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A Network Fit For The Future: Draft Vision for Scotland's Public Electric Vehicle Charging Network

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Ministerial Foreword



Tomorrow's public electric vehicle charging network will be very different to the one of today. Enabling drivers to conveniently and simply charge their vehicles with confidence, at the right place and time, whether at home, work or in public will be crucial. More and more the public charging network will become an essential part of local and national infrastructure, serving the needs of the people of Scotland. In doing so I want to see that it is easily accessed by all, adaptive to innovation and that optimal outcomes are delivered through its integration with our wider sustainable transport and energy systems. The public network needs to connect our rural and urban communities; supporting households, businesses and visitors across our regions and growing a sustainable and inclusive economy.

By 2030 we might expect there to be anywhere between 500,000 to 1 million electric vehicles on Scotland's roads. Whilst we are focussed on reducing dependency on cars and have set an ambitious commitment to reduce annual car kilometres by 20% by 2030, car journeys will remain part of our overall transport mix. Scotland's public electric vehicle charging network needs to continue to grow to meet this demand. All in a way which reflects rapidly changing technology influencing where, when and how often people will charge their vehicles.

We can be rightly proud of the progress that has been made in Scotland through the development of the ChargePlace Scotland network of public electric vehicle charge points. With over £50m of public funding to date, this network has helped stimulate the ever growing and increasingly rapid uptake of electric vehicles in Scotland. Our 32 local authorities, wider public bodies as well as third and private sector hosts have played an instrumental role in its growth.

However, I am aware that the existing network is not always perfect. Charge points are sometimes unavailable or in disrepair and electric vehicle drivers report that it is not always easy to use. The scale and pace of investment in public electric vehicle charging infrastructure will need to accelerate over the coming years to meet demand and it would be impractical for the public sector alone to fund the investment needed. We need to build on the lessons learned in developing the ChargePlace Scotland network – continually striving to improve.

We've now reached the next stage of the journey, where the opportunity exists to leverage skills, expertise and investment from the commercial sector to build and operate the public network. Partnership will be key and our local authorities will continue to play a critical role in planning outcomes for local areas, developing partnerships with the private sector and ensuring that public subsidy is focused on those areas of the network where it is needed most.

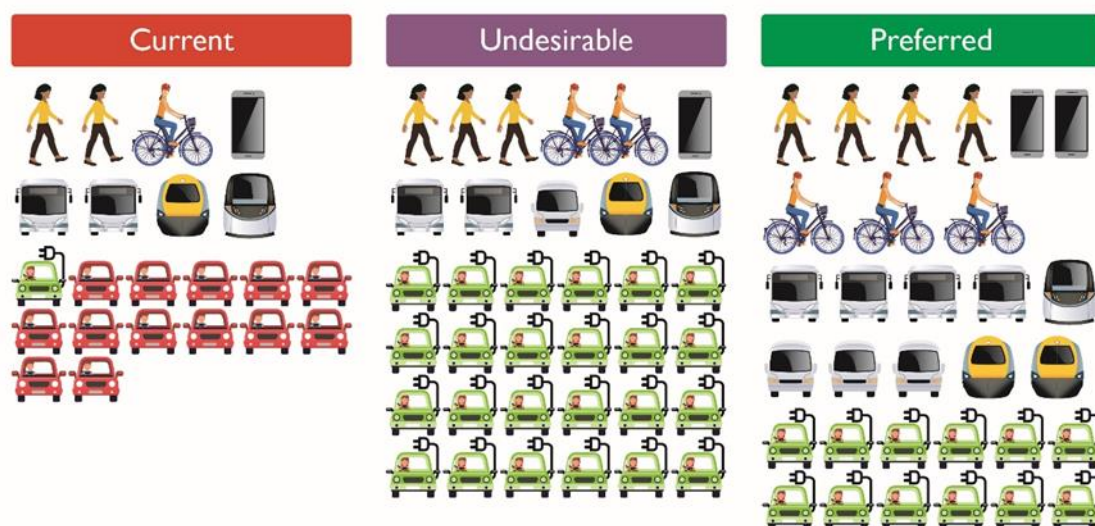
This strategic Vision sets out the key areas underpinning the development of the public electric vehicle charging network over the coming years. An exemplar network that fellow nations highly regard and one that supports a Just Transition and the delivery of our Net Zero climate commitments. By advocating a people-oriented approach, it is focused on ensuring that no part of Scotland is left behind. I do not underestimate the scale of the challenge ahead but also the opportunity, and it is one that we must truly embrace together – for the benefit of our economy, climate and society as a whole.

Michael Matheson MSP,

Cabinet Secretary for Net Zero, Energy and Transport

I. Introduction

Scottish Ministers are committed to tackling climate change and to delivering net zero as set out in the update to the [Climate Change Plan](#). A key part of this will be encouraging the people of Scotland to make greater use of public transport, cycling and other forms of active travel. And, whilst we want to see an overall reduction in reliance on cars, aligned with our ambition to reduce annual kilometres driven by 20% by 2030, a wholesale shift to zero emission vehicles is also necessary to meet our climate change goals.



This draft Vision is for Scotland's network of publicly available electric vehicle charge points. It is one part of our wider agenda for Mission Zero, and an overall vision for a transformative shift to sustainable, zero emission mobility in Scotland. It follows from our [joint report](#) published in July with Scottish Futures Trust, that report set out the opportunities for growing the public electric vehicle charging network with increasing commercial investment, together with the conditions that will be important in facilitating this.

The electric vehicle market is rapidly evolving and developing, and we can expect more change. This draft Vision will be further informed and refined through continued engagement with the public, businesses, industry and our public sector partners.

Draft vision for Scotland's public electric vehicle charging network

People have access to a well-designed and comprehensive public network of charge points.

The public electric vehicle network works for everyone regardless of age, health, income or other needs.

Scotland has attracted private sector investment to grow the public electric charging network, ensuring it meets the needs of all people.

The public charging network is powered by clean, renewable energy and drivers benefit from advancements in energy storage, smart tariffs and network design.

People's first choice wherever possible is active and public transport with the location of electric vehicle charging points supporting those choices.

2. Where we are today

While a number of important aspects of investment and delivery of electric vehicle charging are not devolved, the Scottish Government has moved early to support the transition to electric vehicles.

Since 2013, £50 million has been invested in the ChargePlace Scotland network of publicly available electric vehicle charge points; while simultaneously creating a policy environment to support investment in electric vehicles. This network of over 2,100 charge points, that delivered 783,000 charging sessions in 2020, is currently the fifth largest in the UK.



Together with private sector provision, Scotland's 'network' of public charge points is the most comprehensive in the UK outside of London. Furthermore, the provision of [rapid charge points](#) – capable of providing power outputs rated at 25kW or above - is also ahead of anywhere else in the UK.

In October 2021 there were 49 public charge points per 100,000 people in Scotland.

There were also 12.5 public rapid charge points per 100,000 people – higher than anywhere else in the UK.



Sales of new electric cars in Scotland, for example, are also on a steep upward trend. According to the Society of Motor Manufacturers and Traders, on a rolling 12 month average they made up 12.7% of new car sales at December 2021 – a 24% increase on the rolling average at December 2020. For the month of December 2021 itself, sales of electric cars made up over 21% of all new car sales in Scotland.

21.4%
of all new car sales in
December 2021 in
Scotland were electric



It is evident that an inflection point in electric vehicle uptake is underway. Whilst we want to transition from dependency on cars in preference to active modes of travel and increased use of public transport, independent analysis commissioned by

Transport Scotland indicates that under a number of policy scenarios there could be anywhere between 500,000 to 1 million electric cars on Scotland's roads by 2030¹. While electric vans and other vehicles are at an earlier stage of transition, demand is rising and a similar trajectory is expected over the coming years.

The availability, accessibility and reliability of public charging infrastructure must progress in tandem to support growth in demand to the high standards expected and needed by consumers. Expansion of the public charging network will need to continue to be planned in a way that best reflects local geographies and the requirements of users; to avoid unnecessary investment and to deliver best outcomes across Scotland.

3. Making this vision real – outcomes and priorities

The world of electric vehicles and charging is undergoing a significant period of innovation and change. As such, this is purposely a draft strategic vision; underpinned by a number of outcomes and priority areas of focus. It is our intention to engage with users and key parts of the market to refine the vision. Activity is also already underway that is aligned with the vision, such as on-going work on establishing requirements for electric vehicle charge points and enabling infrastructure in new build homes and, non-domestic publicly accessible premises, which the Scottish Government consulted upon in 2021.

3.1 A people-focused network

Ultimately, households and businesses need to be front and centre of the planning and delivery of public charging infrastructure. This applies not only to today's public network but also to tomorrow's. A new generation of infrastructure and service delivery models will need to be considered as older technologies become obsolete and as expectations of access to a high quality, affordable and reliable service continues to grow.

It will be important that users of the network are fully engaged to shape its development and to ensure that its inclusive design caters for everyone's needs – reflecting that a one-size-fits-all approach is unlikely to deliver optimal outcomes. There are clear opportunities to create models of best practice, set out established and robust national guidelines which could be aligned with similar activity across the

¹ Underlying data from Decarbonising the Scottish Transport Sector - Element Energy Report for Transport Scotland - September 2021

UK. Their implementation in the public charging network could be facilitated through a number of avenues including public procurement. The approach will also need to consider the wider community too to avoid, for example, designing public electric vehicle infrastructure that impedes pedestrians access to pavements and their ability to move around freely.

Outcome we want to achieve:

People have access to a well-designed and comprehensive public network of charge points.

The public electric vehicle network works for everyone regardless of age, health, income or other needs.

Priorities:

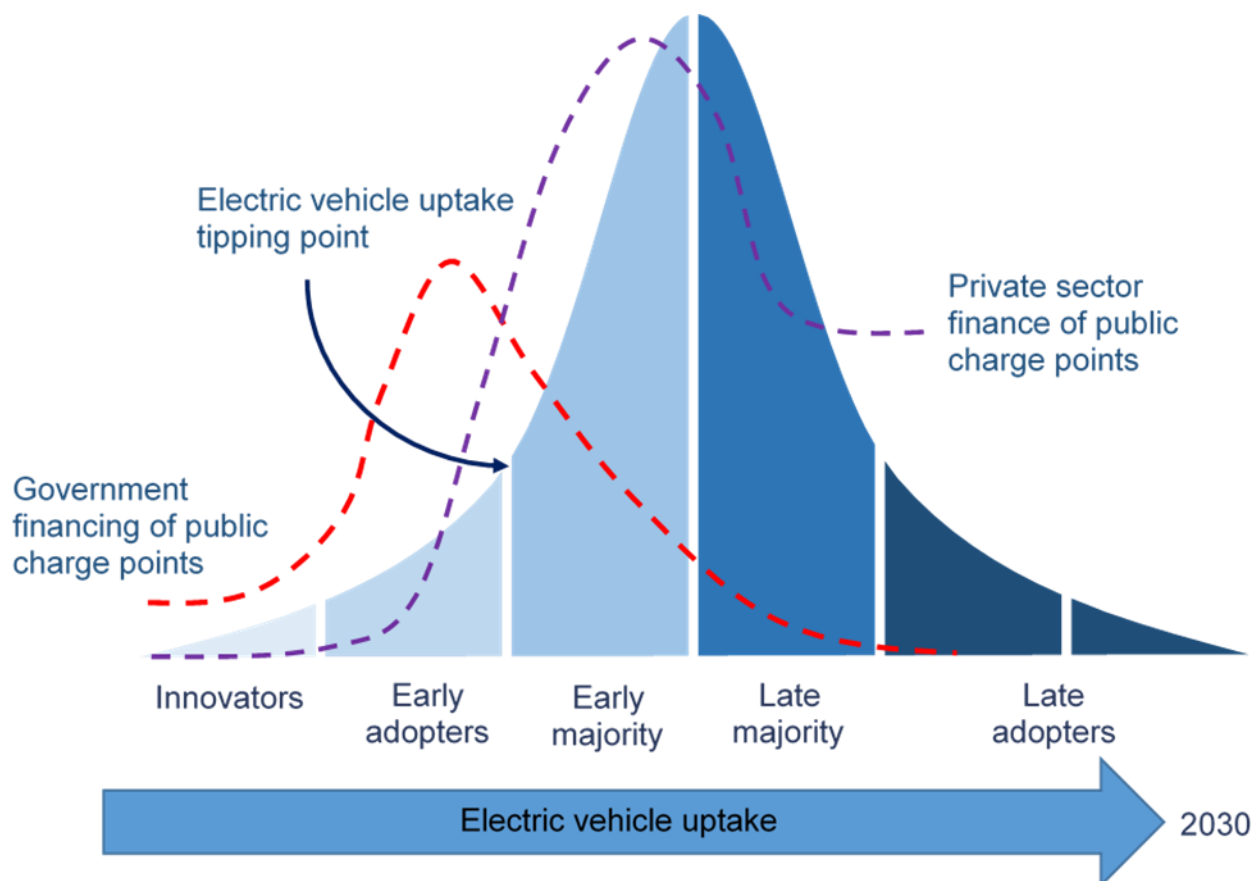
Drawing on feedback from community engagement to continuously improve Scotland's public charging network; through consultation, surveys and other engagement.

Working with the design community and industry to make charging an electric vehicle simple and seamless; tackling issues relating to charge point design for the benefit of all groups of users to ensure a Just Transition.

Enabling investment in public electric vehicle charge points to support communities that don't have access to home charging; ensuring convenient access and at a fair cost.

3.2 Accelerating commercial investment

Like many new technologies, the uptake of electric vehicles will be characterised by different categories of adopters across society. For plug-in electric cars, Scotland is moving towards a tipping point that is seeing a shift from an innovator and early adopter phase to an early majority phase. As adoption of electric vehicles continue to increase, this will influence the development of the public charging network along with the role and nature of government intervention.



We can expect a shift towards a public charging network largely financed and operated by the commercial sector. Whilst this is central to our Vision we are not at that point yet. Nor will there be a uniform approach across Scotland to get there. At this stage of the market's development, public and private sector partnerships will be a key enabler in attracting and making the commercial case for investment viable. The public sector will continue to play an important role in the transition, but the nature of its support will not remain static and it will change over time to meet the needs of different consumers and distinct geographies of Scotland, where, on its own, the market is unable to deliver at the scale and pace required.

Although difficult to precisely define, expanding the public electric vehicle charging network between now and 2030 could need up to £1 billion investment. This

environment creates considerable opportunities to attract a range of service providers and private capital in Scotland. In doing so, it has the potential to leverage the skills and expertise of Scotland's world-class academic base as exemplified for example through the Michelin Scotland Innovation Parc in Dundee and Power Networks Demonstration Centre in Cumbernauld. Furthermore developing Scotland's public network and accelerating commercial investment will enable supply chain and service sector growth and anchor well paid and high quality green jobs across Scotland.

Outcome we want to achieve:

Scotland has attracted private sector investment to grow the electric vehicle charging network, ensuring it meets the needs of all people.

Priorities:

Working with investors, charge point network operators and other parties to provide access to Chargeplace Scotland data; creating an enabling environment to support investment in public charge points.

Enabling new models of public electric vehicle charge point financing and delivery, focused on public and private partnerships, to support and coordinate investment.

Ensuring public funds are targeted at areas where commercial investment is unable to fully deliver; using public procurement to deliver an affordable, reliable and well-maintained network of charge points across Scotland.

Working with Scotland's enterprise and skills agencies to realise supply chain opportunities from electric vehicles and infrastructure in Scotland.

3.3 Coordinating with the electricity network

Treating public electric vehicle charging infrastructure in isolation to the wider energy system is unlikely to deliver optimal outcomes. Whilst growth in the number of electric vehicles may pose challenges for planning and operating of Scotland's electricity networks, it also provides opportunities. The storage potential of electric vehicle batteries, for example, provides a vast distributed source of energy to help manage the demands of a modern, responsive and efficient electricity network. A robust and comprehensive public electric vehicle charging network will underpin this; offering the ability to support the needs of vulnerable consumers and businesses. Scotland's renewable electricity potential is significant, and this network should use clean, renewable energy to facilitate millions of miles of genuinely zero-emission travel. And we should not lose sight of the need to work with regulators and industry to promote and encourage end-to-end net zero, where carbon emissions are reduced across the transport process.

A 'whole-system' approach is needed as set out in the Scottish Government's [Scottish Energy Strategy](#) published in 2017. Already the strength of Scotland's approach to delivering public electric vehicle charging infrastructure has been our close, collaborative working with the energy sector, as demonstrated through the [Strategic Partnership](#) with Scotland's electricity Distribution Network Operators which has included [project PACE](#).

Project PACE

- £5.3m partnership project
- 167 public charge points installed across 44 sites in Lanarkshire over 2020/21
- Estimated electricity grid connection savings between £1.3m and £2.6m



Outcome we want to achieve:

The public charging network is powered by clean, renewable energy and drivers benefit from advancements in energy storage, smart tariffs and network design.

Priorities:

Continuing to work with the electricity Distribution Network Operators and Ofgem to enable a regulatory environment that delivers optimal outcomes for consumers and the decarbonisation of Scotland's transport system.

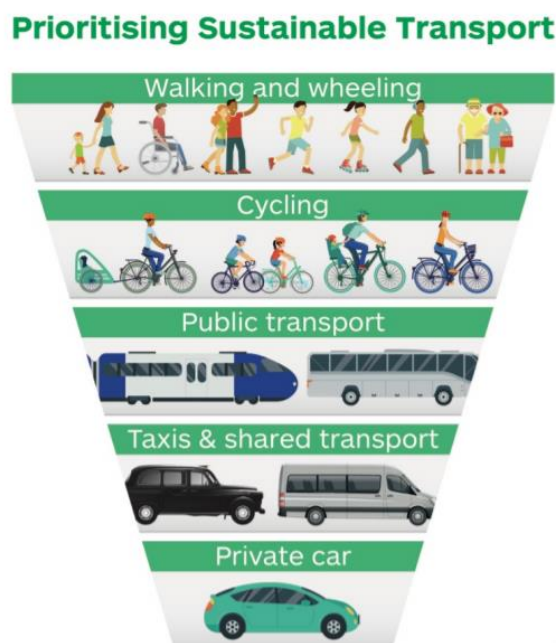
Building on the work of the Strategic Partnership, ensure a coordinated approach is taken to planning and delivery of public electric vehicle charge points and electricity infrastructure in order to optimise investment.

Enabling Scotland to develop, test and adopt new electric vehicle and energy system technologies, drawing on the strengths of our academic institutions involving industry and consumer-focused collaboration.

3.4 Integration with Scotland's sustainable transport system

The Scottish Government's Climate Change Plan update of December 2020 set out the ambitious commitment to reduce by 20% by 2030 the annual kilometres driven by cars. This commitment is ambitious and necessary. Not only to meet Scotland's legally-binding targets for greenhouse gas emission reduction, but also to deliver a wider range of benefits to individuals and communities, including improvements to health and well-being.

While we know that people in some areas of Scotland and individuals with particular needs may be more dependent on car use, it is also important to recognise that a significant proportion of existing car journeys have the potential to be made in other ways. For instance through greater participation in active travel and use of public transport for journeys. It is clear, however, that if climate change targets are to be met a wholesale switch to zero-emission is required across all transport modes.



Transport Scotland's recently published [Route Map](#) sets out the specific, evidence-based actions that need to be taken up to 2030 to support the car kilometre reduction target. This recognises not only the importance of supporting people to have the capability and opportunity to travel differently, but also the need to create the social conditions to enable motivation for change.

To align with the Route Map, it will be important to ensure that both the planning of and investment in public electric vehicle charging infrastructure is undertaken in a way that considers the wider sustainable transport system. This needs to also recognise that there will not be a one-size-fits-all approach. Whilst the 20% kilometre reduction is a national target, it does not mean that car use in rural and remote areas is expected to drop at the same rate as towns and cities. Scotland's public electric vehicle charging network will therefore need to develop and evolve to account for local circumstances and needs.

Outcome we want to achieve:

People's first choice wherever possible is active and public transport with the location of electric vehicle charging points supporting those choices.

Priorities

Using the Strategic Transport Projects Review 2 to inform Scottish Government investment to deliver on the vision, priorities and outcomes set out in the National Transport Strategy, reducing the need to travel unsustainably.

Enabling local authorities to plan public electric vehicle charging infrastructure – both locally and regionally; aligned with wider sustainable transport outcomes to encourage greater use of public transport and active travel.

4. Next steps in delivering the draft vision

Realising this vision will require collaboration and partnership across and between the public sector and between public and private sectors. Resources, skills, knowledge and investment will all be needed to maximise the opportunities. All at a time when the market is moving rapidly and demand is increasing. The Scottish Government will lead and enable the change, establishing the environment for collaborations to flourish and for optimal outcomes to emerge.

This vision heralds the next phase in growth of Scotland's public charging network. Along with its associated outcomes and priorities, over the next 12 months it will be reviewed and refined through engagement with stakeholders.



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Published by Transport Scotland, January 2022

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