



IAG Report

2022

Table of Contents

Foreword	3
Introduction	4
Vision	5
Delivering the vision	6
I. Strengthen the Innovation Ecosystem	6
II. Identify and Address Existing and Emerging Skills Gaps	8
III. Attract inward investment and patient capital	10
IV. Develop Global Export Markets	12
V. Public Procurement for Innovation	13
VI. Build domestic supply chain opportunities	15
VII. Foster collaboration	17
VIII. Installing Refuelling and Charging Infrastructure	19

Foreword

Scotland is on a Mission Zero for transport: a national collaborative effort to ensure our country is at the forefront for zero emissions, while people and places benefit fairly from the transition. Since its establishment in 2019, the Scottish Automotive Industry Advisory Group has been a clear example of the partnership working that is going to be critical to driving forward this Mission.

The members of this group represent a sector that has significant challenges in decarbonising including heavy duty and vehicles which either have power or configuration requirements that make zero emissions alternatives to current fossil fuel vehicles challenging.

This report provides an excellent account of progress in this context, including the development of the LOCATE zero emission powertrain test centre, DER Scotland Industrialisation Centre and the establishment of the Bus Decarbonisation Taskforce, which has informed both SULEBS and SCOTZEBs funding and the introduction of 548 zero emission buses on to Scotland's roads.

The IAG has also brought greater alignment between stakeholders on progress towards Mission Zero and the report highlights, in case studies, some of the impactful work of the sector in Scotland including: the Glasgow City hydrogen refuse truck innovation project and fleet initiative; zero emission bus manufacture by Alexander Dennis; and the development of the world's first zero emissions fire engine by Emergency One.

A thriving transport sector is the vital backbone of the Scottish economy, and as Transport Minister I want to see Scotland's sector becoming an engine driving a just transition to net zero across the country. The work of the IAG is a beacon of ambition and I'm confident that the sector will continue to show continued leadership as we move together towards 2045.

I look forward to continued partnership with all parts of the transport sector through an IAG, enlarged with additional members from across Scotland's supply chain, as all parties work to co-deliver the vision set out in this report.



Jenny Gilruth, Minister for Transport

1. Introduction

Scotland's Zero Emission Mobility Industry Advisory Group (ZEM IAG) was convened for four meetings and three themed workshops between December 2019 and November 2021. It identified an agreed vision for Scotland's automotive industry to:

- Become a global player in the supply chain for zero emission mobility (hydrogen and battery) for heavy duty and niche vehicles.
- Become an international centre of expertise for energy and transport integration.
- Become a global destination for innovation in sustainable and zero emission transport.

The group has included operators, manufacturers and suppliers to the automotive sector in Scotland as well as motor trade organisations, passenger groups and skills organisations.

More information about the group's membership and meetings is on the Transport Scotland website. Transport Scotland funded KPMG to perform secretariat and research services for the group. **Zero Emission Mobility Industry Advisory Group | Transport Scotland**



MSIP team celebrating success and collaboration during COP26.



COP 26, Route Zero event

This report now sets out an expanded version of the group's original vision along with actions that the group sees are required to move the sector towards delivering that vision.

- I. Innovation ecosystem development
- II. Skills
- I. Inward investment and capital investment
- II. Trade and export
- III. Public procurement for innovation
- IV. Supply chain opportunities
- V. Collaboration
- VI. Infrastructure

Also included are case studies that show progress being made towards the vision along with some priorities for the medium term.

2. Vision

Success means a future where Scotland's vibrant automotive sector is a major employer supporting skilled, green jobs in the development, manufacture and deployment of zero emission vehicles, components and related supply chains and infrastructure.

Scotland has already made many advances in this area in recent years. The vision is to see the following developments continued, consolidated and fully realised over the long-term. Success will include products developed in Scotland being part of our growing export market for green technologies, including in the fields of batteries, fuel cells and heavy duty vehicles, alongside innovative new forms of personal travel, notably for people with reduced mobility. Additionally, Scottish businesses have developed close working partnerships with other, global automotive companies.



Graduate skills development is important to Scottish Companies like Alexander Dennis.

A long-term key to Scotland's success will have been the unified support from its public sector, including economic development agencies, alongside a closely connected community of technology suppliers, system integrators, designers, engineers and researchers.

The emergence of several industrial clusters and innovation hubs will have been driven by a strong innovation agenda, and supported by several key strategic activities, including:

- Early investment in **developing an innovation ecosystem**;
- Harnessing and building on the internationally-recognised reputations of Scotland's universities and research centres;
- Investment in facilities to test and demonstrate innovation; and
- The creation of a network of post-graduate researchers helping businesses push the boundaries of technology development and commercialisation.

Looking forward, an early focus on **identifying and addressing existing and emerging skills gaps** across the product lifecycle and supply chain will have ensured that Scotland's automotive sector, its workforce, the garages that maintain vehicles, and the Scottish fleets that use its zero emission vehicles were primed for the transition.

Scotland's ability to attract **inward investment and patient capital** will have created growth and diversification opportunities for Scottish companies in developing and supplying technologies, enabling companies to compete successfully in the highly competitive global markets, and enabling key sectors to move early to deploy zero emission vehicles.

A successful sector will have seen Government, industry and academia in Scotland working to successfully **develop global export markets** for products and intellectual property created in Scotland and sold across the UK and around the world. This included strengthening existing trade opportunities and developing new markets as well as Scottish businesses collaborating to take advantage of existing international supply chains to access new markets.

After a vital period where the public sector acted as catalyst for innovation by helping to de-risk major projects through **public procurement, grant support and research and development funding for innovation**, Scotland's industry will have worked to **build domestic supply chain opportunities** and

resilience, identify opportunities to collaborate on product development, engage in innovation and encourage diversification from other sectors with established capability in Scotland.

To reach success Key players in the industry will have worked with **collaboration fostered** between manufacturers, academics and end-users to develop research, projects and intellectual property.

Scotland's early focus on **installing fuelling and charging infrastructure** will have achieved a transition to net zero in transportation which has allowed fleets to move to zero emission vehicles, unconstrained by infrastructure, adopting the right vehicle types for the most appropriate purpose.

3. Delivering the vision

I. Strengthen the Innovation Ecosystem

Scotland should strengthen its zero emission mobility innovation ecosystem by: harnessing and building on the internationally recognised reputations of its universities and research centres; investing in facilities to test and demonstrate innovation; and establish a network of post graduate researchers helping businesses push the boundaries of technology development and commercialisation.

Case Study

Michelin Scotland Innovation Parc

Michelin Scotland Innovation Parc (MSIP) is an ambitious joint venture between Michelin, Dundee City Council, and Scottish Enterprise, created to generate economic growth in Scotland and support a fair and just transition to a net zero economy.

MSIP is transforming the 32-hectare Michelin Tyre Factory to become a home for innovators, manufacturers, and skills leaders to develop and advance sustainable mobility and decarbonisation technologies. With close links to world leading institutions, including the University of St Andrews, the University of Dundee and Abertay University, it creates an environment for collaboration between industry and academia.



MSIP's 32 hectare site, including sustainable energy sources on offer at the Innovation Parc.

The Innovation Parc includes industrial space, an innovation campus, the MSIP Skills Academy as well as business and innovation support, and competitive, green and sustainable energy.

Key to the success in setting up MSIP has been partnerships between industry, academia, government and the local community to transform Dundee into a key location for innovation that will progress emerging technology for a greener future.



Design render for MSIP's Innovation Labs and Makerspace

Priorities

Gaps in the zero emission mobility innovation ecosystem should be identified by reviewing existing facilities, networks and access to funding and those gaps should be addressed.

A zero emission mobility innovation engagement group could be established to respond to innovation challenges, promote the development of innovation projects across Scotland and to link with other innovation actors such as those in logistics, finance and town planning.

An innovation fund should be considered to provide support for innovators to scale up their manufacturing capability in Scotland and bring the development and testing of new technologies to Scotland, with a particular focus on batteries, fuel cells and zero emission heavy duty vehicles.

Industry could work more closely with education centres to ensure skills development for innovation is in place across the range of areas required including engineering and design skills as well as management, operations, safety and quality.

II. Identify and Address Existing and Emerging Skills Gaps

Scotland should identify and address skills gaps across the product lifecycle and supply chain to ensure it is primed for the transition to zero emission mobility.

The second is the extent to which Scotland has the skills necessary to support the transition to low carbon/zero emission heavy duty vehicles. The [final report](#) on this was published in October 2021.

Transport Scotland is working with an industry-centred steering group (made up from representatives from skills delivery organisations, the automotive and road haulage industry, as well as a business operating in the zero emission heavy duty vehicles space) to guide the research and consider the issues raised in the final report. This will lead to an action plan of activities to address the key findings and to inform our priorities for our skills development activities.

Additional to these evidence-gathering exercises, Transport Scotland is supporting the implementation of Scotland's Climate Emergency Skills Action Plan (CESAP) through participation in Skills Development Scotland's Implementation Steering Group and the Scottish Government's Green Skills Forum.

Transport Scotland is also developing a skills strategy setting out actions to make the most of the economic opportunity of the shift to zero emission mobility.



EV skills demonstration at West Lothian College, in partnership with ESP.

Case Study

Skills collaboration

Collaboration between Government, education and industry has been central to the initial work done to address the skills gaps in the transition to a zero carbon transport sector.

Transport Scotland has led on commissioning research to analyse the skills baseline and requirements including those for two important areas.

The first is the mass uptake of ultra-low emission cars and vans, to ensure that workers now and in the future have the skills they need to secure high quality and sustainable jobs. [This report](#) was published in November 2020.

Throughout that work, academic and business organisations, such as the SMTA, the IMI, ESP, Scottish Enterprise, Skills Development Scotland and SRPe were involved, to ensure a collaborative approach for developing the right skills base to meet the future market demands. This includes our ongoing work with ESP – previously the Energy Skills Partnership - to support Scottish colleges to build capacity and capability to provide EV skills training courses.

Priorities

Industry should continue to work with the Scottish Government on the Heavy Vehicles Skills Steering Group to address the issues raised in the Heavy Vehicles Skills Baselining final report. This will inform priorities for skills development activities in Scotland. Consideration could be given to similar work on skills development for niche and flexible forms of transport, which are of particular importance in city centres, in rural areas, in education and for special needs groups. Examples include community/social transport minibuses, school minibuses and the taxi sector.

Industry should continue to work with the Scottish Government to help develop a strategy for zero emission mobility skills to ensure Scotland is best placed to make the most of the economic opportunity.

Industry and Government should continue to support Scottish colleges and universities to develop and deliver the skills required to work safely with zero emission vehicles, high-value skills required to support innovation in the sector and the full range of business and management skills required to develop the industry.

Case Study

Driving the Electric Revolution Industrialisation Centre – Scotland

Driving the Electric Revolution Industrialisation Centre – Scotland (DER-IC Scotland), is a part of the UK network of Driving the Electric Revolution Industrialisation Centres. The centre has been established to support industry and government in delivering domestic supply chain growth to achieve net zero and capitalise on the related industrial opportunity, in Power Electronics, Machines and Drives (PEMD). The centre draws on capability in Scotland at Universities of Strathclyde (including NMIS and PNDC), Glasgow, Edinburgh and St Andrews (including Hydrogen Accelerator and LOCATE).

In 2021, the centre focussed on work with Industry and Government in Scotland to support supply chain growth.



PNDC, providing real-world systems validation for transport decarbonisation.

III. Attract inward investment and patient capital

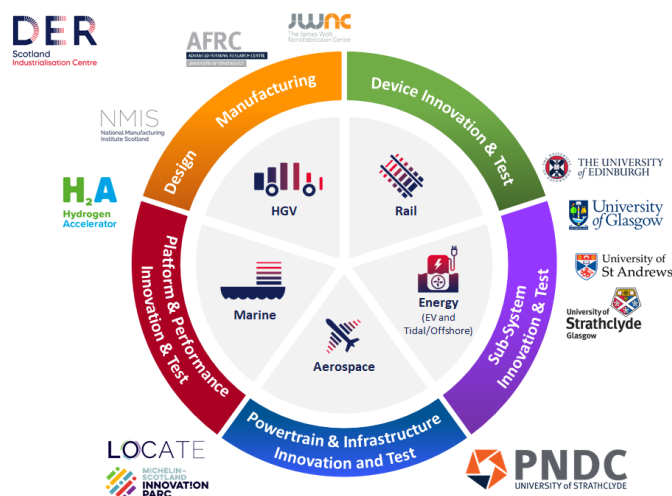
Scotland should attract inward investment and patient capital to create growth and diversification opportunities for Scottish companies in zero emissions mobility. This would help to enable Scottish companies to compete successfully in the highly competitive global markets, and key sectors to move early to deploy zero emission vehicles.

Case Study

Low Carbon Applications Test Centre – LOCATE

The Low Carbon Applications Test Centre, known as LOCATE, is a powertrain test bed which was developed as part of a joint Low Carbon Transport Programme by Scottish Enterprise and Transport Scotland. It will be sited at MSIP in Dundee – the home of sustainable mobility in Scotland (see case study above).

The project is being led by the Hydrogen Accelerator based at the University of St Andrews, in partnership with the University of Strathclyde, Transport Scotland, MSIP and Scottish Enterprise.



DER Industrialisation Centre Scotland has been established to offer a complete cycle of support for development of PEMD for electrification of transport and decarbonised energy systems.

LOCATE has a particular focus on zero emission, heavy duty vehicles and will assist OEMs and system integrators in their product development and accelerate their route-to-market. It will deliver the following technical and economic benefits:

- An open access testing facility for the development of battery electric and fuel cell electric powertrains particularly for zero emission heavy duty and niche vehicles, such as gritters, bin lorries and tractors
- System testing and validation, including optimised integration of components
- The ability to demonstrate that individual duty cycle requirements and vehicle performance benchmarks can be met
- Accelerated development and deployment of hydrogen fuel cell and battery vehicles
- Enabling of collaborative projects to deliver zero emission deployment targets
- Furthering skills development to create skilled, high value jobs in Scotland

The LOCATE facility will complement the existing network of facilities available in Scotland including those of the Power Networks Demonstration Centre in propulsion and powertrain systems. LOCATE will play a critical role in developing Scotland's zero emission transport ecosystem.



Ballard Motive Solutions' (formerly Arcola Energy) rail engineering team at Bo'ness.

Priorities

Decarbonisation of transport is one of nine opportunity areas identified in the Scottish Government's Inward Investment Plan. Industry should continue to work with the Scottish Government and its agencies to set a clear indication of market demand for zero emissions mobility technology over the next 10 years, and work towards developing a market demand forecast to give clear signals for investment in the sector.

To become a global destination for innovation, the sector could promote its readiness for collaboration in hydrogen, battery, heavy duty and niche vehicle innovation challenges. In the short-term, prospectuses showcasing these capabilities could be developed.

Scottish industry and Government should work jointly to engage with the investment community to allow them to understand the planned changes to the transport system in Scotland and to enable them to make informed decisions for the short and long term.

Clear signals from Government to the investment community on current and planned future investment in the sector will help encourage private sector investment.

IV. Develop Global Export Markets

Government, industry and academia in zero emissions mobility in Scotland should work to develop global export markets for products and intellectual property created in Scotland. This should include strengthening existing trade opportunities and developing new markets, as well as collaboration between Scottish businesses to take advantage of existing international supply chains to access new markets.

Case Study

Alexander Dennis

ADL is the UK's largest bus and coach builder with a history dating back to 1895, and a major employer in Scotland's central belt, innovating and investing in developing the market's widest range of low, ultra-low and zero emission buses. ADL is pleased to have partnered with other organisations, academia and the public sector as part of Transport Scotland's Industry Advisory Group to help achieve their vision of a decarbonised automotive sector in which Scotland achieves economic benefit.

The Scottish Government has led the way in supporting bus operators' commitment to invest in cleaner, greener buses with two highly successful rounds of funding from SULEBS and the forthcoming ScotZEB scheme. Its investment in locally manufactured zero emission buses such as ADL's electric and hydrogen buses manufactured in Falkirk with the associated extensive supply chain, will underpin Scottish, skilled jobs and apprenticeships that are vital for the transition to net zero.



ADL zero emission bus en route to COP26 blue zone (dual branded hydrogen fuel cell and battery electric)

A strong domestic market is also required for continuous investment in new product development, for the UK and international markets. Without this foundational bedrock to ADL's business from designing, engineering and manufacturing zero emission buses in the UK, the company would not have been able to expand its range to include battery electric buses for North America, New Zealand and Hong Kong, which is a particular achievement, being in such close proximity to the global heartland of battery electric bus manufacture in China.

Priorities

Industry should continue to work with Scottish Government and SDI to identify the potential to work on export opportunities with existing technologies and markets, as well as new ones.

More could be done by industry and the Scottish Government to develop existing international networks to connect with international centres of expertise and to share learning.

Government and industry could work together to strengthen links to key export markets to allow business to understand and adapt to specific market requirements as part of their product and service development plans.

V. Public Procurement for Innovation

Scotland's public sector, industry and academia should work to deliver a new generation of domestically developed and produced zero emission vehicles and infrastructure, harnessing public sector procurement for major projects and public sector fleet to act as a catalyst for de-risking innovation.

Case Study

Emergency One

Scottish based company, Emergency One (E1), launched the world's first electric fire engine in 2020 from Cumnock. The new E1 EV0™ fire engine uses battery power for both its engine and water hose pump and is a direct result of significant innovation work by E1. With an output of 250 vehicles a year, E1 is the UK's largest manufacturer of specialist fire and rescue service vehicles and equipment.

Scottish Enterprise's innovation teams worked closely with the company to develop the project and awarded a £500,000 grant in 2019 as a contribution towards the company's £1.7m research and development in the new vehicle.

The company is now poised to target international markets with the new net zero emergency vehicle.

Director Steven Bell who confirmed the launch at COP26 stated: "It was great to see such a positive response for our E1 EV0™;

a lot of hard work and dedication went into this project, and we have seen interest in customers from France to the USA.

Customer response so far demonstrates that the want and need for this technology is there. With a tagline of “zero emissions, zero compromise” for the EV0, we wanted to take our organisational commitment to the next level and ensure that the company as a whole also met this ethos. The decision to offset our factory carbon footprint today was a logical choice and one we had to make.”

With government pressure on local authorities to plan for and deliver electric vehicle infrastructure, and move towards zero emission vehicle fleets, the E1 EV0™ launch has provided fire and rescue services with a proven solution for their future fire

appliance fleets. The company continues to develop its range of low and zero emission specialist vehicles and achieving net zero status for its manufacturing operations was an important aspect of its ambitious environmental targets, whilst also recognising its customers’ responsible procurement goals.



The World's First Fully Electric Fire Engine, the E1 EV0™.

Case Study

Glasgow City Council Hydrogen RCVs

In November 2019 the council approved a Fleet Strategy 2020 – 2030 which commits the council to decarbonise its fleet no later than 2030, and with the aspiration for that to be nearing completion within half that time.

The council has already made a significant start in moving its 3,000 strong fleet to zero emissions vehicles with over 300 EVs, 20 dual fuel hydrogen gritters and a full battery electric refuse collection vehicle (RCV) now in service.

The strategy dictates a broad split of battery electric for cars and vans, and hydrogen for heavy fleet. A great deal of research went into the selection of hydrogen as the optimum alternative fuel solutions. Whilst Glasgow is not a big city, in relative terms, it is recognised as having arduous duty cycles which are challenging from an operational perspective.

To convert the policy into action the council secured funding support from Transport Scotland to develop a hydrogen fuel cell (HFC) RCV prototype, repowering an existing council RCV. This was to robustly test the use and fuelling aspects of hydrogen before the wider deployment.



Hydrogen-powered RCV development vehicle for Glasgow City Council.

Funding was also secured to procure a temporary hydrogen refueler, which is now on site and dispensing hydrogen, to support the gritters and early 2022 the first of the HFC RCVs.

Early feedback on the prototype project enabled the council to run a competitive tender process to procure 19 new build HFC RCVs and secure a long term supply agreement for “Green” hydrogen.

The contract for the supply of 19 new build HFC RCVs was secured by Ballard Motive Solutions (formerly Arcola Energy), who are developing manufacturing capability at the Michelin Scotland Innovation Parc in partnership with Dunfermline-based Farid Hillend Engineering.

Priorities

Industry should work with the Scottish Government to build on learning from work in this area to date to develop more potential procurement for innovation with local authorities and other public sector fleet owners.

Adapting to new ways of procuring innovative solutions could be a focus for skills development in public sector bodies.

VI. Build domestic supply chain opportunities

Scotland’s zero emission mobility industry should work to build a high quality, resilient domestic supply chain, identify the critical gaps and addressing/ mitigating these by developing opportunities to collaborate on existing product development, engage in open innovation, and encourage diversification from other sectors with established capability in Scotland.

Case Study

Hydrogen Accelerator

Funded by Transport Scotland, the Hydrogen Accelerator is a partnership between the University of St Andrews and the University of Strathclyde.

The Hydrogen Accelerator is focused on developing and supporting world-leading hydrogen projects, placing Scotland at the forefront of innovative decarbonising solutions, in particular those relating to hydrogen and hydrogen-based technologies in transport.

Working across all sectors such as public, private and academia, it aims to accelerate the deployment of hydrogen and hydrogen related technologies in Scotland, thereby creating high value green jobs and building Scotland's expertise and skills in zero carbon mobility. Since its launch in late July 2020, the Hydrogen Accelerator has acted as an enabler of hydrogen technologies in Scotland's growing green economy with achievements including

the successful procurement of phase 2 of the Zero Emission Train project and leading the development of the Low Carbon Applications Test Centre (LOCATE).

The Hydrogen Accelerator has also provided technical advice including providing evidence to the Scottish Parliament's Rural Economy and Connectivity Committee to support policy development, supply chain development to support the creation of high value jobs and skills required to grow the hydrogen economy in Scotland, support to SMEs already in the hydrogen sector or to those looking to transition.



The Scottish Hydrogen Train Project.

Priorities

The heavy duty vehicle industry and Government should work together to develop a pathway for decarbonisation including working with Government agencies to form an heavy duty vehicles decarbonisation group, providing leadership to support smaller operators.

Industry and Government could work to leverage domestic capability in battery and hydrogen technology development to build further heavy duty and niche vehicle specialisms.

Scotland could build on the legacy of skills in the oil and gas sector in quality and health and safety to develop expertise for the heavy duty and niche vehicle sector.

VII. Foster collaboration

Scotland's industry, aided by Government, should work collectively and individually to foster increased collaboration with academia, the third sector and end-users to develop targeted research, projects and generate intellectual property.

Case Study

Bus Decarbonisation Taskforce

The Bus Decarbonisation Taskforce was established as a sub-group of the ZEM IAG following the work the IAG did looking at key opportunity areas for Scotland. It is a short-life group made up of leaders from the energy, finance, bus operating and bus manufacturing sectors, with one task: to co-design a pathway to a fully zero emission bus fleet in Scotland.

As of January 2022, the group has met four times. The first meeting was to agree its guiding vision and to set out the hurdles and opportunities in transitioning to zero emission.

The second focussed on finance, as that was considered the biggest hurdle to deployment. Existing, emerging and potential financial models that fit the characteristics and cost profiles of zero emission buses and infrastructure, rather than the status-quo models for diesel systems, were published in the Taskforce's Information and Ideas Pack.

The third focussed on the electricity and hydrogen infrastructure needed to support zero emission buses. This led to the production of a Guide for Fleet Operators, written by Scotland's two electricity network operators, setting out how to approach electrification of depots (of all types, not just bus depots).



Electric buses at First Glasgow's Caledonia Bus Depot.

The fourth concentrated on supply-chain and circular economy, with the taskforce discussing Zero Waste Scotland's research into circular economy for batteries, and agreeing to work closely with ZWS and Scottish Enterprise to put that research into action.

To date, Scottish Government and bus operators have each invested over £70 million in 272 zero-emission buses, three quarters

of which are being built in Scotland, supporting quality, green jobs.

To further support and encourage the changes in the market being discussed by the taskforce, Scottish Government has replaced the Scottish Ultra Low Emission Bus Scheme with the Scottish Zero Emission Bus Challenge Fund. This fund is designed to stimulate increasing commercial investment and a self-sustaining commercial market for zero-emission buses.

The fifth meeting, scheduled for February 2022, will explore how to ensure a 'just transition' to zero emission buses across the country, and the last meeting in summer 2022 will finalise the pathway.



Lothian Buses introduced Edinburgh's first electric double deckers, supplied by Alexander Dennis.

Priorities

More input from industry with existing networks including the Sustainable Mobility Cluster Builder, the ZEMANS network and the Hydrogen Accelerator is important in supporting the sharing of knowledge, including funding sources, and to foster collaboration.

Continued engagement from Government with industry on key action areas such as innovation could help support public and private sector collaboration. For example a group similar to the short-life Zero Emission Industry Advisory Group.

Government and industry could work together to develop greater cross-border and international collaboration, for example, identifying opportunities for Scottish Government to use its membership of international networks such as the Zero Emission Vehicle Community and the Transport Decarbonisation Alliance to proactively introduce Scottish companies and institutions to governments, agencies and potential commercial partners in other countries.

A greater focus could be placed on themes relating to zero emission mobility in Government's engagement with Horizon Europe and other multilateral funding programmes, providing increased intelligence on opportunities for participation.

VIII. Installing Refuelling and Charging Infrastructure

The zero emissions mobility Industry in Scotland should work with Government to build on initial work on the battery electric vehicle charging deployment programme to deliver enabling infrastructure for zero emissions vehicles across all zero emissions mobility technology. Industry and government should work with the consortium for hydrogen in Scottish transport, as referenced in the draft Hydrogen Action Plan, to establish hydrogen refuelling to support the use of hydrogen across all appropriate modes of transport.

Case Study

Project PACE

Project PACE drives electric vehicle charge point growth and efficiencies

The widespread roll-out of Electric Vehicle (EV) charging points is essential to meeting the Scottish Government's net zero and carbon reduction targets. The availability of public charging infrastructure will encourage car users to switch to zero emission vehicles with greater confidence.

Project PACE was formed to trial the approach of an electricity network provider leading on the planning and installation of public EV charge points at a regional scale. The project received £5.3million of Scottish Government funding, with oversight from Transport Scotland. It was led by SP Energy Networks, which also contributed funding primarily through its Green Economy Fund, and was facilitated by North Lanarkshire Council and South Lanarkshire Council.

The first phase of the project involved a sophisticated site selection study carried out by SP Energy Networks which focused upon car parks owned by North Lanarkshire Council

and South Lanarkshire Council. The second phase of the project involved installing public EV charge points on a short-list of optimal sites.

By choosing charging locations that make effective use of the existing electricity network, SP Energy Networks estimated potential savings of between £34,000 and £64,000 in electricity grid connections for each new location. This equated to potential savings of between £1.5million to £2.8million across all the planned sites.

SP Energy Networks estimates that using the same site selection approach across other regions could save £26million in Scotland and £310million across the UK.



First Minister attends the launch of the strategic partnership in August 2019.



ChargePlace Scotland EV charger installed at Strathclyde Country Park under Project PACE

The first EV charging hub was opened in August 2020. With a programme of rapid deployment, all 44 EV charging hubs were completed by August 2021 resulting in additional 167 public charge points being added to the ChargePlace Scotland Network. The chargers have been used over 85,000 times since the first charger was installed.

Priorities

Industry in Scotland could work with the Scottish Government to identify and address barriers to the expansion of charging networks and fuelling stations for zero emission heavy duty and niche vehicles on and off road, including the development of hydrogen refuelling at a cost that will be acceptable to users.

Enabling infrastructure requirements could be reviewed to identify gaps in charging and fuelling networks, and in testing and maintenance requirements.

The Scottish Government could continue to use the Switched-on Fleets programme to support the public sector transition to a zero emission fleet, and to help stimulate the growth of Scottish supply chain opportunities.

The potential for shared infrastructure and models for shared usage could be considered as part of funded developments.

Scottish Government and Energy network companies could work together to encourage the early engagement of major fleet users with infrastructure providers. This will ensure that infrastructure providers are able to plan or invest ahead of need to accommodate the fleet ambitions of Scottish businesses.

The Scottish Government and Energy network companies should work together to deliver infrastructure in a way that ensures remote or rural communities are not left behind. IAG members and Scottish Government could work with the consortium for hydrogen in Scottish transport mentioned in the draft Hydrogen Action Plan, aiding the co-design of a framework for and establishment of a network of hydrogen multi-modal refuelling stations to support the adoption of hydrogen vehicles across all appropriate modes of transport.