Accelerating a Green Recovery

Proposals to deliver the world's most extensive electric vehicle charging network by 2025

Scottish & Southern Electricity Networks

Foreword

The world has changed significantly in the four months since the publication of our Electric Vehicle (EV) Strategy. Unprecedented measures have rightly been taken to address the coronavirus pandemic, the tragic impact of which is still too early to predict.

SSE Group published a Greenprint which set out how a low-carbon recovery could provide a vital economic boost, creating skilled sustainable jobs in all UK regions. The sentiment of the Greenprint is echoed in this document.

Surface transport is now the largest source of UK carbon emissions, with cars responsible for approximately 40% of that total. In the EV Strategy I wrote that with the right measures in place the UK could have the most extensive EV charging network in the world by 2025. This document seeks to constructively engage with the challenge and set out the actions the Government could take to make that ambition a reality.

As a distribution network operator, Scottish and Southern Electricity Networks (SSEN) has a critical role in ensuring the UK's infrastructure is ready to accommodate the increased demand of EVs. These policy recommendations highlight the significant opportunities that this shift presents, and how these can be maximised, while safely mitigating risks.

Customers rightly expect the electricity networks that serve them to be ready to support their decarbonisation ambitions. SSEN strongly supports the principle of universal service provision of EV charging infrastructure, and that individuals should be encouraged to transition to EVs, and not inhibited by their location. The call for the world's most extensive EV charging network by 2025 is to secure and spread EV opportunities across the UK, in a cost-effective manner.

Companies must show leadership in this area. SSE Group currently operates the seventh largest fleet in the UK, and the largest in Scotland. I am proud that we have joined the Climate Group's EV100 initiative and are switching 3,500 of our business vehicles to electric by 2030. We are seeking to lead by example, understanding that we have an important role in making EVs the new normal.

We continue to engage with stakeholders, and these proposals have developed based on the conversations we have held prior to, and since the publication of our EV Strategy. I hope this document helps support the coordinated delivery of the UK and Scottish Governments' respective 2050 and 2045 net zero ambitions, in a cost-effective manner for the communities we serve.

Andrew Roper
ED2 Director

SSEN Distribution

Introduction

In March 2020, SSEN published its EV Strategy outlining how we will facilitate EV uptake and support the UK's transition to net zero. The Strategy sets out five principles that we will embed in this transition:

1. Using data and analytics to anticipate issues, support decision making and make sure our networks are ready for EV uptake;
2. Having a suite of tools available to support widespread EV uptake;
3. Using Local Development Plans to inform and establish strategic investment programmes;
4. Using innovation digitalisation, new skill sets and operation capabilities to meet the forecast growth; and
5. Supporting stakeholder and customer ambitions to decarbonise.

These principles will support the realisation of SSEN's EV vision: networks enabling the transition to EV; customers and business having the confidence to switch, and this process being simple, efficient and fast; the customer experience being consistent across the UK based on cross-industry collaboration; and targeted investment delivering a cost-effective transition to net zero.

The cost of EVs is falling, choice is improving, and increasing numbers of customers are considering making the switch. Policymakers should seize the opportunity to accelerate the transition to EVs, and SSEN believes that with the right measures in place the UK could have the most extensive EV charging network in the world by 2025 which would help unlock EV demand.

With the right measures in place the UK could have the most extensive EV charging network in the world by 2025

By 2035 we can expect 35 million EVs on our roads (up from 200,000 in 2018) requiring 386,000km of network line reinforcement, with up to 66% of this taking place underground in built up areas across the UK. Strategically planning, and investing to get the UK's infrastructure ready for EVs will avoid £34bn of unnecessary expenditure.[1] There is clearly a need to coordinate our activity, to deliver a cost-effective, and secure transition for UK households, businesses and communities.

Investing in EV infrastructure creates well-paid, sustainable jobs, that are spread across the UK, and an equitable economic recovery from Scotland's Highlands to Bournemouth's beaches.

These proposals, in conjunction with SSEN's EV strategy, are part of our constructive engagement in delivering the transition to EVs in a cost-effective, secure and timely fashion that the climate emergency demands.

Our proposals are targeted to:

- **accelerate ambition;**
- **empower communities;**
- **support consumer confidence; and**
- **deliver a sustainable, cost-effective and fair transition for UK plc.**

1. Vivid Economics (April 2019) Accelerated electrification and the GB electricity system

Accelerating ambition

1. End the sale of new petrol and diesel cars from 2030

Stimulating market demand through phasing out petrol and diesel vehicles at an earlier date will provide the leadership the decarbonisation challenge demands. It will provide the market signals to automotive manufacturers to bring new, electric models to market faster and spur engagement by local communities and businesses to work together to meet the target.

The UK Government made a welcome announcement earlier this year that this target would be brought forward from 2040 to 2035. SSEN strongly supports this being brought forward to 2030. Even with the most extensive EV charging infrastructure in the world and with auto manufacturers scaling up EV production globally, there will also be a need to stimulate consumer demand – there is a role for incentives, but bolder regulation will also be needed.

2. Publish a joint plan alongside the Scottish and Welsh Governments to coordinate the rollout of ultra-rapid charging

The announcement of the £500m Rapid Charging Fund in the March 2020 Budget is a welcome step in delivering the world's most extensive charging network. Drivers travelling long distances need to have confidence that the infrastructure that is being built across the UK is coordinated and developed with the devolved administrations in Scotland and Wales. SSEN is proud to be working with Scottish Government as part of the Strategic EV partnership in the planning of that network.

A joint plan drafted with all devolved administrations must set out how the rollout of rapid charging will be coordinated across the home nations. Charge points should be placed to give access to local amenities in order to benefit local communities and EV drivers confidence that the infrastructure they need to complete their journey is in place.[3]

[2] Further information is _____

[3] For example, see Scotland's Electric A9 project

Empowering communities

3. Empower communities to accelerate the EV transition through Local Area Energy Plans (LAEPs)

Network operators, local authorities and communities must work closely together to ensure a clear understanding of what local areas require to meet their climate change ambitions and how those requirements can be met.

A 'bottom-up' approach to local network development should be adopted by putting in place Local Area Energy Plans (LAEPs). These plans are co-developed by network companies and local bodies with input from key stakeholders, including transport groups, consumer bodies and network users to collect data and evidence of need. This process can help build a locally driven and endorsed energy plan that reflects local needs and informs the efficient and long-term development of the distribution system.

LAEPs can deliver efficient investment in EV infrastructure through identifying where there is need, and developing robust, data-driven evidence for rolling out charge points. Government and Ofgem should ensure LAEPs have a clear role in the next price control for distribution networks (RIIO-ED2, 2023-2028) to complement the roll-out of ultra rapid charge points.

LAEPs, and a bottom-up approach to the roll out of infrastructure, will complement the current rollout of the ultra-rapid network. Both measures have a key role in supporting whole-system planning and ensure that the demand on the network is met in a cost-effective and timely manner.

Locally endorsed energy plans support efficient and targeted investment.

Empowering communities

4. Support a universal service provision of EV charge points through area-wide tenders

To accelerate the rollout of EV infrastructure the UK should encourage competitive tendering of an area-wide network of EV charge points, leveraging investment to deliver a universal service provision across the country.

Tendering for an area-wide network of EV charge points will complement the rollout of ultra-rapid and ensure gaps on the secondary network are plugged. Grouping EV charge points under a single tender will allow lower deployment costs by pooling demand risk across a larger number of sites. It will avoid duplication of activity and associated cost, ensure interoperability and enable wider geographic coverage by grouping less and more-economic charging sites together. This will reduce range anxiety for drivers, whilst securing wider societal benefit for remote communities.

These tenders should be coordinated between DNOs and local bodies, and access to EV charging infrastructure recognised as a universal service to support social equity in access to EVs, in a cost-effective manner. In England, whilst 78% of owner occupier households have access to off-street parking and will be able to access low cost EV charging with time of use tariffs at home, this only includes 48% of the private-rented sector and just 25% of local authority housing. Importantly, these households will be in urban areas who have most to gain from the local air quality improvements from EVs.

A successful area-wide tender process for a network of public EV charge points in the Netherlands in January 2020 led to 20,000 charge points being contracted across an area covering 3.2 million people [4]. In comparison, as of June 2020 the UK had 32,000 public EV charge points for a population of 66.8m people [5]. The Dutch example should be replicated in the UK to accelerate the provision of EV charging infrastructure, more cost effectively. If infrastructure gaps do emerge, DNOs could be empowered to deploy charge points in these areas.

4. total.com
5. zap-map.com/

Empowering communities

5. Amend the Transport Act to allow revenue from Clean Air Zones to fund vital public EV infrastructure

Poor air quality is a significant risk to public health in the UK and implementing policies that support tackling air pollution should be prioritised.

The Royal College of Physicians estimates that poor air quality causes over 6 million sick days and a total social cost of £22.6bn a year[8]. Proportionate action, that prioritises the interests of local people, will deliver improved air quality and lead to significant improvements in public health, while providing strong investment signals to vehicle purchasers and infrastructure investors. Alongside the phasing out of the purchase of new ICE vehicles by 2030, SSEN strongly advocates the expansion of Clean Air and Low Emission Zones.

The Clean Air Zone Framework states that local authorities should not set the level of charge for Charging Clean Air Zones as a 'revenue raising measure'. However, the Transport Act 2000 does allow for excess revenue that may arise from charges above the costs of operation to be re-invested to facilitate the achievement of local transport policies. The Government should make explicit that this includes the rollout of EV charge points and seek to significantly increase the number of Clean Air Zones.

Poor air quality costs the UK £22.6bn a year.

7. Royal College of Physicians (October 2017) Lancet Countdown 2017 Report: Briefing for UK Policymakers

Supporting consumer confidence

6. Implement common standards to support charge point interoperability at the point of use

The Electric Vehicle Energy Taskforce found that interoperability of charge points is a key issue that directly impacts the appeal of EV ownership[8]. Different physical and commercial systems must work together seamlessly and invisibly to the consumer. The objective is for any EV to be able to be plugged into any public chargepoint with the electricity that it uses being paid for in a way that is both transparent and fair for the consumer. This will require a standard unit of charge (for example p/kWh) to mirror how drivers of conventional vehicles refuel today where downloading an app or buying a charge card are not necessary.

Coordination is needed at a governmental level and the Office for Low Emission Vehicles (OLEV) may be well placed to manage development of areas such as:

- a roaming solution across the charging network;
- debit / credit card payment facilities at all public charge points;
- facilitation of open data to allow drivers to plan their journeys

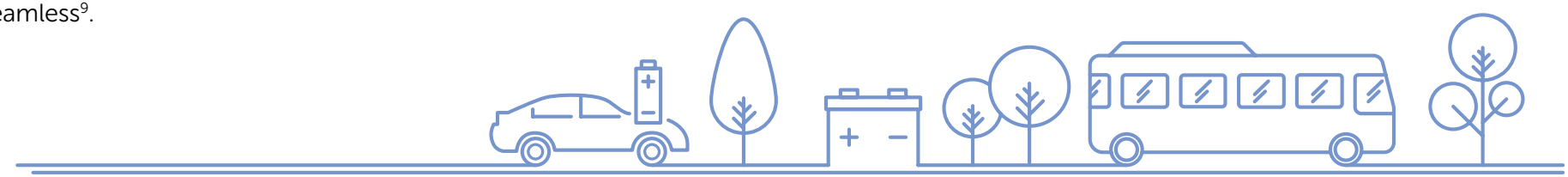
The development of standards should not hamper innovation and must ensure the customer experience of using different charge providers is seamless[9].

7. Support system security through incentivising Vehicle to Grid (V2G) participation

Customer participation and engagement will be critical to the success of the transition to EVs, as proactive consumers will be able to use their vehicles to help balance the grid and keep network costs lower for everyone.

However, the opportunities that households and businesses could access are not yet widely understood. An incentivisation scheme is needed which can drive interest, uptake and engagement, offering subsidies to participants with a clear end date. This additional incentive will increase interest in EVs and the additional ways in which they can work for their owners. Once successfully trialled, the opportunities of V2G technology will be available to all EV owners, broadening out the benefits of ownership to the wider public.

The incentivisation scheme should encourage V2G participation, and in emergency scenarios allow the curtailment of EV charging to protect the wider integrity of the network. This should proceed based on customer consent, with a clear understanding as to when these powers could be used, and only as a last resort. The Government and regulator should work with industry to set out clear standards covering when domestic EV charging can be managed to support wider system security.



8. EV Energy Taskforce (Jan '20) Energising Our Electric Vehicle Transition
9. Ibid

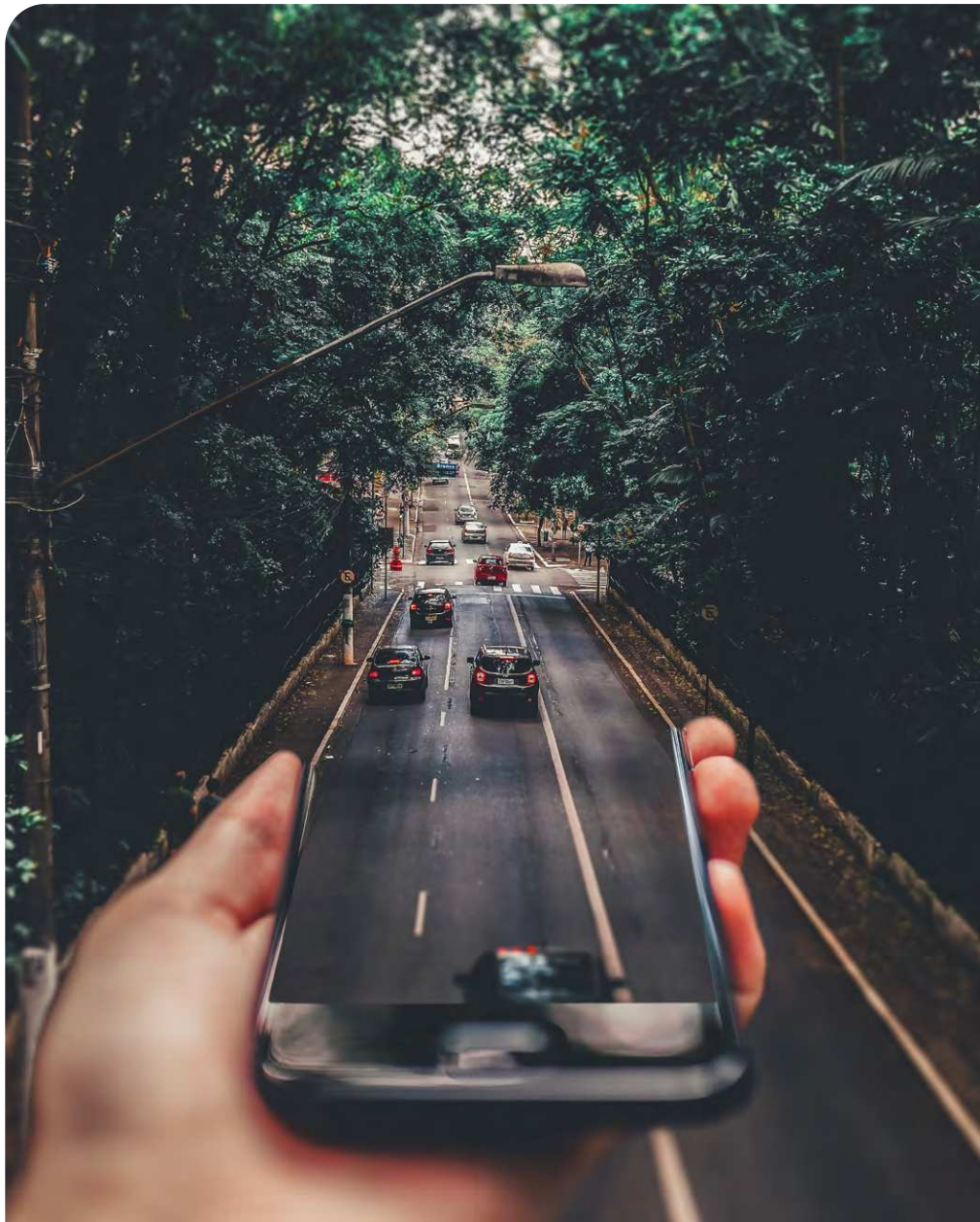
Delivering a sustainable, cost effective and fair transition for UK plc

8. Legislate for comprehensive and secure data sharing arrangements

Currently network operators are forced to rely upon 'lagging' indicators, monitoring an increase in demand on the network at a substation level to detect when EVs are added to the network. Data sharing can unlock leading indicators of emerging demand and allow cost-efficient preparation for the rollout of EVs.

SSEN is committed to putting data users at the heart of our services and we welcome Ofgem's guidance that expects greater collaboration between network operators and other sectors to improve data sharing and digitalisation[10]. Selling and purchasing EVs does not require DNOs or the ESO to be informed. Through legislating to support data sharing the Government will reduce the cost, and the risk to system security, of the electrification of transport.

The EV Energy Taskforce has recommended a review into whether new legislation will be required to deliver the cross-industry data sharing that is required. SSEN supports action now, to develop comprehensive data sharing arrangements and open and interoperable exchange principles and mechanisms in conjunction with the implementation of the Energy Data Taskforce recommendations.



10. Ofgem letter (June 2020) Evaluation of digital strategies

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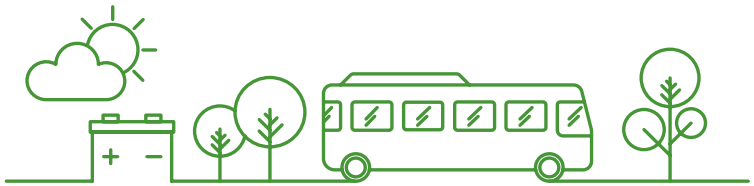
9. Support the development of UK 'gigafactories' to onshore EV and battery production

Large factories capable of producing significant quantities of batteries, or gigafactories, will be critical in accelerating EV demand internationally, and supporting the growth of green jobs in the UK.

With the right policy and regulatory framework to accelerate EV demand, there is considerable potential to support existing and new jobs in the net zero transition. 89% of jobs and the value in the UK automotive industry are directly transferable to, or already invested in, EV production and it is estimated that stronger policy could boost employment in the sector from 170,000 today to 220,000 by 2040[11].

The Faraday Institution has found that by 2025 Britain will need at least two gigafactories for the 500,000 hybrid and pure electric vehicles that are due to be built each year in the UK. The absence of gigafactories may cost the UK 105,000 jobs by 2040. Without urgent action the UK could fall behind its international partners in developing large scale domestic EV battery supply. The Conservative Manifesto commits the Government to delivering a UK gigafactory. SSEN strongly supports this as critical to the UK maintaining a competitive and international automotive industry and believes the Government should support a timetable for delivery.



[11] The Faraday Institution (March 2020)
UK electric vehicle and battery production potential to 2040

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10. Maximise batteries' utility for the UK and support disadvantaged communities

In the forthcoming revision of the producer responsibility system for EV batteries, the Government should set policy for better design, reuse and recycling, including establishing a digital database for tracking batteries,[12] instead of shipping them abroad for treatment.

Batteries which have reached the end of their useful life in a car retain 70-80% of their capacity,[13] meaning there is also considerable mileage in reuse of batteries before disassembly. Initiatives overseas are already exploring re-use of batteries as back-up power for lifts (France), EV charging (Belgium) and energy storage in homes (Netherlands).[14]

There is a strong role within the healthcare and social sectors for second-life batteries, which could be prioritised for healthcare centres, hospitals, off-grid and fuel poor homes, or those where residents rely upon electrical medical equipment. Government and regulator should engage with industry to explore how these initiatives can be supported.

12. Green Alliance (November 2019) Smarter transport. A digital revolution for electric vehicles and mobility services

13. National Infrastructure Commission (July 2018)

14. bloomberg.com

Accelerating a Green Recovery: Our Proposals

Accelerating ambition

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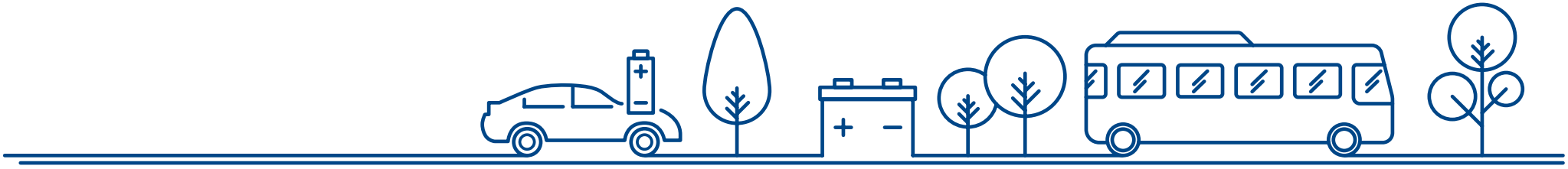

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