

Transport for the North Electric Vehicle (EV) State of Play Report (DRAFT)

TfN's policy recommendations on the transition to electric vehicles

Introduction

Transport for the North (TfN) is a statutory partner of the Department for Transport (DfT). We are a body of elected and business leaders from across the North, who collectively represent the region's 16 million citizens and 1.1 million businesses. Complementing the work of Mayoral Combined Authorities (MCAs) and Local Transport Authorities (LTAs), and with powers devolved from central Government, our role is to add value by ensuring that funding and strategic decisions about transport for the North are informed by local knowledge, expertise and requirements.

Our Strategic Transport Plan (STP) sets out the opportunities and challenges facing the North of England's economy, people and communities, demonstrating how improved transport links are needed to help the North achieve its true potential.

Our STP has three clear strategic ambitions the North wants to achieve:

1. Transforming economic performance
2. Rapid decarbonisation of our transport system
3. Enhancing social inclusion and health

There is a high level of car dependency in the North, with around 8 million registered cars in the region and 61.1 billion miles driven annually by cars and taxis on our region's roads. Additionally, there are over 970,000 vans, and around 12,000 HGVs, whilst over 90% of freight lifted by tonnage is moved by road. Motorised road travel is the largest contributor to surface transport carbon emissions in the North of England, with more than 95% of the 26 million tonnes of transport-related carbon emissions per year from road transport. The North's highway network is responsible for 23% of UK road emissions and 6% of total UK emissions.

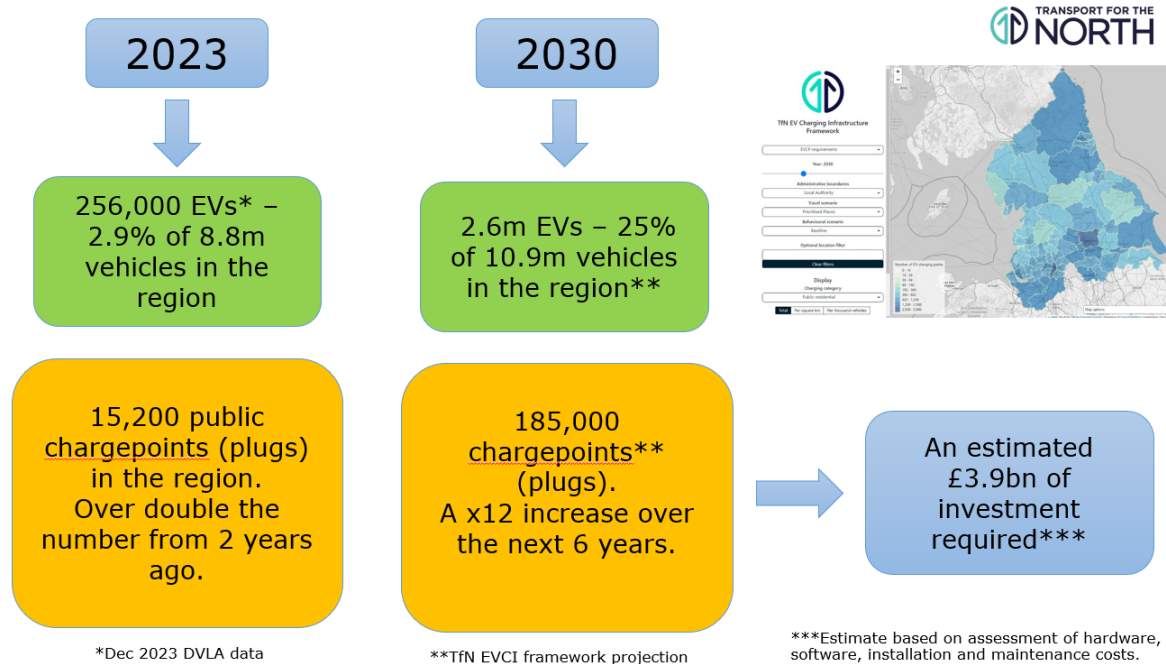
Our vision for a better connected, prosperous and environmentally sustainable north of England, requires substantial modal shift and management of road vehicle demand. Our 'right share' metric proposes a reduction in car dependency, with a target share of public transport and active travel trips increasing from 36.4% currently to 51% by 2050. Aligned to this is a metric for a zero mileage increase in regional car and taxi trips by 2045.

Whilst consistent and substantial investment in active travel and public transport is required, the transition to electric vehicles is important as it will significantly contribute to our emission reduction targets; a 56% reduction by 2030 (11 million tonnes), and near zero surface transport

carbon emissions by 2045, as stated in our Transport Decarbonisation Strategy. It is critical that the transition to electric vehicles takes place and that investment in charging infrastructure provision is realised in all areas of our region, across varying local transport realities, in order to ensure consumer confidence and the necessary speed of change.

TfN’s evidence – where we are and where we believe we need to be

Figure 1: TfN’s forecasts for the region through to 2030



An evidenced approach

TfN’s publications and tools are derived from original empirical, analytic and case study research conducted through detailed consultation and collaboration with partners and through reviewing best practice. Where possible, TfN’s primary objective is to make this material available to its MCAs/LTA partners.

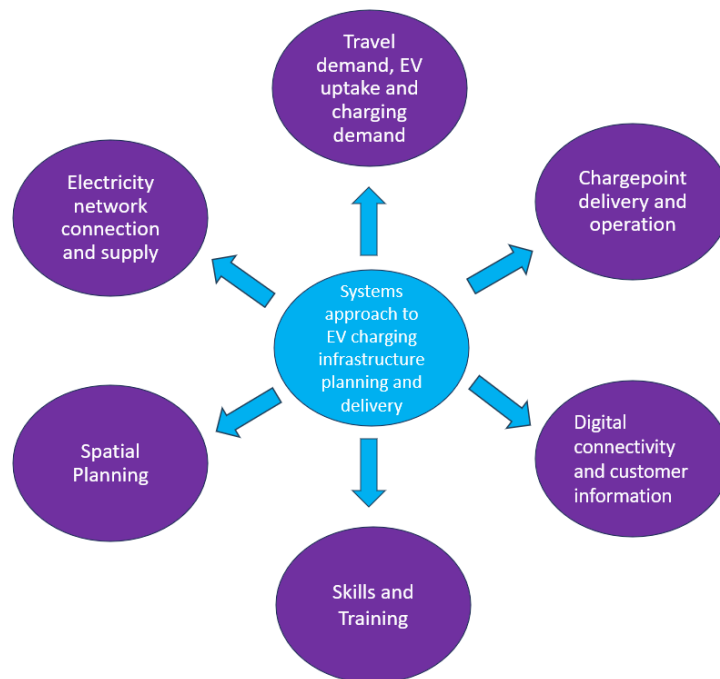
TfN is also cognisant of qualitative and statistical analysis from documents published by its partners and the DfT, utilising those as appropriate to augment our evidence base to support the case for transport investment in the North.

TfN’s EV Charging Infrastructure Framework

TfN strongly advocates the benefits of a ‘whole journey’ and ‘whole network’ approach to infrastructure planning. Realising the potential of electric vehicles, including delivering the associated charging infrastructure, requires an approach at a scale beyond individual local authority boundaries. Taking a systems approach, TfN has developed our

openly available toolkit with our MCAs/LTAs, transport and energy organisations, and other partners across the North of England.

Figure 2: A Systems Approach



Our EV Charging Infrastructure (EVCI) Framework outlines a regional strategy for EV charging requirements to support the movement of cars, vans and HGVs. Our interactive visualiser tool applies TfN’s powerful regional analytics to develop a robust and comprehensive place-based understanding of charging infrastructure need across the North. This spatial and temporal route map communicates investment opportunities and de-risks investment decisions (both public and private) across sectors by using robust evidence to increase certainty and confidence of infrastructure need; particularly with regard to identifying the different types of charging required in different places, where these will be needed and when.

TfN has also rolled out the EVCI Framework to all of England’s other Subnational Transport Bodies (STBs) and their constituent local authorities, as requested by the Department for Transport (DfT).

The purpose of this report

This report aims to:

- Apply TfN’s evidence, to monitor, review and evaluate progress of charging infrastructure deployment against our forecasted needs.

- Consolidate the expertise and views of our regional partnership, to highlight key policy related recommendations to government.

TfN has the ability to monitor chargepoint rollout metrics via its EVCI Framework, as well as infuse new datasets and enhancements to support planning and delivery, based on partner priorities. TfN's intention is to provide an annual State of Play horizon report to evaluate progress and inform future decision making.

It is the belief of TfN and its partners that the recommendations included in this report will further increase the speed and sustainability of the EV transition by highlighting best practice and success, required investment, and current or expected barriers that require intervention to continue a step change in the level of transition to electric vehicles. This report also seeks to highlight what is required for a fair, just and sustainable transition for all.

These recommendations fall into six 'Systems Thinking' themes:

- Electric vehicle access
- Chargepoint rollout
- Inclusivity
- Transport and Energy
- Sustainability
- Skills

Next steps:

- Publish the report and use these recommendations as a basis for continued work with regional and national partners.
- Continue to engage closely with the Office for Zero Emission Vehicles (OZEV) and other government departments to identify areas of risk or opportunity, applying TfN's EVCI Framework evidence.
- Continue to improve our EV evidence and capabilities, based on partner priorities, were appropriate integrating TfNs wider capabilities such as buses, freight, connected mobility and transport related social exclusion.
- Further encourage and support a 'systems thinking' approach across the transport, energy, spatial, digital and skills sectors to operationalise recommendations, in order to support and deliver action.

Themes:

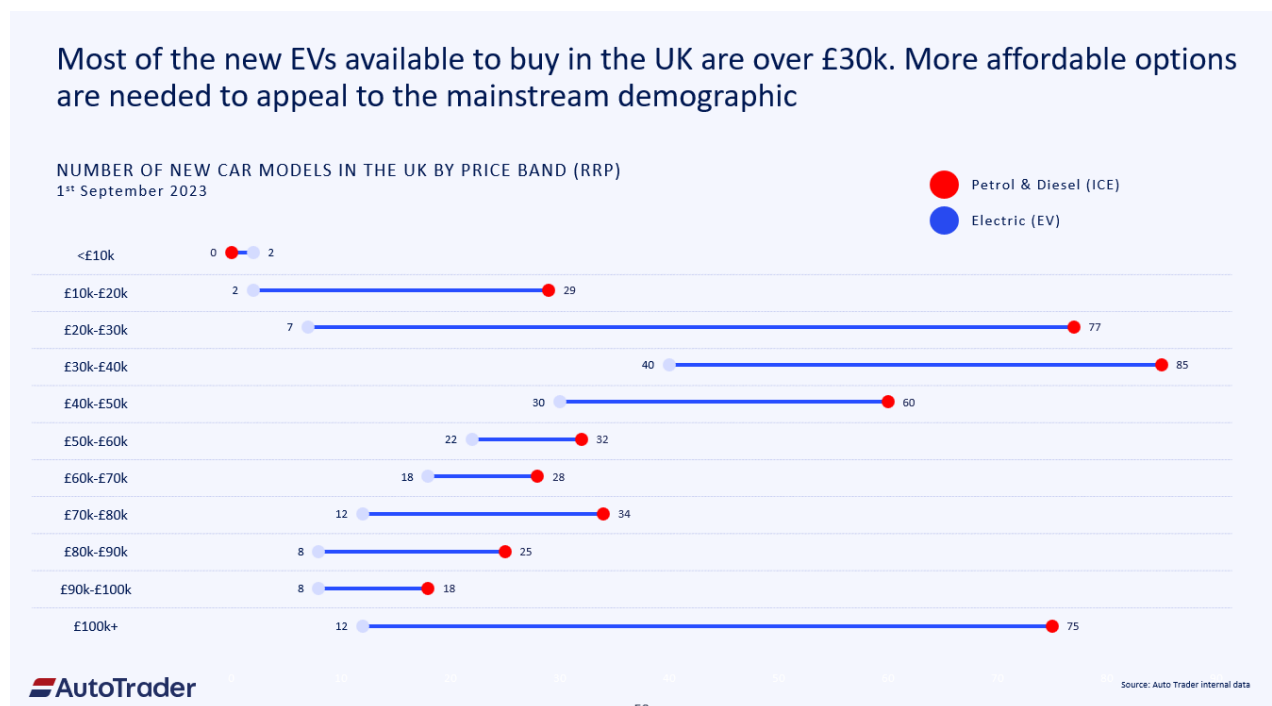
Electric vehicle access

According to 2023 DVLA vehicle registration data, there are around 8.8 million vehicles (cars, vans and HGVs) on the region's roads, with around

250,000 of these being EVs, 2.9% of the overall total. The UK Government is set to reinstate the 2030 ban on the sale of new internal combustion engine (ICE) cars (currently 2035), with the Zero Emission Vehicle (ZEV) mandate setting out the percentage of ZEV cars and vans that manufacturers will be required to produce. 80% of new cars and 70% of new vans sold will be required to be zero emission by 2030, increasing to 100% in 2035. Currently, levels of sales of both new (315,000 battery electric cars registered nationally in 2023, 18% higher than 2022) and used EVs are relatively positive, with projections for future market share looking promising. By 2029, Autotrader estimate 43% of sub 5-year old cars on the road will be EVs, and price parity is already happening across certain comparable models. For example, a one to three year old Petrol Renault Clio is currently selling at around £13,000, compared to a fully electric, one to three year old Renault Zoe at £15,000.

Whilst this is the case, the reality more generally is that the transition is only taking place in certain, more affluent sections of society. The average price of a used EV is £28,000. Whilst this cost will reduce over time due to an older fleet of used EVs being available, as well as an increase in the availability of small and medium models, currently the cost far exceeds the budget of many car buyers.

Figure 3: Number of new models, petrol/diesel v EV
(source: Auto Trader, 2023)



This point is highlighted in our own 'Northern Transport Voices' research findings, with 56% of respondents looking for lower EV upfront and/or running costs when they replace their current vehicle.

As viewed in TfN's EVCI Framework visualiser, the impact of vehicle costs and user price accessibility on forecasted sales of new EVs based on socioeconomic factors can be understood. This outlines the potential for an uneven transition to EV uptake across our region, highlighting areas which could 'electrify' faster or which are vulnerable to transport related social exclusion associated with decarbonisation of the vehicle stock. Applying this evidence, we can support a stronger correlation between demand and charging infrastructure investment. But also highlight the more difficult task of decarbonising via EVs for some areas of our region. Applications can include:

- Identify priority areas for faster deployment to support early EV uptake, high annual mileages (higher emitting trips) and charging demand; or to be more commercially attractive.
- Link with household compositions to target areas with high earlier EV uptake with no off-street charging.
- Support stimulus for more policy or infrastructure action to improve social access to EVs where uptake may be slower in the short term (including where charging access is a blocker).
- Understand areas of low uptake and possible need for other decarbonised travel options in the short to medium term (i.e. public transport and active travel connectivity).
- Link to distance travelled to target areas of high potential uptake and the high emitting journeys.
- Understand potential first and second-hand market impacts to better inform planning.

It is also important to highlight that there is likely to be an increased role over time for shared car ownership in the form of increased provision of electric car clubs, which have the potential to provide a viable alternative to car ownership.

Recommendation 1:

Consider a national scheme providing individuals with targeted financial support to purchase EVs, with a focus on the second-hand market. In doing so, the relative cost of all transport modes should be considered to ensure active travel and public transport remain attractive travel choices (in line with TfN's STP road use success metrics and road travel appraisal hierarchy¹). Other

¹ https://transportfornorth.com/wp-content/uploads/TFN_MajorRoads_Report_Dec21.pdf

options for assessment could be based on transport related social exclusion evidence (i.e. those with least public and active transport connectivity accessibility), with local authorities determining criteria, with the support of national Government.

Providing financial support for those unable to make the switch otherwise, will help to ensure that a package of 'wraparound' vehicle and charging support is available, which should include targeted promotion of the support available. Whilst acknowledging existing UK tax breaks for company cars via salary sacrifice schemes and reduced benefit in kind rates, such schemes are unlikely to reach those most in need of support. Further qualitative findings from our Northern Voices research, highlighted that a lack of clarity on government incentives for EV purchase, as well as future vehicle taxation is negatively impacting consumer confidence.

Examples of financial support which could be considered include the, now withdrawn, UK's Plug-in car grant, France's purchase subsidies, an interest free loan option, such as available in Scotland, or a removal or reduction of the 20% VAT on new EVs. It may also be more targeted and effective to provide grants or reduce VAT on used EVs. The focus needs to be on supporting the transition for those on lower incomes or who have insecure pay arrangements. It is also important to support a strong second-hand car market, meaning EVs have a higher residual value, encouraging the purchase of new EVs by those able to do so.

Further to this, there is a need to ensure car manufacturers provide an adequate selection of small and medium sized EVs that meet the needs consumers. Many car owners are 'brand loyal' and will only make the switch when an equivalent EV is available.

Recommendation 2:

Building on work underway, a national education campaign is required to provide trusted information, in order to increase public confidence in the EV transition. This should be targeted at sections of society that are currently least likely to make the change.

Clear consistent information, both for current and future EV drivers is vital to encouraging and maintaining EV uptake. Conflicting information is abundant in the public domain and is another key factor affecting the general public's desire to make the switch to an EV. Some of these claims often fuel scepticism about making the change to electric vehicles. Context is also important when considering use of petrol and diesel vehicles and what current users of those vehicles experience and accept in terms of cost, maintenance and reliability..

Evidence from MCAs/LTAs social media communications material responses suggests more is needed to inform the public and support best understanding of facts, evidence and experiences. They have also found it challenging to resource the maintaining and updating of website content due to the quantity of new information in this space. In Spring 2023 TfN carried out its own research into consumer attitudes to the EV transition via its Northern Transport Voices panel of around 500 people (204 responses). Our results show the barriers to making the switch, with good quality and reliable information highlighted as a key requirement.

TfN notes work to date by government, academics and industry to educate the public, for example the Office of Zero Emission Vehicles (OZEV) recent guidance on costs, charging and infrastructure and Fair Charge's Little Book of EV myths. National Highways is also taking forward an EV 'End-to-End Journey' trial project aiming to improve user experience by improving physical and digital signage and information to increase user confidence (i.e. reducing range anxiety). However, TfN believes more is needed to reach all sections of society and avoid concerns from many that see EVs as not suitable for their circumstances.

Chargepoint roll out

Provision – where we are and where we need to be

Whilst the number of UK public charge points continues to grow at ever increasing rates (around 61,000 in April 2024, 43% higher than in April 2022), there are significant concerns that the pace is still not quick enough to be sufficiently ahead of demand to ensure targets for transition to EVs are met. TfN's region currently has around 8,000 public chargers (15,000 plugs), 13% of the total, despite having 24% of the population.

TfN's electric vehicle charging infrastructure (EVCI) framework and visualiser tool provides current and projected requirements for EVCI provision. For example, by 2030 the projection is that 185,000 public charge points (plugs) are required in the region, requiring an estimated investment of £3.9 billion. This estimate accounts for hardware, software, installation and maintenance, but does not include electricity grid enhancements and reinforcements. Our forecasts break down public charging requirements into the categories below in figure 4. This provision will cater for the charging requirements of electric cars, vans and HGVs, therefore taking into account fleet and freight movements. Of the 2.6m EVs we forecast to be on the region's roads by 2030, over 205,000 are set to be vans and around 5,000 HGVs.

Figure 4: TfN’s forecasted chargepoint breakdown for the region in 2030

Year	Chargepoint type	Forecasted number (plugs)
2030	Public residential	94,201
2030	HGV depot	10,715
2030	Destination	39,603
2030	Workplace	36,098
2030	Rapid	4,124
2030	Total	184,741

Whilst a sizeable number of chargepoint installations are in the pipeline, it is important that TfN and its MCAs/LTA partners monitor numbers against projections. TfN has also carried out work to understand the commercial viability of potential chargepoint locations, showing areas that are more or less attractive to chargepoint operators (see Inclusivity section for more detail).

Clearly, the transition to EVs and delivery of associated charge point provision is going through a significant period of piloting, trials and user behaviour experiences. Despite the fact that an estimated 80%+ of current EV drivers have a home charger, 90% of them still use the public network showcasing that it’s required by nearly all those using EVs. In addition, as highlighted in our Inclusivity theme, a full transition to EV can only happen if households without off-street parking are provided with adequate near home charging options.

Recommendation 3:

Delivery of government funded projects (such as Local Electric Vehicle Infrastructure (LEVI) & Rapid Charge Funds), is monitored by an independent task body to provide evaluation and recommendations which shape future funding actions, as highlighted in recommendation 8. Transport for the North provides monitoring and evaluation capacity for our regional partners which can support delivery of this recommendation.

The use of government support to fund the On-street residential chargepoint scheme (ORCS) and the Local Electric Vehicle Infrastructure (LEVI) trials, as well as the main LEVI fund, serves to support on-street provision in areas of the country where households do not have driveways. The Government’s Rapid Charge Fund is supporting creating

grid capacity in the vicinity of strategic and major roads. Household funding is now also available to support cross-channel pavement solutions. These allow households without off-street parking to install a home charger. Grants towards charge points at state-funded schools are also available. However, MCAs/LTAs must have the necessary approvals, resource and processes in place to be able to support applications from residents.

All such funding is valued by TfN and its MCAs/LTA partners, but it is recognised that a holistic view of the interplay between them and the local authority resource required to apply, and deliver is fully considered. This is also true in terms of ensuring any pilot funding achieves its aim of being delivered and informing wider delivery. TfN has the ability to monitor chargepoint rollout metrics via its EVCI Framework, as well as infuse new datasets and enhancements, based on partner priorities. TfN's intention is to provide an annual State of Play horizon report to evaluate progress and inform future decision making.

The Council for Net Zero Transport has been formed to help the delivery of the UK's decarbonisation transition. The recommended monitoring and evaluation function could feed into the work of this body.

Recommendation 4:

Solutions to reduce the delay of appointing Charge Point Operators, as well as speeding up the installation of chargepoints, are investigated and applied.

Appointing chargepoint operators (CPOs)

Given the relatively recent requirement for EV chargepoint delivery it is understandable that there are administrative delays as processes are worked up and refined. As the number of chargepoints continues to grow, so does the amount of market engagement and procurement processes. To this end it is vital that the key lessons learnt are captured which provide clarity and consistency to future processes. Specific and consistent guidance on the legal aspects is critical to providing the certainty that MCAs/LTAs need to establish robust contracts with CPOs. Standard terms and contracts may not be feasible due to the variety of circumstances and different delivery models.

However, template documentation for different contract options would be of real use to MCAs/LTAs and would speed up the appointment process, particularly for those with a low level of experience in this area. Key areas of a vital feedback loop are around contract length, tariffs, revenue margins and balancing the delivery of commercially viable and non-commercially viable chargepoints. Where possible and practical, opportunities for aggregation and economies of scale should be taken. It

is also important that the CPOs are educated as to the realities of public sector procurement processes. Doing so reduces the chances of not adhering to mandatory aspects, as well as reducing the likelihood of failed processes or drawn out negotiations.

Speeding up installations

TfN welcomes the government's consultation on CPOs being brought into the street works permitting regime, meaning they will no longer face the delay of applying for a section 50 licence, thus speeding up installations.

TfN has actively engaged with the three distribution network organisations (DNOs) in the region and is seeing positive results (see our Transport and Energy theme). It is clear the DNOs are increasing capacity and improving processes but, with a significant amount of installation requests coming through (e.g. LEVI), monitoring of resource and opportunities to learn from and adapt processes are critical to the speed of chargepoint rollout. DNOs need visibility of the pipeline of projects in order to plan grid reinforcement accordingly. Acquiring land from third party owners can often also provide a challenge and a delay to all stakeholders involved.

In terms of within local authorities, again, resource and expertise are growing, however, this is far from consistent across localities, with a danger that a varied picture of charging provision, types and usage costs will result.

A clear and consistent national vision is required, with complementary, consistent funding streams, along with clear delivery guidance that provides the opportunity for a chargepoint rollout that is fit for purpose and meets consumer needs. TfN and its partners recognise the steps taken by OZEV to provide this and are open to working collaboratively to apply lessons learned and evidence to shape this continued effort.

Within local authorities, devolved freedom and flexibility within that vision (and any associated targets) will allow for local place-based solutions to ensure fit for purpose outcomes for the communities they serve. Individuals, teams and departments within authorities should have the skills, knowledge and levels of resource required to ensure joined up processes and quicker delivery (see theme F: Skills).

Improving user confidence

Understandably, there is a clear focus on the roll out and installation of chargepoints. However, TfN is aware of current and potential issues that have the potential to negatively affect user experience and thus impact current and future provision. Good work is underway in this area but there must be continued oversight, focus and reporting to ensure a

positive user experience and increased consumer confidence in the availability and usage of charge points.

Recommendation 5:

Theft, vandalism and safety considerations are embedded, and where possible funded, within charge point delivery.

Theft and vandalism of chargepoints is an example of this and presents a growing issue. In some areas the transition to EVs is seen as being forced upon residents and deemed elitist (see recommendation 2: myth busting campaign and theme C: Inclusivity), with this causing growing resentment and negativity amongst certain communities. This resentment appears to be resulting in increased vandalism of charge points and theft of cables. Whilst the reality is cables are worth very little in terms of financial gain, it appears the combination of a belief that they are valuable, a backlash against a transition to EVs seen as enforced, and lack of concern of prosecution, means theft and vandalism are on the rise. MCAs/LTAs and/or CPOs face significant costs (in some cases, around £30,000) and logistics to resolve such situations and EV drivers themselves face uncertainty and issues with charge points not being in use.

A package of measures, including improved charge point design/signage, CCTV, appropriate positioning, lighting, forensic marking, and enforcement and prosecution will help. It is important that funding pots, such as LEVI, enable the inclusion of theft, vandalism and safety equipment within their funding criteria. However, winning 'hearts and minds' against what is often believed to be an antiestablishment protest crime is just as important when looking to resolve this situation and must not be overlooked. In addition, provision of CCTV also has a positive impact on the safety concerns of some users who may have concerns around using certain charge points, particularly if using local charging hubs overnight that require walking to and from.

Recommendation 6:

Clear national guidance is provided on charge point usage liability and maintenance to support local and national delivery, such as the government cross-pavement charging grant.

Another ongoing issue with charge points is liability. This is particularly true in terms of trailing cables from home or on-street chargers. Whilst many councils have introduced their own approach to specifying liability, a number are still hesitant to do so and are therefore unable to fulfil resident requests to access the government's grant for cross-pavement charging solutions or install on-street chargers. A clear consistent government stance on this topic would be welcomed in order to increase

the confidence in the delivery of charge point provision, particularly by local authorities. Providing a consistent approach not only provides clarity and confidence for MCAs/LTAs to support charge points delivery, but also increases the public's understanding in this area.

The Public Charge Point regulations 2023 provides measures to ensure customers can be confident that public charge points will be in good working order. This is critical to inspiring confidence in use and uptake of EVs. It sets out that 99% of rapid chargers should be reliable as an average across each charge point operators network. Consideration should be given to extending this measure across public non-rapid networks to enhance reliability across the whole network of charging infrastructure.

Recommendation 7:

All public charge points either have adequate mobile phone reception coverage or provide a Wi-Fi hotspot in close proximity.

Users of charge points want to be confident they are operational and easy to use. TfN welcomes the Public Charge Point Regulations 2023 guidance which looks to ensure consumers can easily locate the right charge point, be confident it is working, compare prices and find it easy to pay. However, whilst user experience is improving it is still too varied and affects the confidence of current and potential users. An example of this is research from the RAC Foundation that suggests that around two-thirds of the public charge points that are 8kW or below (these are not obliged to provide contactless payment), outside of London, do not provide adequate levels of mobile data coverage across the four main networks. The vast majority of EV drivers use mobile phone apps to access such chargers, and the chargers themselves also need a signal to function. Improving digital connectivity more generally also has additional transport benefits for local communities, such as contactless bus payments and demand responsive transport. It also supports wider benefits in terms of working from home and local businesses.

Inclusivity

Social inclusion through private vehicle charging access

TfN's work on Transport Related Social Exclusion (TRSE) highlights those areas where transport issues have a fundamental and negative impact on everyday life. In the North 3.3 million people live in areas with a high risk of TRSE, 21% of the population. Many people living in these areas have no access to a car or may have one, due to the lack of alternatives, but limit journeys due to financial constraints. In order to reduce car dependency and TRSE, TfN's STP states that investment in transport infrastructure should be targeted, in the first instance and where appropriate, on active travel and public transport.

Whilst the reduction of car dependency is a critical aim, supported by enhanced public transport and no net vehicle growth, action is required to support decarbonised travel on our road networks.

For this to happen, EV charging infrastructure needs to be accessible and affordable to all sections of society. This is particularly relevant across the North where we see a range of urban, semi-urban, rural and remote place types. National Government funding mechanisms and local authority delivery plans will need to recognise the need for flexibility to ensure solutions fit for a particular place, which can drive the uptake of EVs.

There are different spatial, social, energy and transport challenges across these very different place types. TfN's EVCI Framework, and our evidence from our wider analytical capabilities, can be brought to bear to enable effective delivery which accounts for these different challenges and requirements. By engaging with relevant partners and stakeholders to determine priority areas and deliver them, TfN has a range of current and future EVCI Framework enhancements that can be used individually or layered to support effective chargepoint delivery.

Enhancements to TfN's evidence provides an assessment of likely chargepoint commercial viability for the north. This provides our MCA / LTA partners with a heatmap output at middle super output area level (MSOA) with which they can apply to their planning and delivery. Using a scoring matrix (population density, levels of deprivation, proximity to major roads, flood risk and grid capacity) to determine likely commercial viability.

Further to this, as highlighted in the Chargepoint rollout section, TfN and Ordnance Survey have jointly worked on mapping driveway presence provision across the North. Satellite imagery and spatial data was used to upgrade our EVCI Framework to map the presence of household driveways, across 6.4m residential households in the region. This has improved our accuracy of understanding driveways within an area, and also means we can supply our partnership with localised intelligence pinpointing driveway locations across our region. Results suggest 53% of residences have driveways and 47% do not. This is above the national average of around 40% without driveways, showcasing the vital need for public charging provision that supports the EV transition.

Figure 5: Example output from TfN and Ordnance Survey driveway analysis



Recommendation 8:

Future charging infrastructure investment is considered to ensure public charge point provision in specific areas of need not fulfilled by current national or local infrastructure deployment programmes. This should be informed by monitoring and evaluation of deployment and enabled by TfN's evidence. It should recognise TfN's whole network vision, the travel hierarchy and the needs of local residents.

The provision of public EV chargepoints should be targeted in specific areas of need, where there is a lack of off-street parking for households who require a car. Previous and existing national funding has been constructive in aiming infrastructure deployment in these areas. As these schemes reach delivery, monitoring and evaluation (Recommendation 3) should shape any further targeted support across the region to meet our forecasted requirements.

As mentioned previously, it is vital that the transition to EVs is inclusive, equitable and fair. In terms of future overall investment in public chargepoints, as stated, TfN currently forecasts that 185,000 are required by 2030. Breaking these down to different charger types, and using latest market financials, the overall private and public investment required in the north is estimated to be £3.9bn. Whilst, as mentioned, a sizeable number of chargepoint installations are in the pipeline, it is important that TfN and its MCAs/LTA partners monitor numbers against forecasts and map these to ensure a fair and equitable transition across all parts of the region. As mentioned, TfN's work on commercial viability provides a focus on those areas at risk of not having the required provision if the rollout is left purely to the market. However, it also is recognised that careful consideration of the overall transport needs of communities is taken into account when planning chargepoint rollouts.

Costs of using private v public charge points

Further to previous references to an inclusive and fair transition to EVs, the disparity of charging costs to those able to charge at home versus those without off-street parking is a stark one. As stated, TfN's own research, supported by Ordnance Survey, shows our region has more households without driveways than the national average.

Data from Zap Map shows the average home intelligent/overnight EV tariff is 8.5p/kWh, whereas those using public chargers are paying an average of 56p/kWh for fast chargers (less than 50kW) and 81p for rapid/ultra-rapid (50kW+). Whilst it is recognised that the public chargers will charge a vehicle much quicker than an overnight charge, the reality is many users are satisfied with overnight charging.

One of the reasons for the higher public chargepoint costs is that VAT is charged at 20% on public chargers, compared to 5% on home charging. TfN believes that those living in properties without off-street parking are at a significant disadvantage and supports the recent Lord's Environment and Climate Change Committee's report and Fair Charge's campaign to seek a reduction of VAT on public charge points to 5%.

However, it must be recognised that, for example, such a reduction would still only reduce a public fast charger to 47.6p/kWh (8.4p cheaper) and so a large differential would still exist.

There are other options which should be explored to make charging more accessible. Examples include:

- To legislate that cheaper tariffs for overnight use of public local charge points are applied, aligned to the home energy tariffs many current EV drivers with home chargers benefit from.
- To consider 'energy porting' whereby the charger recognises a vehicle's ID and the owner is charged based on their home energy tariff. This could be targeted at those living locally to the public charge point and using it overnight. This also has the additional benefit of resolving many of the concerns and barriers to cross pavement solutions installations that MCAs/LTAs are dealing with (see Chargepoint Rollout, charger types).

Recommendation 9:

The VAT rate on public charge points is brought in line with home energy VAT at 5%. This should be supported by consideration towards other options to reduce charging costs for those without access to a home charger, such as tariff legislation and use of technological solutions.

An equitable transport system

How we pay for, and fund mobility is a fundamental factor in ensuring that good transport choices are available and affordable for all members of the community. The cost of transport, whether by private car or public transport, can significantly limit opportunities for people to access jobs, education and other services, particularly as TfN evidence² has shown for people living on a low income.

A headline finding of TfN's recent Travel Choices research, was that for the same distance travelled, those travelling by car face significantly lower costs than those travelling by bus or by train. However, the cost that car travel has on society is much higher. Therefore, increasing public transport ridership through tackling the affordability and quality of public transport is a priority, and the identification of alternative options to fuel duty for car use will be key to achieving that.

As the transition from use of petrol and diesel gathers pace, the £28bn per year tax revenue from fuel duty will start to fall sharply, significantly impacting on government finances. In 2022 the Transport Select Committee launched an inquiry into Zero Emission Vehicles and road pricing, which TfN submitted evidence towards. The Committee published its conclusions and recommendations³, including stating *'The Government must start an honest conversation with the public on the funding implications for road development and maintenance and for other essential public services of decreased revenue from vehicle excise duty and fuel duty'*.

Should government continue to allow fuel duties to decline, without any policy response, that would inevitably result in the need for other taxes to 'plug the gap' or reduced public expenditure, including on maintaining and upgrading transport networks.

Additionally, TfN's Travel Choices research indicates that the total cost of car use to society, in the North, is likely to continue to increase in the future despite an increasing share of EVs in the fleet, due to an increase in the overall number of car trips.

Recommendation 10:

That the UK Government should lead a detailed and informed discussion with regards to tax revenue from fuel duty and vehicle excise duty, with a view to setting a clear direction. An integral part of this review should be how to improve equitable access to all sustainable modes of transport.

² [Transport Related Social Exclusion report](#), TfN, 2022

³ [Road pricing](#), House of Commons Transport Committee, 2022

Accessibility

It is vitally important that all EV users are able to use all charging infrastructure. This is why TfN fully endorses the PAS1899 document that sets out a core minimum standard to ensure disabled and older people, and those with mobility impairments, can access and use charge points. TfN is aware that the standard is currently being updated based on a years' experience of implementation, and that compliance on the ground is limited. TfN supports the idea of phased mandating of suitable new installations so that compliance grows overtime.

Recommendation 11:

A phased mandating of the updated minimum accessibility standard (PAS1899) for chargepoints is introduced, with a focus on moving at pace to ensure infrastructure is accessible to all during the EV transition.

Transport and Energy

Transport and energy sectors

The delivery of transport outcomes is dependent upon aligned strategic planning and investment in energy generation and distribution systems. This is particularly true in terms of the transition to EVs, with transport and energy sectors required to work in harmony to achieve success. The scale of the challenge is significant and complex. In the TfN region, there are currently 256,000 EVs (2.9% of the region's vehicles). TfN's EVCI framework projects that this number will grow to over 2.6m by 2030 (25% of the region's vehicles). In terms of public chargepoint plugs (not including home chargers), there are currently around 15,000 with this projected to rise to 185,000 during the same time period, a twelvefold increase. Clearly, the impact on our energy network is significant with an estimated 5501 Gigawatt-hours (GWh) GW of additional electricity required annually (not including home chargers). This is the equivalent of annual household consumption of around 1.4 million households (applying average use according to Ofgem).

TfN has welcomed the opportunity to support the Office of Gas and Electricity's (Ofgem's) consultation on the future of energy institutions and governance, and the creation of a Regional Energy Strategic Plan (RESP). Removing barriers and siloed delivery strategies is critical to enabling more user-centred, place-based and outcome focused investment decisions. This whole system, forward thinking can ensure the linkages between transport, digital and energy systems are maximised in decision making to inform the policy and political conversations that will enable economic growth, inclusivity and net zero by 2050. In practical

terms, realisation of strategic outcomes for our transport system is dependent upon alignment of investment across these infrastructure sectors. This presents another step forward for cross-sector working, but TfN recognises the need to go further and faster to affect the change required with regard to the EV transition.

Collaborative working and use of data to shape infrastructure investment

Cross-sector working and collaboration is critical to achieving effective and efficient results, grasping opportunities that come with the alignment of infrastructure planning. Via its EV Regional Partner Group, containing local authorities, National Highways and the OZEV (Office for Zero Emission Vehicles), TfN has engaged with the energy regulator Ofgem National Grid and our three DNOs. Continued dialogue and relationship building has increased knowledge and expertise across both sectors. Clearly combining each other's knowledge of their sector, e.g. TfN transport modelling capability and the DNOs future energy projections, can achieve more robust planning. Whilst TfN has its own future transport scenarios, with the energy sector having Distribution Energy Scenarios and Future Energy Scenarios, the increased dialogue and information sharing means future alignment of assumptions and use of best datasets is achievable.

TfN has recently progressed an enhancement to its EVCI Framework, with support from the three DNOs in the region. This joint work has merged DNO data such as the current and future headroom capacity in primary substations, with TfN's future projections for EV and charging demand. Whilst the 'snapshot' outputs do not include for grid enhancements in the pipeline, the work will go some way to highlighting expected pinch points or focus areas for grid reinforcement and increased capacity across our region. This can help to future proof decision making with regards to electricity supply, and target priority areas for action which often need to be made years ahead of delivery. The images below showcase that whilst currently over 90% of primary substations have good levels of capacity currently, this situation will radically change due to increased energy demand for EVs by 2035 (note the shading change from dark to light in the images as capacity reduces). TfN will continue to work with the DNOs in the region to increase the accuracy of this work to inform future grid capacity planning.

Figure 6: Assessment of primary substation headroom capacity in 2025

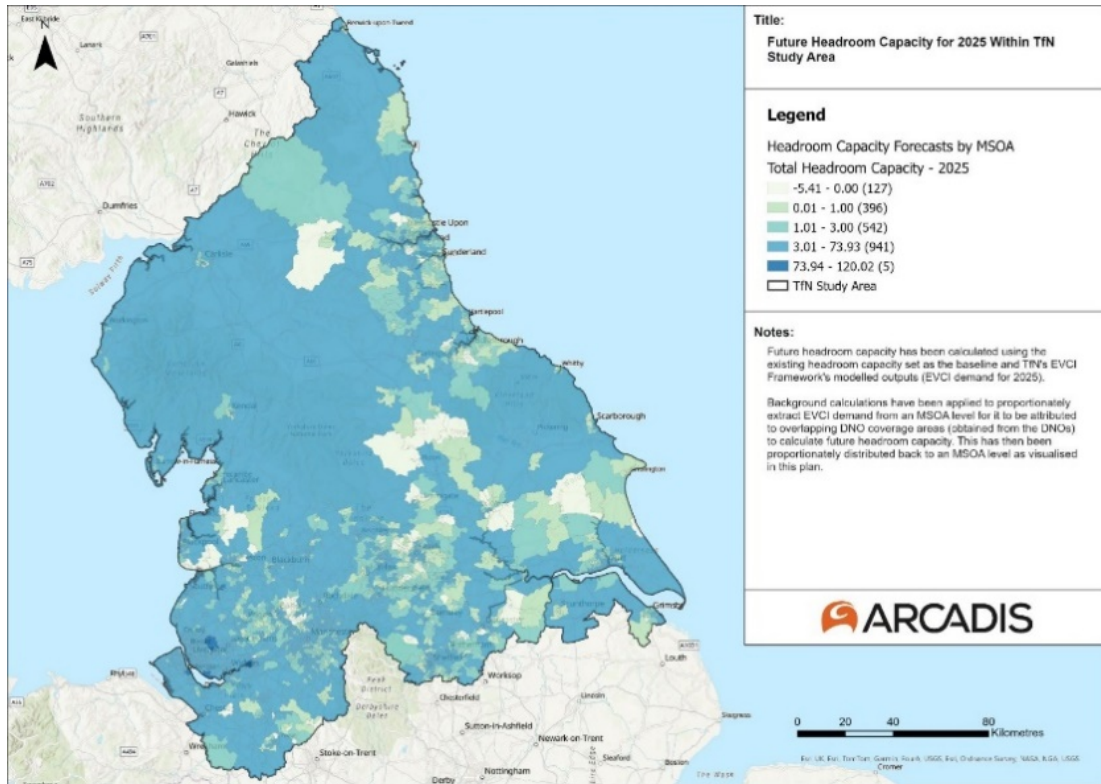


Figure 7: Assessment of primary substation headroom capacity in 2030

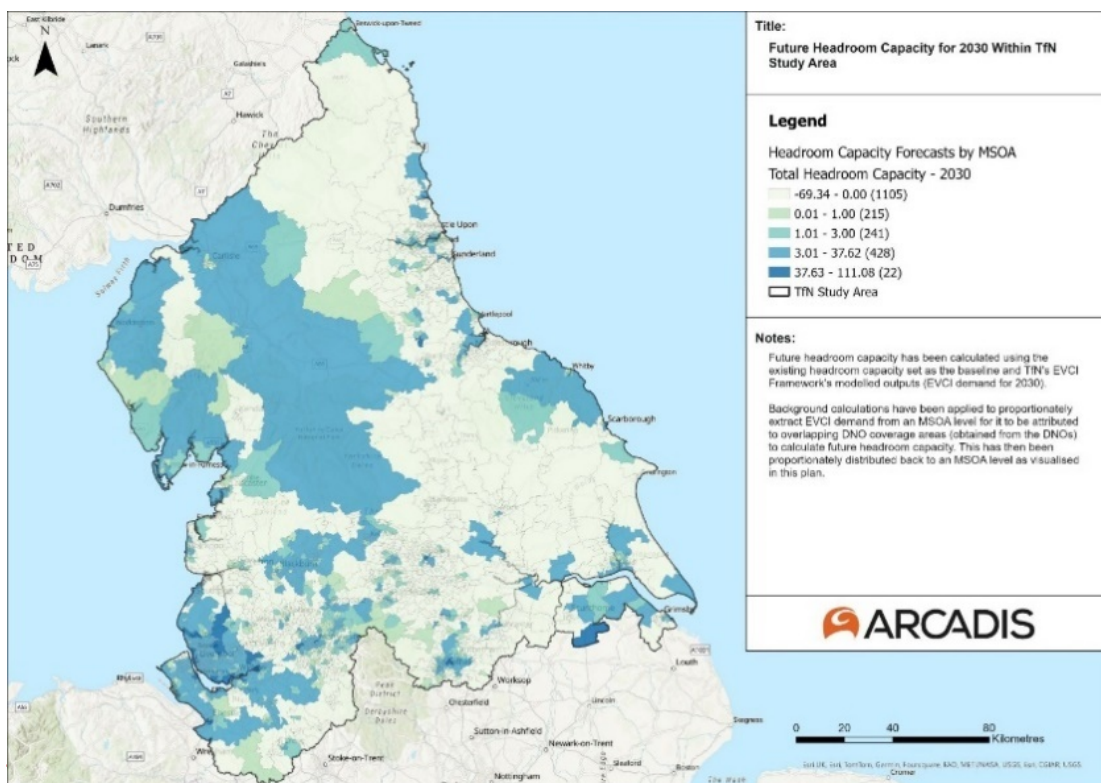
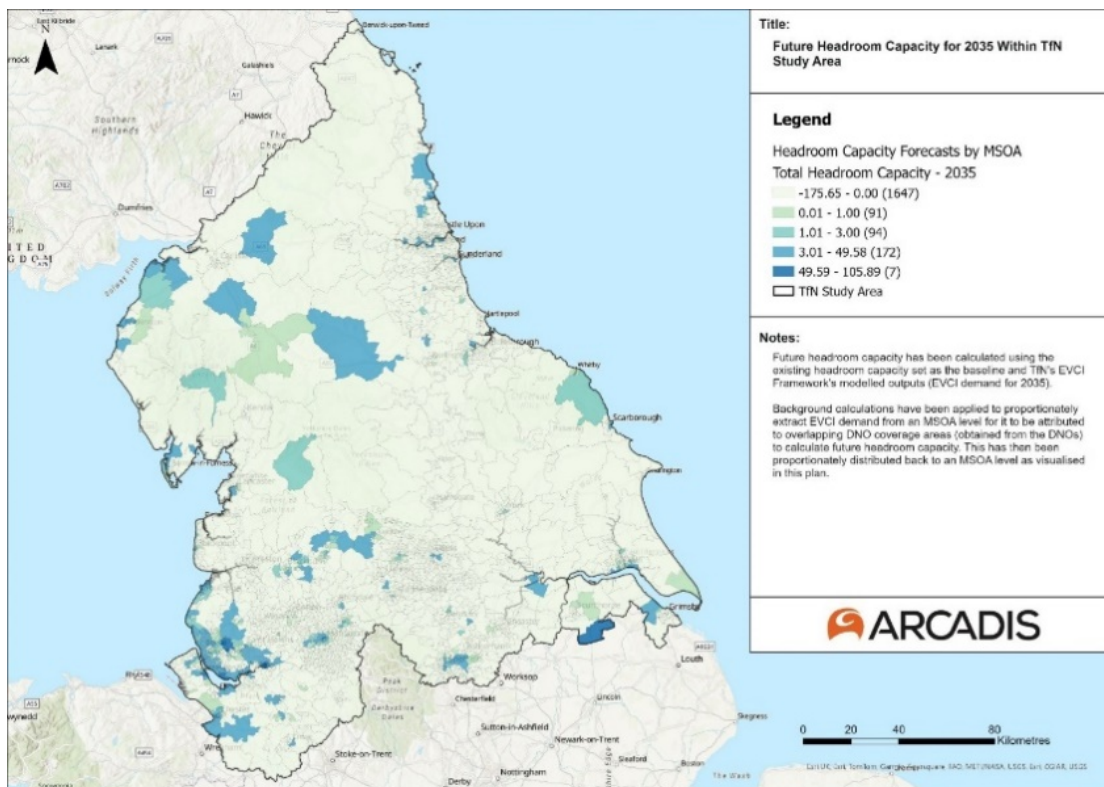


Figure 8: Assessment of primary substation headroom capacity in 2035



Formalising planning and systems thinking

The evidence base assembled by TfN demonstrates how investment in the North's infrastructure contributes to achieving agreed outcomes on reducing carbon emissions, improving health, and achieving sustainable economic growth. This will require, at a minimum, alignment of analysis, evidence and decision making in transport investment with that in energy systems and digital connectivity.

Tfn acts as a focal point for trusted data and evidence that can be used to develop policy and implement solutions. There are, and will be, critical information links between transport and energy functions and planning considerations with which to share and collaborate on to develop outputs for our industry participants.

Tfn welcomes the positive working relationships we have with northern DNOs, and the development and communication of our EVCI framework, and the enhancements refer to in this report. Whilst progress has been made, it is clear we could collectively do more to take this further. Our evidence available could be more actively incorporated and accounted for in energy planning and delivery. TfN see continued work with our DNOs as key in making best use of critical whole systems tools (and exogenous sources) such as evidence provided by TfN (and other STBs in England as the EVCI Framework is rolled out nationally), and our MCAs/LTAs (Local

Area Energy Plans, (LAEPs)), to collaboratively apply and enhance decision making and delivery towards our mutual ambitions.

TfN recognises an opportunity for the future RESP and ourselves to support improvements to how we plan, develop and deliver infrastructure and services. This includes better informing multiple infrastructure processes and ensuring they are aligned to local and regional requirements. This includes processes such as:

- National Grid's Electricity Distribution (NGED) investment planning process.
- Delivery of the local electricity networks RIIO Electricity Distribution Price Control (RIIO-ED2) period 2023 to 2028.
- Investment channelled through National Highway's Road Investment Strategy.
- Investment channelled through Network Rail's Control Periods for planning and investment.
- Other public investments channelled through government, i.e. Major Infrastructure Projects and funding streams such as the Local Electric Vehicle Infrastructure (LEVI) and Rapid Charging Fund (RCF).

TfN will continue working closely with Ofgem to support the RESP development. It is encouraging the see the development of clear roles and responsibilities for each body, as well as the intention for clear governance procedures and a democratic mandate. We recommend that TfN – as a statutory body - is confirmed as a 'key actor' which should inform, support and be consulted on the RESP when enacted.

Recommendation 12:

A more formalised process is introduced to further allow for the energy and transport sectors to integrate evidence and place-based planning to shape delivery (i.e. Local Area Energy Plans and TfN's EV Charging Infrastructure Framework).

Sustainability

Grid decarbonisation

Whilst EVs are zero emission at point of use there is still a requirement to continue to reduce the carbon emissions associated with the production of the electricity to power them. Emissions from electricity generation have been falling. As highlighted in the Climate Change Committee Electricity Generation report, since 1990 they have fallen 68%, with emissions falling by 62% between 2008 and 2018. The Balanced Net Zero Pathway decarbonises electricity generation by 2035. However, the challenge is to

ensure the rising demand is met with low-carbon generation. With a sizeable contribution related to EVs, electricity demand is projected to double between 2020 and 2050. From an EV charging perspective it is important that those responsible for charge point delivery, including EV owning residents, look to incorporate low carbon solutions in their delivery. For example, this may be through powering charge points via connected or local renewable generation, such as solar panels or wind turbines. Where this is not possible, 100% renewable electricity tariffs should be utilised.

Recommendation 13:

That all electricity used to power EV chargers is from renewable sources, to support our net zero ambitions.

Battery production and the environment

Whilst the source of some debate, there is a growing consensus that EVs produce significantly less carbon dioxide during their lifetimes than internal combustion engine (ICE) cars, including production and battery disposal, with this gap set to widen as electricity generation decarbonises further and manufacturing processes improve and produce less embedded carbon. There are opportunities to further reduce emissions by producing large quantities of batteries used in new EVs here in the UK (see £4bn gigafactory planned for Somerset). TfN supports such potential economic activity in our region, as a sustainable model that supports net zero targets, creates employment and ensures control over, not only the production of batteries, but the reuse, recycling and disposal of them at the end of their life. As highlighted in the Skills section below, there is a real opportunity for the north to further support the 'green economy' transition by expanding investment in EV related production, training and skills to boost economic activity and close the economic imbalance that exists in the country.

Recommendation 14:

The UK Government encourages investment in battery production factories and ensures appropriate regulations are in place in regard of production, reuse, recycling and disposal of EV car batteries.

Skills

EV skills and training

As the EV transition continues and, more generally, the 'green economy' grows, there is an opportunity to make the UK, specifically the North, a leader in terms of EV skills and training. This is in terms of EV knowledge

and skills across all parts of the industry, including car and battery production, as well as charge point production and installation. An opportunity also exists to upskill workers moving from carbon intensive roles to those that support the transition to EV.

The Electric Evolution report highlights that despite an increase in EV technician training, availability is inconsistent across the country. The report examines the proportion of maintenance and repair technicians that are EV qualified, with only seven authorities across the UK having 10% or more technicians qualified to work on EVs. More than 150 authorities have less than 2%. The Institute of the Motor Industry (IMI) predicts that 77,000 IMI TechSafe qualified technicians will be needed by 2030, increasing to 89,000 by 2032. With over 230 IMI training centres across the country there is an opportunity for the north to take a lead on filling the gap.

EV skills and qualifications should not purely be focused on technicians working on the EVs themselves. Clearly, there are a range of related roles, ranging from the selling of vehicles, to charge point strategy, procurement and delivery. As highlighted earlier, the results of surveys and interviews conducted with our Northern Transport Voices research community, highlighted that those visiting dealerships often did not get adequate information in order to give them the confidence to invest in an EV. It appears there is an opportunity to upskill car sales staff in this area so that common questions can be answered with confidence and misinformation is reduced.

In terms of charge point roll out, a range of staff, particularly within Local Authorities, have some form of involvement in the procurement and installation of facilities. Whilst specific EV Officers are in place in many authorities, those working in legal, procurement, highways and strategy also need to have a good level of EV knowledge. Local Councillors can also play a critical role in being the voice of residents and therefore increased knowledge can be beneficial to any related approvals sought. TfN welcomes the work of the Energy Saving Trust in this area, who have held pilot training sessions with local authority staff and councillors. We are of the view such sessions should be rolled out further, and are designed in such a way that recognises the time constraints of participants.

For those EV officers within authorities, TfN welcomes the Electric Vehicle Infrastructure (EVI) training course delivered by CENEX (Centre of Excellence for Low Carbon & Fuel Cell Technologies). Whilst good work is taking place in this space, TfN wishes to see a step change in the scale of such training across the region, to ensure adequate human resource and knowledge for the EV transition.

Recommendation 15: Further investment is made into EV related training to increase the speed of the EV transition and support economic growth in the region.