



ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Executive Summary

This document summarises the business case being developed for the proposed network of electric vehicle charging points across Tees Valley

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PROJECT SPONSOR DETAILS

Lead Organisation:	Tees Valley Combined Authority
Registered Address:	Cavendish House, Teesdale Business Park, Stockton-on-Tees, TS17 6QY
Type of Organisation:	Combined Authority
Date of Formation:	April 2016
Company Registration Number:	N/A
VAT Registration Number:	N/A
Are you part of a group of companies?	TVCA Group
If so, who is the parent company?	TVCA
Lead Sponsor: name	Tom Bryant
Lead Sponsor: position in organisation	Head of Transport
Contact address if different from above:	

PUBLICITY STATEMENT

Greenhouse gas emissions from road transport make up around a fifth of UK greenhouse gas emissions¹. Within transport, road transport is the largest emitter of greenhouse gases. Just over three-quarters of road traffic in 2018 was from cars and taxis.²

The vision for the Tees Valley Strategic Transport Plan is 'to provide a high quality, quick, affordable, reliable, low carbon and safe transport network for people and freight to move within, to and from Tees Valley'.

Key to reducing carbon emissions from road transport will be increasing the uptake and usage of electric vehicles (EVs), particularly given the recent announcement from Government that the sale of new cars that run solely on petrol or diesel will be banned in 2030.

A shift from petrol and diesel fuelled cars to electric is required, so to speed up this transition, challenges of range anxiety have to be overcome, as well as improving the availability and reducing the variability, of charging facilities.

This project will coordinate and improve Electric Vehicle Charging Point (EVCP) provision across Tees Valley.

Up to £2,000,000 has been allocated to this project to develop the EVCP infrastructure and encourage more people to switch to electric vehicles.

EXECUTIVE SUMMARY

¹ <https://www.ons.gov.uk/economy/environmentalaccounts/articles/roadtransportandairemissions/2019-09-16> Figure 5 ONS data 2017

² <https://www.ons.gov.uk/economy/environmentalaccounts/articles/roadtransportandairemissions/2019-09-16> Figure 3 DfT data 2018

TVCA Ref:	ITP0005
Project Name:	Electric Vehicle Charging Infrastructure
Location: (delete as appropriate)	Tees Valley wide
Total Project Cost and Duration:	£TBC
TVCA funding requested: £	Up to £2,000,000

DESCRIPTION

What is this project, what will it do?

This project aims to improve the provision of Electric Vehicle Charging Points (EVCP) across Tees Valley, to overcome the most significant barrier that prevents people from switching to electric vehicles. Electric vehicles are becoming increasingly acceptable as the alternative to petrol or diesel for private car users, but there remains 'range anxiety'; the fear that the car will run out of charge before the trip is completed. Creating a network of EVCPs, which meets the demands of potential EV drivers across Tees Valley will reduce range anxiety, increase take up of EVs, and deliver reductions in carbon emissions.

There are already EVCP sites across Tees Valley that have evolved over time. However, there are several issues with the current level of provision.

- The infrastructure has been implemented by lots of different providers and there is therefore no consistency in terms of type of provision or interoperability.
- Some of the infrastructure is now outdated, has been poorly maintained and may not even be functional.
- There are varying degrees of coverage across the local authority areas within Tees Valley.

This project will deliver a step change and implement a Tees Valley wide approach to:

- improve the level of EVCP coverage for public use;
- improve the quality of provision;
- improve the customer experience across infrastructure owned by different providers; and facilitate additional activity that supports business, public sector partners and residents to switch to electric vehicles.

There are three steps to take to deliver this step change: assess demand; identify gaps; and then supply a solution.

Firstly, evidencing demand by reviewing mapping to show current levels of provision. This work assesses where there are already EVCPs, the type of provision at each site, whether the provision is fit for purpose and operational. On top of the map of current physical infrastructure, considering peoples travel patterns will show where people are most likely to need and use EVCPs. Using this information and discounting the sites where the private sector will provide EVCPs, will identify the need for public sector intervention.

Secondly, using the gaps identified in the first step, further investigation into the sites that could be used is required. It may be necessary to partner with land-owners; potential demand and revenue streams must be considered; and the most suitable type of charging required at each site will need to be considered. This step will also involve liaison with the National Grid to determine if there is scope in the electricity supply to meet the additional demand.

Thirdly, determining the most effective way to structure the project, and then procuring from the market the supplier(s) to supply, install, operate and maintain the EVCP equipment required.

Why this project is needed? What is the problem we need to solve? (Rationale for intervention)

This project is needed to help speed up the transition from petrol and diesel to electric vehicles.

This transition needs to accelerate because the UK is committed to delivering on its new emissions target, which has set the UK on the path to net zero by 2050. In ambitious plans announced by the Prime Minister in December 2020, the UK aims for at least a 68% reduction in greenhouse gas emissions by the end of the decade, compared to 1990 levels.

Tees Valley is one of the most carbon-intense regions in the UK, with emissions per capita over twice the national average. A large part of this is down to the level of heavy industry in the area, but transport still contributed 17.3% of CO₂ emissions in Tees Valley in 2017. This is mainly from private car usage, although road freight continues to make a significant contribution to emissions in the region. So, key to delivering on the government ambitions will be to increase the uptake and usage of electric vehicles.

A holistic approach is needed to develop the whole market for EVs. This requires adequate vehicle supply, a strong consumer base, the right market conditions and a fit for purpose infrastructure network. However, the marketplace for green technologies is fragmented in terms of supply and demand and lacks a strategic overview of how and where infrastructure should be rolled out.

There is already EVCP infrastructure across Tees Valley that has evolved over time. The infrastructure is located on a variety of sites, including local authority car parks, businesses, petrol stations, supermarkets, hotels, educational establishments and health care facilities. However, as mentioned above there are several issues with the current level of provision.

- The infrastructure has been implemented by lots of different providers and there is therefore no consistency in terms of type of provision or interoperability.
- Some of the infrastructure is now outdated, has been poorly maintained and may not even be functional.
- There are varying degrees of coverage across the local authority areas within Tees Valley – data published in a report by the Department for Transport and sourced from Zap-map shows that Stockton-on-Tees is the local authority with the most public charging points in Tees Valley as of October 2020, with 86; Hartlepool has the lowest number, with 6; Darlington and Middlesbrough were both recorded as having 29, with Redcar & Cleveland having 24.
- The focus has been on infrastructure provision rather than a holistic approach to increasing the uptake of electric vehicles.

These issues need to be resolved to make it easier for more people to choose to drive EVs in order to stimulate the demand, which is required to meet the government's ambition to end the sale of new petrol or diesel vehicles in 2030.

How much support are we giving and who is it for? (Scale and scope of intervention; assessment of support needed)

Using the three steps outlined above will determine the scale and scope of intervention required.

Carrying out analysis to identify the need for public sector intervention by reviewing:

- current levels of provision – identifying where there are already EVCPs, what is at each site, whether it is fit for purpose and operational;
- mapping travel patterns will show where people are most likely to need and use EVCPs; and
- identifying where supply of EVCP will be provided commercially.

There is a need to understand the practical constraints of each site proposed to fill a gap in EVCP provision. This will need to include consideration of land ownership and contractual arrangements,

and the ability of the National Grid to supply sufficient electricity. The potential demand for different charging types, and potential revenue receipts must also be considered.

Based on the above, the best solution will be procured from the market to address the identified gaps, which will contribute to a Tees Valley wide network of EVCPs available for public use, at market rates.

How does this project fit alongside other projects? (Complementarity / Displacement)

The Government has a [10 Point Plan](#) for a Green Industrial Revolution, where economic growth and jobs are created whilst helping to eradicate our contribution to climate change. Tees Valley is driving forward several of the points.

This project clearly fits with Point 4: Accelerating the Shift to Zero Emission Vehicles. The project is aimed at the domestic and light vehicle transport market.

To reduce emissions, behavioural change is being encouraged to shift from the use of the car, by moving to more active and/or sustainable transport. TVCA's Integrated Transport Programme is investing in cycling and walking, and shared transport via bus or rail. In the main, the significant investment in infrastructure to support these changes complements this project, so that where it is necessary for people to use a private car, the emissions are removed by switching to electric.

Point 2 of the 10 Point Plan: Driving the Growth of Low Carbon Hydrogen is aimed at heavier transport. TVCA has projects using hydrogen as a transport fuel, providing hydrogen refuelling stations, for vehicles used at the port and for road use. TVCA is also working jointly with the Department for Transport to develop the UK's first hydrogen transport hub.

What must be achieved by the project? (Critical Success Factors and how measured)

The project must increase the number of EVCPs	<ul style="list-style-type: none"> Measure the increase in gross numbers, as well as the upgraded provision, compared to the base evidenced in the initial mapping exercise
Demonstration of technology, raising awareness to users and their networks (demand)	<ul style="list-style-type: none"> increase in sales of electric bikes increase in sales of electric motorbikes increase in sales of electric cars Attitudinal change – reduced range anxiety
Reduction in carbon emissions from transport	<ul style="list-style-type: none"> Reduction in emissions relative to petrol and diesel vehicles
Electric charge data	<ul style="list-style-type: none"> evidence base for future schemes
Temporarily fill the gap in provision	<ul style="list-style-type: none"> Intervention in the market will bridge the gap until demand increases to the critical point where the private sector supply meets demand The market is established so that any publicly owned assets are sold into private ownership

How is the project restricted? How has the project been developed to work within these? (Constraints)

Geography	Funding for this project, and therefore eligibility, is only for charging provision in Tees Valley.
Subsidy Control	How the funding is granted, and to whom, must comply with prevailing law. There must be consideration of the 'viability gap' so that commercial operators are not overcompensated financially by the grant.

Subsidy Control	The vehicle owners who use the funded charging infrastructure must pay the market rate, so that the grant funded infrastructure does not distort the market by being cheaper than commercially provided infrastructure.
Asset Life and Ownership	The funded asset must be maintained for at least 10 years, so the project must be structured with an exit strategy for the provider, and a plan for what to do with the infrastructure at the end of the scheme.
Funding	Funding is limited, and so the focus on where investments are made will be to deliver the greatest impact.
Funding restrictions	Restrictions on the funding for the project will set timescales for when the project must be delivered and may restrict the use of funds.
Grid Capacity	The electricity available in the Grid Network may limit the chosen sites, if the cost to increase the electricity capacity is prohibitive.
Charging Capacity	There are different speeds of charging facility, and different requirements for the car's batteries. The scheme will be designed by considering the demand for different types of charging in different places and different user types.
How could we solve the problem? (Preliminary Option Development)	
Option 1:	Do nothing: The market will provide (i.e. enhanced number of EV charging points and/or greater battery capacity)
Coordination Options	
Option 2:	Do Something: Strategic coordination of supply of EV
Option 3	Do something: Provide a publicly owned network of infrastructure (Do everything)
Delivery Partner Options	
Option 4:	Do something: EV supplier led
Option 5	Do something: Data provider led (travel patterns)
Funding Options	
Option 6	Do something: Support market selection/ development by gap funding the sites that are not commercially viable (the partner selects) variation in terms of partner
Option 7:	Do something: Provide funding (variable amounts) to address geographical gaps in provision (we select) (Funding gap versus geographical gap)
Option 8:	Do something: Pump prime a commercial partner to deliver a large-scale solution to network coverage
Option 9:	Do something: Pump primer of community asset for filling gaps on a small scale
Option 10:	Do something: Pump primer/delivery partner/evergreen fund to support the network until the market is commercially viable
What will we achieve? (Benefits: outputs, outcomes, impacts)	
Outputs	A balanced distribution of EVCP infrastructure across Tees Valley
Outcomes	To be determined in the business case development process, e.g. XX amount of electricity charge purchased from the charging points XX number of charging events XX income generated XX new charging sites XX Ultra rapid XX rapid XX fast XX improved charging facilities
Impacts	Reduced range anxiety

Increased purchase of electric vehicles
Reduced purchase of petrol and diesel vehicles
Reduced carbon emissions: CO2, NO2

How will we do this, what risks might we face? (Assessment of Deliverability)

An existing demand study, as outlined in step 1 of the project above, will be reviewed to understand the current provision, identify gaps and provide the basis for the project as in step 2.

Informed by the findings of the first two steps, further development of the commercial case will generate the preferred delivery option, and a delivery partner will be procured to supply, maintain and operate the EVCP infrastructure.

This project presents several risks. High level risks at this stage of project development are:

Procurement:

- securing the correct range of equipment, and the right provider is key to the successful delivery of this project. A carefully designed procurement specification and using established public procurement processes, will aid selection of the best organisation to run the scheme;
- ensuring the procurement specification and the assessment of the bids is robust. TVCA is seeking specialist legal advice to mitigate this risk. Separation of the demand evidence base from the supplier of equipment will reduce the risk of oversupply.

Subsidy Control:

- a competitive transparent procurement process will mitigate the risk of paying too much for the service, and not achieving value for money;
- testing the viability gap (the amount costs exceed income) to only fund the gap; and
- charging market prices to users of the scheme reduces the risk of distorting the commercial market and avoids the risk of commercial entrants being prevented from entering the market as demand for electric vehicles and their charging points increases.

Land ownership:

There will be a range of public owned land that infrastructure could be located on. At present it is unknown whether all the owners agree to the proposed project. This could have cost and time implications for delivery of the project. This can be mitigated with the detailed analysis of land ownership (step 2) and entering early discussion with landowners.

Technological change and obsolescence:

- Electric vs 'other': as with any new technology there is a risk of investing in the wrong solution. The market for electric vehicles is establishing and growing, so the risk of EVs not taking off is lessened, as there is increasing public acceptance that electric will replace petrol and diesel to power domestic vehicles.
- Batteries: As battery capability improves, range anxiety decreases, which present the risk that the demand for EVCP infrastructure is short lived and the investment creates over supply. This remains a risk which could be mitigated in the design of the project regarding the relationship with, and funding provided to, the private sector.

Asset ownership control and exit strategy: contractual structure is yet to be determined depending on the preferred option selected in the Full Business Case.

What will happen next? (Consultation and due diligence process)

The publication of this summary of the project commences the three-month consultation phase.

On completion of the consultation, the business case development process will end. The Full Business Case will be submitted for appraisal. Subject to appraisal the investment decision will be made.

If you have comments or questions, please contact us at transport@teesvalley-ca.gov.uk