point units (22kW – 50kW) and **Ultra rapid units** (100+ kW – often 150 kW – and up to 350 kW) are the quickest way to recharge a vehicle, typically recharging a vehicle to 80% in around 30 minutes. However, rapid charge points are expensive to install and thus expensive to use, they are DC only and they cannot be installed at home. They are only compatible with EVs that have rapid charging capability but they're a great way to top up during long journeys. Typically found in motorway service car parks, petrol stations, larger shopping centres and supermarkets.

It is important for Swindon's charge point network to have a mix of charging speeds, available to meet the needs of different user groups.

Home charging

Off street charging can take place on private driveways or in garages. The cost of installing dedicated EV charging point starts at around £450 and a Government grant will cover up to £350. The Council will carry out campaigns to promote awareness of the grant to residents, with continual promotion to encourage its uptake. This is often the cheapest way to charge an electric car, and in response to this demand, and to add incentives for EV drivers to charge at off-peak times, several energy companies have introduced special tariffs tailored specifically for electric vehicle owners.

Highway Options (“On-street”) – On-street charge points

Starting from a baseline of zero on-street charge points, Swindon needs to consider a network of EVCPs in dedicated bays on residential streets. As a priority, the network should benefit those with no off-street parking, such as resident parking zone permit holders.



Swindon Borough Council will collect suggestions of locations for EV charging infrastructure from residents, and review these on a quarterly basis. New locations will be prioritised based on level of demand, suitability of site, grid availability and impact on the community.

Lamp column charging

Some local authorities, especially in London, are utilising lamp columns as a charging solution. These offer a lower cost, less visually intrusive opportunity for local residents to charge on their street overnight, using existing street furniture.



However, this option requires lamp columns to be installed on the front side of the footway (nearest the road) to avoid cables trailing across the pavement, or the need for an additional charging bollard with cabling through a gully to the kerbside. Currently Swindon's lamp columns are located at the back of the footway and therefore less suitable to be used as chargers. The other implication is the electricity supply needed to support electric charging without disrupting the lamp function means that the charge point would be typically be around 5kW slow charging. Lamp column charging can be considered if it is the most suitable option for a site.

Wireless charging

Wireless technology is a different prospect for EVCPs. It's a simple way of putting charge into a car without the need for cables. It relies on resonant magnetic induction to transfer energy between a pad on the ground, and another under the floor of a compatible EV. The charging pad is around a metre square, while the car's receiving pad is enclosed in a smaller, dinner plate-sized device under the car. Once the two are aligned, charging can take place at 3.3kW, 6.6kW or 20kW speeds.



These could be installed in garage floors that can charge an EV overnight, to car parks, taxi ranks or even motorways that can power vehicles and propel them at the same time.

Currently, there is a small trial on a taxi rank in Nottingham, and BMW offer a wireless charger option with the 5 series plug-in hybrid, but wide scale roll out could be several years away. SBC must keep up to date with the outcomes of trials and future developments in this technology with a view to rolling out wireless taxi ranks in Swindon.

Issues to consider with on-street charging

- Equality of access
- Is there adequate electricity supply in the street?
- Where lampposts are located at the back of footway, an additional post / bollard will be required if taking charge from the lamppost.
- Lampposts will only support slow charging
- Narrow pavements could lead to additional street clutter / trip hazards
- Parking conflicts – especially when bays are placed directly outside properties
- Enforcement and TRO options
- Significant regulatory burden to installations
- A wide range of available charging solutions of varying quality are available
- Should EV ownership be encouraged through parking permit incentives?

Off highway locations

Swindon Borough Council owned car parks

Swindon Borough Council currently operate 6 multi-storey car parks in Swindon town centre and 9 surface car parks (of which 4 are in Old Town). These all operate on a commercial basis, along with pay and display car parks at Coate Water and Lydiard Park.

We recognise the demand for electric vehicle charging in the car parks, both for local residents and for destination charging for visitors. Whilst there is minimal provision at present with just four spaces serviced by relatively slow chargers, we need to ensure much more comprehensive provision in the future. Any redevelopment of the town's car parks presents an opportunity for planned expansion of EV charger provision. Retrofitting of both rapid and fast charging in our other car parks is an aspiration.

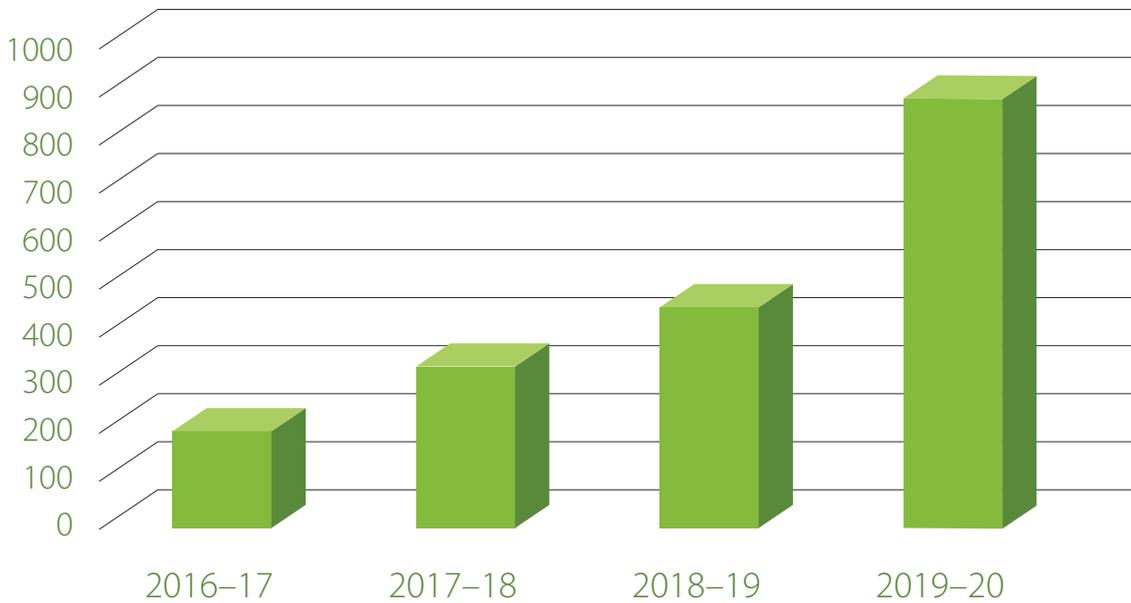
Currently Swindon's public car parks have very limited charge point provision with two spaces and one dual 7kw charger at Brunel North car park and two spaces and one dual 3kw chargers available at Whalebridge Car Park. In both locations, customers must pay the relevant parking charge, but the electricity is then free.

In Whalebridge car park there are regular complaints that the spaces are blocked by vehicles not requiring the charge points, so improved signing, lining and enforcement are required. There does not appear to be any back end metering of usage of this charge point, so we have no data on its use.

In Brunel North car park, the charge point was installed in 2016 as part of the Local Sustainable Transport Fund works, and the growth in usage can be seen in Figure 6 below. To sustain the increase in demand, we will have to roll out many more electric charging bays in SBC car parks over the next decade. This proposition is discussed further under the "assessment of feasibility" section.

Figure 6

Number of charges at Brunel North



There were many comments about utilising SBC car parks for EV charging in our resident survey. A selection appear below:

"Chargers in public car parks could be used by visitors during the day and local residents at night."

"Have chargers spread out throughout the area, especially the bigger car parks to encourage people to travel into the town... Also do not go over 20p a kWh. Otherwise people will refuse to use the charger as it will be overpriced."

"I personally would not want electric charging machines on the streets. I think keeping them at supermarkets or public car parks is quite sufficient."

"Install chargers in public car parks, abolish parking fees for full electric (not hybrids) and drop parking charges for everyone if you want to encourage shoppers to town."

"It would be great to see charging points in car parks around the town."

"So few charging points at present. More availability – at car parks for instance or within reach of cafes or "pit stops" would be good incentive for more people to save up and buy electric vehicles."

"Charging points at parking in town centre would also be good."

"More charging around the town would be positive and encourage more people into a struggling town centre."

3rd party land

Paragraph 110 of the National Planning Policy Framework states that new development should “be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations”. The Swindon Borough Council draft “Parking Standards for New Developments 2020” contains a requirement for developers to provide electric vehicle charging points in both residential and commercial developments. The requirement is:

- For residential developments, every new dwelling with a parking space will be required to have an EV charging wall box or charge point.
- For retail and leisure developments, 10% of spaces are required to be fitted with EV charge points with a further 10% to have the underground infrastructure fitted to enable further installation in the future.
- For employment land, there must be a minimum of 2 EV spaces, or 20%, whichever is greater. An additional 10% will be required to demonstrate that EVCPs could easily be installed in the future.

Existing developments: Destination and “on the go” charging

We are already starting to see a rise in the number of privately operated retail parks, supermarkets, restaurants, pubs and service stations installing charge points for the public, either as an opportunity to raise revenue, or as a benefit for customers. At time of writing there are 53 charge points across the borough in 18 locations. Furthermore, a network of Zap-Home charge points allow people with home charging units to let other EV users plug in and top up for an agreed fee.

The business advantages to having somewhere for customers to charge are numerous. Property managers Savills rolled out 76 charging points across shopping centres as a pilot project, and monitored usage and benefits. They found:

- There was an increase in dwell time of up to 50% by EV owners, spending an additional £36–£80 per visit.
- In a year, there was 31.2 tonnes less CO² from visitor travel, improving the sustainability credentials of each property, and creating PR and marketing opportunities.
- The average EV charge only cost the shopping centre 52p in electricity.

The Local Authority has a role in encouraging leisure, dining and shopping destinations to consider the investment based on the benefits outlined above.

Workplace charging

8% of electric vehicle charging takes place at workplaces; this is higher than both destination charging (4%) and “on the go” charging (just 1%).

For 47% of households with no driveway, the ability to be able to charge whilst the car is parked up at work, makes sense. It doesn't require a special journey and there is no unproductive waiting around for the car to charge.

For employers, the addition of EV charging points in their staff car parks could be seen as an additional benefit for their workforce, especially if tariffs can be low, or even free.

Employers may be reluctant or unable to financially invest in electric charging infrastructure, but currently there are government grants under the Workplace Charging Scheme to help. The contribution covers 75% of purchase and installation costs, up to a maximum of £350 for each socket, up to a maximum of 40 sockets across all sites for each applicant.

The Local Authority has a role to play in making local employers aware of the Workplace Charging Scheme, and encouraging them to apply.

Strategy to encourage the uptake of EV ownership

Swindon Borough Council should take every opportunity to promote electric vehicle use over owning and running internal combustion engine cars. Whilst offering as many attractive charging propositions on street, within car parks and at leisure outlets as possible, the council also has control over other perks and incentives to EV ownership. Below are some suggestions, based on innovative practice elsewhere:

Incentives on parking

Spaces can be designated for EVs in municipal car parks that are free to use, more conveniently located or a cheaper rate. Any charging points in the car parks could be free. The pros and cons of free parking and / or free electricity are discussed in the section of Car Parking numbers and general accessibility.

Increase visibility of EV charging

The Government are considering a standardisation of parking spaces for electric vehicles, suggesting that they should be painted green³. SBC should adhere to any future guidance on this, as it will highlight to drivers that EV parking and charging is available and prominent.

³ <https://www.gov.uk/government/news/supercharging-the-future-of-driving-this-worldtoday>

Incentivise parking permits

Cities like Amsterdam and Bergen give priority for highly coveted residential parking permits to Electric Vehicles, so Swindon could consider introducing a reduced cost EV permit for its residential parking zones. (Cost could be higher for non-EVs to balance the lost income). In Sheffield, EV owners can join a “green permit scheme” that entitles them to park for free in certain locations.

Bus Lanes

Allowing EVs into bus lanes may enable EV drivers to travel more quickly and avoid congested junctions. Although technically possible, there would be a high amount of infrastructure involved in setting this up, which may be too costly in relation to the benefit it could bring. If implemented, this would have to be monitored to ensure the number of EVs in bus lanes do not interfere with bus journey times, and over time more and more EVs would be eligible to use the lanes, which has to be a factor in any decisions.

Raising Awareness

Public awareness campaigns can dispel the myths (particularly around range and reliability) of EVs. Through existing communication channels, including Swindon Travel Choices, the benefits of EVs can be promoted.

Some authorities have offered “Try before you buy” schemes, where individuals or employees (as part of a fleet) can borrow an EV for a period of time to see whether it works for them.

Strategy to enable the uptake of EV ownership

It will not be enough to simply promote and incentivise the benefits of EV ownership if residents don't feel enabled to own one.

Swindon's emerging Local Plan policies will continue to encourage development that promotes and supports Low Carbon and Renewable Energy Infrastructure. Electric Vehicle Charging Points are actively promoted in the development process via these policies, such as the 2020 Parking Standards for New Development SPD, which requires the provision of one EVCP per dwelling where parking is required. Minimum requirements are also set out for retail, leisure and employment uses. As Swindon continues to grow, the provision of electric charging infrastructure will become a normal feature of our streetscapes.

Investment in EV charging is important to enable SBC's housing tenants to exercise choice in the type of car they use. Options will need to be considered on an annual basis alongside other identified investment priorities for tenants' homes when the HRA budget is set.

On the charging point infrastructure, we will endeavour to take a standardised approach to signage, operations and payment methods so that residents do not receive conflicting messages about how to charge an EV.

Assessment of feasibility

Capital and revenue cost implications with scope for income generation

There are four different operating models available to local authorities when securing EVCPs for their area. With each model there is a trade-off between risk and revenue generation.

When deciding which model to use, it is important to remember that as a local authority, the Council are obliged to act in the interests of local residents and businesses. In this context, installing EV charging infrastructure is both providing a service and improving public health and combatting inequality. The ownership model under which you procure and operate EV charging infrastructure has an impact in all of these regards.

With some of the models, the local authority can set the tariffs that are charged to use the infrastructure. In doing so, better value to residents and businesses are provided, increasing the appeal of EVs. You can also ensure that residents without off-street parking are not overly disadvantaged when compared to those with driveways or garages, who can charge their EVs at domestic electricity rates.

Model One : Own and Operate

Investment	High – Capital and Revenue
Risk	High
Income generation	Highest
Best Used	Wherever demand is high

The EV charging infrastructure is owned, installed AND operated by the local authority. This means that the local authority is responsible for all maintenance and liability of the asset, as well as the operation, including payment systems.

The upfront capital and significant expertise to plan, install and operate the network make this a relatively high-risk option, but with no contracted 3rd parties, 100% of the income generated from the charge points can be kept by the local authority.

Benefits	Risks
<ul style="list-style-type: none"> • LA retains ownership of hardware asset • LA has control over the network and pricing • All available income comes back into the LA 	<ul style="list-style-type: none"> • High upfront costs • High investment in hardware and software that will need replacing • Lengthy payback period • Reputational risk if consumer issues with EVCP operation • Requires in-house 24/7 helpline support for chargers

Model Two : External Operator

Investment	Medium – Capital only, grants available
Risk	Low
Income generation	Low
Best Used	On-street

The EV charging infrastructure is owned, and installed by the local authority, but the ongoing maintenance and operation is contracted out to a 3rd party operator.

The profits from the scheme can be shared between the supplier and the local authority. This model can provide a good balance of risk and reward.

Benefits	Risks
<ul style="list-style-type: none"> • LA retains ownership of asset, whilst not having responsibility of back office systems, day to day running and maintenance • The charging points benefit from being part of a wider network • Income can be negotiated through the operating contract • 24/7 helpline support can be contracted 	<ul style="list-style-type: none"> • Upfront costs could be high, although grants are available • Low income from electricity supply, but can be recouped through charging for parking or leasing space to operator • Could be hard to get out of a lengthy contract if needed • Service and maintenance may not be local so could be delays getting units back into operation

Model Three : Concession only

Investment	Medium – Capital only
Risk	Low
Income generation	Low
Best Used	Anywhere – but operators will only be interested in the most profitable sites.

In this model, the groundworks for a range of locations for charge points are constructed by the local authority and made available for an operator to install the hardware and operate from. The local authority will not own the charge points.

The operators tender to have the operational concession for a fixed number of years – usually 5–7 years. The profits from the scheme can be shared between the supplier and the local authority. This model can provide a good balance of risk and reward.

Benefits	Risks
<ul style="list-style-type: none"> • Upfront costs are low • Low risk for the operation • Long contract term means the EVCP points will be in place for a lengthy period • Network operator gains income so motivated to maintain high uptime for EVCP and effective 24/7 helpline support (to protect brand reputation) 	<ul style="list-style-type: none"> • Profits are shared, but could be quite low as the operator own and operates the charge points • No grants available for groundworks only • Long contract term means it could be difficult should any circumstances change • Operators can set a high price for consumers to use the charging points, making it unattractive to use

Model Four : Lease Ownership

Investment	Low – Revenue only
Risk	Medium
Income generation	Low
Best Used	Anywhere – but local authority can bear the risk in less profitable sites.

A typical lease model will be structured such that the Charge point hardware is owned by the supplier and is rented or leased to the local authority.

The local authority could take ownership of the groundworks and electricity costs, effectively meaning that everything behind the charge point is owned by the local authority, allowing them to transfer to a different supplier once the lease agreement has expired.

Benefits	Risks
<ul style="list-style-type: none"> • Offers a degree of flexibility as the terms of the lease can suit the requirements of the local authority • Mitigates the risk of a contracted operator installing units where it is easiest and cheapest, rather than where they are most needed • No capital investment required • Network operator gains income so motivated to maintain high uptime for EVCP and effective 24/7 helpline support (protect brand reputation) 	<ul style="list-style-type: none"> • Grant scheme funding not eligible for leasing • A risk that overall costs are likely to be greater than the cost of outright purchase (as the supplier will pass on the cost of their own borrowing plus a margin)

Government grants

At the time of writing, the Office for Zero Emission Vehicles (OZEV) are offering grants to Local Authorities for On-street Residential Charge points (ORCS).

Local Authorities can receive a grant to part fund (75%) the capital costs relating to the procurement and installation of on-street electric vehicle charge point infrastructure in residential areas.

Funding will be allocated to successful applications on a 'first-come, first-served' basis.

Swindon Borough Council applied to the fund for the first time in 2020 to secure 11 charge points to serve areas of highest demand that were identified in the survey. It is hoped that the installation of these will stimulate further interest and demand, and if OZEV continue to offer the opportunity to bid in subsequent years, Swindon Borough Council can take advantage and expand the scheme.

Should the OZEV grant be withdrawn, then SBC will have to look for commercial models, outlined above, to fund the roll out of further on-street chargers.

Car parking numbers and general accessibility

As we demonstrated earlier, in the off highway section, the SBC owned car parks are a prime target for rolling out further EV charging infrastructure. It provides an opportunity for long and short stay parking / charging, as well as encouraging residents to use our leisure and shopping assets. In spring 2020, an audit was undertaken of the car park occupancy at some of SBC's main car parks to ascertain the level of space capacity that could be given over to EV charging bays.

Car Park	No of spaces	Average Occupancy	Spare capacity	Open 24 hours?	Average as % of total car park
Granville Street ⁴	247	102	142	Yes	41%
Princes Street ⁴	112	44	68	Yes	39%
Brunel North	754	389	365	No (Restricted)	52%
Brunel West ⁴	499	333	166	Yes	68%
Fleming Way	654	294	360	Yes	45%
Wyvern Car Park ⁴	40	16	24	Yes	40%
Whalebridge	840	-	-	No	-
Old Town, Bath Street	28	-	-	Yes	-
Old Town, Britannia Place	140	-	-	Yes	-
Lydiard Park	500	-	-	Yes (Hay Lane entrance)	-
Coate Country Park	250	-	-	Yes	-

⁴ The long term future of this car park is not certain, so any long term investment is discouraged here.

The darker shaded rows are the car parks that are most likely to have spare capacity and potential for long term infrastructure investment, and are recommended to be targeted first for EV charging points using one of the operating models outlined earlier in this section.

A decision will also need to be made on the income structure. As well as choosing an operating model with a supplier / operator, Swindon Borough Council can generate income by:

- 1) Charging for parking
- 2) Charging to connect to the EVCP
- 3) Charging for the electricity used

Currently, when users need to charge their EVs in Swindon there are standard charges for parking at Whalebridge and Brunel car park, but the electricity is given for free. Conversely at Wat Tyler campus, users can park for free and pay for the electricity they take.

An audit was taken of ten other Local Authorities and found there was no consistent approach:

- 40% of Local Authorities made users pay to park AND pay for the electricity
- 40% of Local Authorities made users pay to park AND pay a nominal fee to connect to the EVCP (50p–£1) BUT the electricity was free
- 10% of Local Authorities gave free parking, BUT charged for the electricity used
- 10% of Local Authorities gave free parking, BUT charged a connection fee AND a charge for the electricity taken

Swindon Borough Council would have to weigh up the following:

	Pros	Cons
Free parking	<p>Equitable with charging at home</p> <p>Encourages users to park in town where they may use the local businesses</p> <p>Incentivises EV use over ICE use</p>	<p>Loss of parking revenue income for SBC</p> <p>Will need to change legal order in car park to create free bays?</p> <p>Incentivises EV car use over other sustainable modes</p>
Free Connection	<p>Equitable with charging at other destinations that don't charge for connection</p>	<p>Loss of potential income generation for SBC and / or operator, albeit minimal.</p>
Free electricity	<p>Benefits the user financially.</p>	<p>Loss making for the council, who will be paying the electricity bill.</p> <p>No income for operator, if they are reliant on this model to cover costs.</p> <p>May create too much demand; if combined with free parking, some users may make a special trip rather than charge at home.</p>

The legislative implications

1) Traffic Regulation Orders

For on-street charging, EV charging points do not necessarily have to be accompanied by a parking bay. There are streets elsewhere in the UK where a line of charging points have been installed alongside kerbs where anyone can park in a "free for all" fashion.

This is acceptable if:

- There are so many charging points that it doesn't matter if the points get blocked by non-electric vehicles
- The council doesn't want to maximise usage of each point, as they are likely to be blocked in areas of high parking demand
- The council doesn't want to undertake enforcement action

If parking bays are put in to accompany the charging point, there needs to be a Traffic Regulation Order in place to regulate:

- That the bay is only used by an electric vehicle
- That the parked vehicle is charging (if the order requires this, and it is advertised)
- The time limits that the vehicle can be parked there for.

Technology is emerging in the form of sensors and ANPR that can communicate with the back end of the charge point software to assist in the detection of bay blocking by ICE vehicles. There needs to be the incorporation of such technology in any tendering for charge points to ensure enforcement can be streamlined.

For off street charging on Council owned land (in Council owned car parks, for example) we would need to amend the existing orders in the following situations:

- The EV bays are going to be charged at a different rate to the rest of the parking bays
- Enforcement will take place for non-EV vehicles parking in EV bays

2) **Alternative Fuels Infrastructure Regulations 2017**

The Infrastructure Regulations broadly standardise various technical specifications for charge points (including the plug sockets) by reference to BSI standards and also require the charge point to have an intelligent metering system. Charge points which are accessible to the public also must be usable by anyone without the need to enter into a pre-existing contract with the charge point operator or electricity supplier. Essentially this means that public charge point operators must provide a “pay-as-you-go” option, although most operators provide this as part of an app, which can result in EV drivers having a multitude of different apps on their phone.

Prices charged by charge point operators must be “...reasonable, easily and clearly comparable, transparent and non-discriminatory.” This is in keeping with the general requirements under the Consumer Rights Act 2015 and the Consumer Protection from Unfair Trading Regulations 2008.

Compliance with the regulations falls to the “infrastructure operator”, which means the person responsible for operating the charge point whether as owner or on behalf of a third party. It is recommended that when tendering for charge point operators, Swindon Borough Council should test for compliance to the legal standards.

3) Health and Safety Regulations

It is important to note that the health and safety considerations do not sit exclusively with the charge point manufacturer/ installer. Site owners and operators may also be liable for assessing and managing the health and safety risks arising out of the installation and use of the charge points.

Therefore, when installing charge points, Swindon Borough Council should consider the extent of their own responsibility for the safe use of the charge points including whether the site location chosen is safe, and what operational controls need to be put in place to ensure the charge points are used safely; and ensure that the health and safety risks are effectively managed.

4) UK Equality Act 2010

Electric vehicle charging points can cause a problem when they are poorly located and managed, when they are hard to see or detect properly for blind and partially sighted people. In these cases, it can become a hazard and increase the risk of trips and falls that result in injury. Diversity impact assessments will be carried out on every project to ensure the needs of a range of people have been taken into account from the outset.

The Government has announced it will launch new “accessibility standards” for chargepoints in 2022, based on work with the British Standards Institute and the charity Motability. Under the plan, charging points will be sorted into three categories: “fully accessible”, “partially accessible” and “not accessible”. The decision will be made after taking a number of factors into account, including the space between bollards, charging unit height and the size of the parking bays. Even the kerb height will be considered.

Asset Maintenance considerations

It is recommended that an operator retains the responsibility for asset maintenance via a service contract, and the details are outlined in any contracts. This should cover as a minimum;

- Remote monitoring of faults and system resets
- Repair of both hardware and software
- Graffiti, collision and vandalism

When tendering for charge points, SBC’s responsibilities extend beyond the hardware, installation and maintenance and operation. The sustainability credentials of the bidders, the materials they use, the renewable source of the energy and the price point to the customer are all essential criteria when appointing contractors.

Technical consideration

National Grid has forecasted that electric vehicles could create an extra 18GW of demand by 2050. This will place additional strain on the grid that will require reinforcement at national (transmission) and local (distribution) level. Any additional grid works required at local distribution level may be passed on to the organisation installing the electric vehicle charging infrastructure by the District Network Operators (DNOs).

DNO costs can be high, particularly for large installations involving lots of charge points at a car park or new housing development, for example.

At certain locations, there may be value in seeking to integrate electric vehicle charging infrastructure with an on-site source of generation, such as solar PV, possibly combined with battery storage in order to maximise the amount of on-site generation which can be used to supply the charging infrastructure. In particular, for a number of car park locations a solar car port solution may be an attractive option.

PPS (Public Power Solutions) are a wholly-owned subsidiary of Swindon Borough Council offering innovative solutions in the areas of Power and Waste, and will be instrumental in working alongside this strategy to look at power generation for larger projects.

Vehicle to grid (V2G) technology is one way in which power can be managed. It allows electric vehicle batteries to store energy and discharge it back to the electricity network when it's most needed – for instance at peak times of the day when usage across the UK is at its highest. This two-way exchange of energy provides a number of economic, environmental and operational benefits for both business fleets and the grid.

With a varied network of charge point infrastructure across the borough, there is a danger there will be too many apps and payment systems emerging. This is concerning to the Government, and at the time of writing, plans are afoot to develop a single charging mechanism and national real time information for EV drivers. It is hoped that the requirement for all machines to accept debit and credit card payments will become the norm.

Zap-Map and their app – already a long term leading source of charge point data – look set to emerge as the national leading app to be promoted to EV drivers. Through the map, EV drivers can find chargepoints across the UK, get information on their location and operator, and importantly, whether they are available and working.

Related projects

Swindon Borough Council's own fleet and grey fleet

As one of the borough's largest employers, it is important that Swindon Borough Council demonstrates leadership to other organisations. Ways we can move to low emission transport over the next decade include:

- **Use of electric pool vehicles for council staff use:**

Once the council establishes a more stable way of working following the COVID-19 pandemic, we should investigate whether there is a need to procure an electric pool car, or work with the car club operator to convert the Co-wheels fleet (of which SBC are a corporate member) to fully electric cars.

- **Conduct a fleet review (free from the Energy Saving Trust) and progress to utilisation of zero-emission vehicles within the SBC vehicle fleet:**

SBC has a small number of electric vehicles in its fleet, but could commission the Energy Saving Trust to undertake a free green fleet review to assess the viability and benefits of converting the remaining SBC fleet to more environmentally friendly vehicles. The contents of the study will be evaluated and a supplementary fleet renewal action plan created upon receipt of the findings. Charging infrastructure will need to be installed to facilitate overnight charging.

- **Implement charging provision for SBC employees at key workplaces:**

In order to ensure that SBC employees are enabled to use electric vehicles over internal combustion powered alternatives, charging points need to be established at key working locations for staff. This could include more EV charge points at locations where there is greater pressure on space availability such as at the Civic Campus. Two charging points have already been installed at Wat Tyler House for staff to use (in addition to being publically available) and the usage needs to be reviewed to examine potential for further roll out.

Currently, there are OZEV grants that will provide 75% of the capital costs of installing infrastructure at workplaces.

Taxi Fleet

At the time of writing, there are around 1000 Licensed Private Hire taxis, and 104 licensed Hackney Carriages in Swindon. The restrictions on vehicles are historically based on age (no private hire vehicle can be more than five years old when first licensed, and may not be licensed beyond ten years. Hackney carriages can only be up to fifteen years old).

Through the Air Quality Management Action Plan, there is an action to improve emissions from Private Hire and Hackney Carriages through the licensing regime. The target is for all the taxi fleet to be fuelled by electric or alternative fuel by 2030.

The Energy Saving Trust currently offer engagement support for taxi and private fleets, that can be explored and promoted.

Electric Buses and Coaches

Swindon has a vision that all buses and coaches coming into the town centre will have to be zero emission by 2040. This involves a large investment, both in new buses and in the charging infrastructure. For the urban bus routes, buses would be able to complete a day's journeys and return to the depot to charge overnight.

For Inter-urban routes, it is more difficult to predict where and when these would need to charge so it is unrealistic to be fully electric; hydrogen fuels, long range battery technology or hybrid could be considered.

Swindon submitted a bid to the Government's All electric bus town fund, which would provide 75% funding up to £50m for electrification of both bus depots in Swindon, as well as the buses.

Whilst we were not successful in this instance, we will learn lessons from the demonstration town that is awarded the funding, and work closely with our bus operators to realise the vision. We will investigate any future funding opportunities to help with this.

Proposed action plan

The following key aims / actions have been identified in this document to support the uptake of Electric Vehicles in Swindon:

No.	Action	Owner	Priority
1	Identify a dedicated resource to oversee implementation of the strategy. Once recruited, timescales in this action plan to be reviewed with view to accelerating the programme.	WMT	Immediate
2	Create a means of recording residents' requests for on-street EVCPs, and develop a criteria for assessing the requests alongside other data to inform future roll out.	Strategic Transport	Immediate
3	To identify sources of funding or commercial opportunities to develop and install EV charging infrastructure on-street where gaps exist, and where appropriate pursue that funding / opportunity. This can include investigating frameworks to appoint a single supplier for a wide scale, long-term roll out across the borough.	Strategic Transport	Ongoing as demand increases
4	For Swindon Borough Council to develop a commercial project to deliver charge points in our car parks and wider property holdings. Alongside this, the existing points at Whalebridge car park must be upgraded / expanded, with clearer signage and enforcement for parking in the bays with non-electric vehicles.	Strategic Transport / Property	Within 1–5 years

5	To take advantage of the Government's free Green Fleet Review and robustly consider EV as a preference for all Swindon Borough Council fleet replacement and new vehicle purchase where appropriate vehicles are available, and meet our operational needs. Charging infrastructure will need to be considered alongside this.	Fleet	Within 1–2 years
6	To ensure EV infrastructure is installed across all new developments, in line with the adopted parking standards.	Strategic Transport	Ongoing
7	To encourage Swindon's car club operators to switch to zero emission vehicles, whilst ensuring any car club vehicles secured through the planning process are electric, with associated infrastructure.	Strategic Transport	Within 3–5 years
8	To support employers in rolling out EV charging points across their workplace car parks, signposting Government grants where appropriate. Where feasible, businesses to be encouraged to open their car parks to the wider community at night for utilisation of the charge points.	Economy / Strategic Transport	Ongoing
9	To support employers with driver engagement workshops (offered free by the Energy Saving Trust) to help promote the benefits of electric vehicles.	EST / Economy / Strategic Transport	Within 1–2 years
10	Through the licensing regime, all taxi fleet to be fuelled by electric or alternative fuel by 2030. To support this, SBC will need to investigate wireless or rapid charger facilities and install at a convenient location within this timeframe.	Regulatory Services	By 2030

11	To develop information for residents on EV ownership and use online through Swindon Travel Choices website and promotional work. This includes developing campaigns to promote Government grants to residents and businesses.	Swindon Travel Choices	Immediate and ongoing
12	Housing Services to develop options for EV charging opportunities for its tenants, with an annual plan formulated alongside other identified investment priorities for tenants' homes when the HRA budget is set.	Housing	Within 3–5 years
13	Set up a "Try before you buy" scheme for residents, utilising local dealership or external funding. Work with local dealers and manufacturers to encourage take-up of EVs.	Economy / Strategic Transport	Within 1–3 years
14	Undertake further research with Imperial College to better understand grid demand and demographics.	Economy / Strategic Transport	Immediate
15	Provide support and guidance on EV charging provision to Town and Parish Councils, and other groups writing Neighbourhood Plans.	Strategic Transport	Immediate
16	Review this strategy and its forecasts, projections and actions.	Strategy owner	Every 3 years

Appendix A – Maps showing residents interested in EV ownership if infrastructure was installed on street (March 2020)



-  Where we are installing infrastructure in 2020/21
-  Where residents requested EV infrastructure

Appendix B – List of relevant policies and guidance / references

Swindon Borough Council

(LTP3) – Provides borough transport policy direction, with the aim to provide for effective, safe, reliable, sustainable transport.

https://www.swindon.gov.uk/downloads/file/5171/swindon_local_transport_plan_2011_to_2026

Swindon's Climate Change Pledge –

https://www.swindon.gov.uk/news/article/374/council_commits_to_carbon_neutrality_by_2030

Air Quality Strategy –

https://www.swindon.gov.uk/download/downloads/id/4094/air_quality_action_plan.pdf

SBC Parking Standards (adoption date TBC) – Provides guidance on EV standards to developers of new housing in Swindon

UK Government

The Road to Zero (Department for Transport, July 2018) – UK Government strategy to delivering zero emissions transport.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

Automated and Electric Vehicles Act – To make provision regarding automated vehicles and electric vehicles.

<https://www.legislation.gov.uk/ukpga/2018/18/contents/enacted/data.htm>

The **Transport Energy Model** has been developed to provide an objective assessment of the relative environmental impact of the powertrain technologies and fuel choices available to consumers both now and in the future, bringing together both air pollutant and greenhouse gas impacts.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739462/transport-energy-model.pdf

Appendix C – Glossary

SBC	Swindon Borough Council
LA	Local Authority
EV	Electric Vehicle
EVCP	Electric vehicle charge point
BEV	Battery Electric Vehicle
PHEV	Plug-in hybrid electric vehicle
ULEV	Ultra Low Emission Vehicle
OZEV	Office for Zero Emission Vehicles
ICEd	When a chargepoint is occupied by a vehicle with an internal combustion engine (ICE) , preventing an EV from charging.
TEM	Transport Energy Model
kW	Kilowatt
kWh	Kilowatt hour (A unit of energy equivalent to the energy transferred in one hour by one thousand watts of power.)
CO2	Carbon Dioxide
AQMA	Air Quality Management Area
SPD	Supplementary Planning Document
AC	Alternating Current / DC - Direct Current
TRO	Traffic Regulation Order
ORCS	On-street Residential Charge point Scheme
DNO	Distribution Network Operators
Range Anxiety	The term given to a fear of running out of charge while driving a plug-in electric vehicle.

Strategic Transport and Infrastructure

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