Energy Infrastructure Working Group Meeting

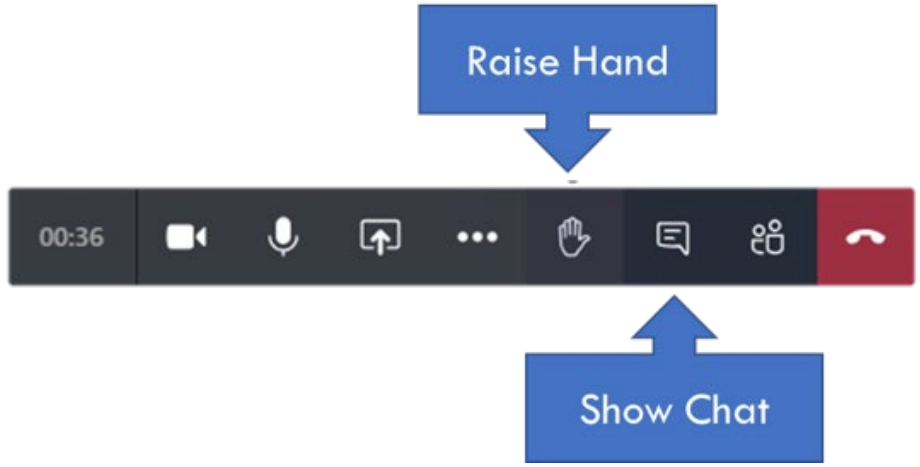
8th May 2025

Zemo Partnership

Accelerating Transport to Zero Emissions

Meeting Etiquette

- Other than presenters, we request that webcams be switched off to save bandwidth for those with less stable broadband connections.
- Mics will be muted while the main presenter talks, but there will be regular dedicated breaks to allow for comments and questions.
- If you do have a question, type it using the chat feature and the presenter/moderator will be able to read your comment and respond accordingly.
- Alternatively, please use the raise hand feature to make it known to the moderator, who will then invite you to unmute your mic.
- **Meeting will be recorded** to assist the secretariat with minute taking only. Recording will not be shared.



Competition Law Statement

Commercial decisions must be taken independently by individual companies.

All participants must be aware that exchange of commercially sensitive information or intimation of intended commercial decisions, directly or indirectly, can result in competition law infringement.

Member conduct at meetings and teleconferences:

There must be no communication of the following information:

- Individual company or industry prices, including differentials, discounts, rebates, allowances, price levels or changes, mark-ups, terms of sale and credit terms.
- Company plans as regards development, design, production, distribution or marketing of products/services, divestments, closures or expansion.
- Rates for production or transportation of products.
- Bids for contracts or procedures for responding to bid invitations.
- Matters relating to individual suppliers and customers/potential customers, progress on negotiations or content of negotiations.

If at any point during a meeting discussion appears to be breaching policy guidelines, the Chair or a participant should immediately raise their concern and close the discussion.

Agenda

10:00 - Arrival

Welcome

- Minutes and Matters Arising

Government Policy Update

- DESNZ/OZEV
- Transport Scotland

Infrastructure Programmes 2025/26

- Electric Freightway, Gridserve
- HyHaul Project

11:00 - Coffee Break (5 mins)

Map of Missing Policies

- Deep dive into Infrastructure Provision

Future Role of Working Group

- How the Working Group should evolve

Member's Roundtable

12:30 - End

VE Day
Observe minute silence at 12.

Minutes and Matters Arising

September 2024 Actions	Response	Status
Incorporation of the Big Ideas into the Delivery Roadmap.	Published in December 2024. (Full Report)	Complete
Development of Zemo Work Programme for 2025/26	High level work programme. (2025 Work Programme) Detailed work programme to be developed from Map of Missing Policies.	On-going

Energy Infrastructure Working Group Roles

There are a number of vacant roles for the Energy Infrastructure Working Group.

The purpose of these roles is to represent the views of the Working Group on the Members Council. The Members Council meets quarterly, reviews cross cutting issues and oversees the Zemo work programme.

- Chair – Vacant
- Representative 1 – Shamala Evans-Gadgil, Coventry City Council
- Representative 2 – Vacant
- Representative 3 - Vacant

If you would like to know more about the roles and the commitment contact members@zemo.org.uk.

Zemo Partnership – Acting Managing Director

Zemo (LowCVP) has been working to decarbonise transport since 2003.

We're changing to meet new challenges.

- Mission remains unchanged
- Evidence based, technology neutral
- Supporting Government in policy formation
- Working with members
- Evolving situation – pivot to delivery
- Engaging senior decision makers
- Policy support – Across UK and its regions
- Major project funding – Making a difference
- Accreditation schemes – supporting the market

Government Policy Update

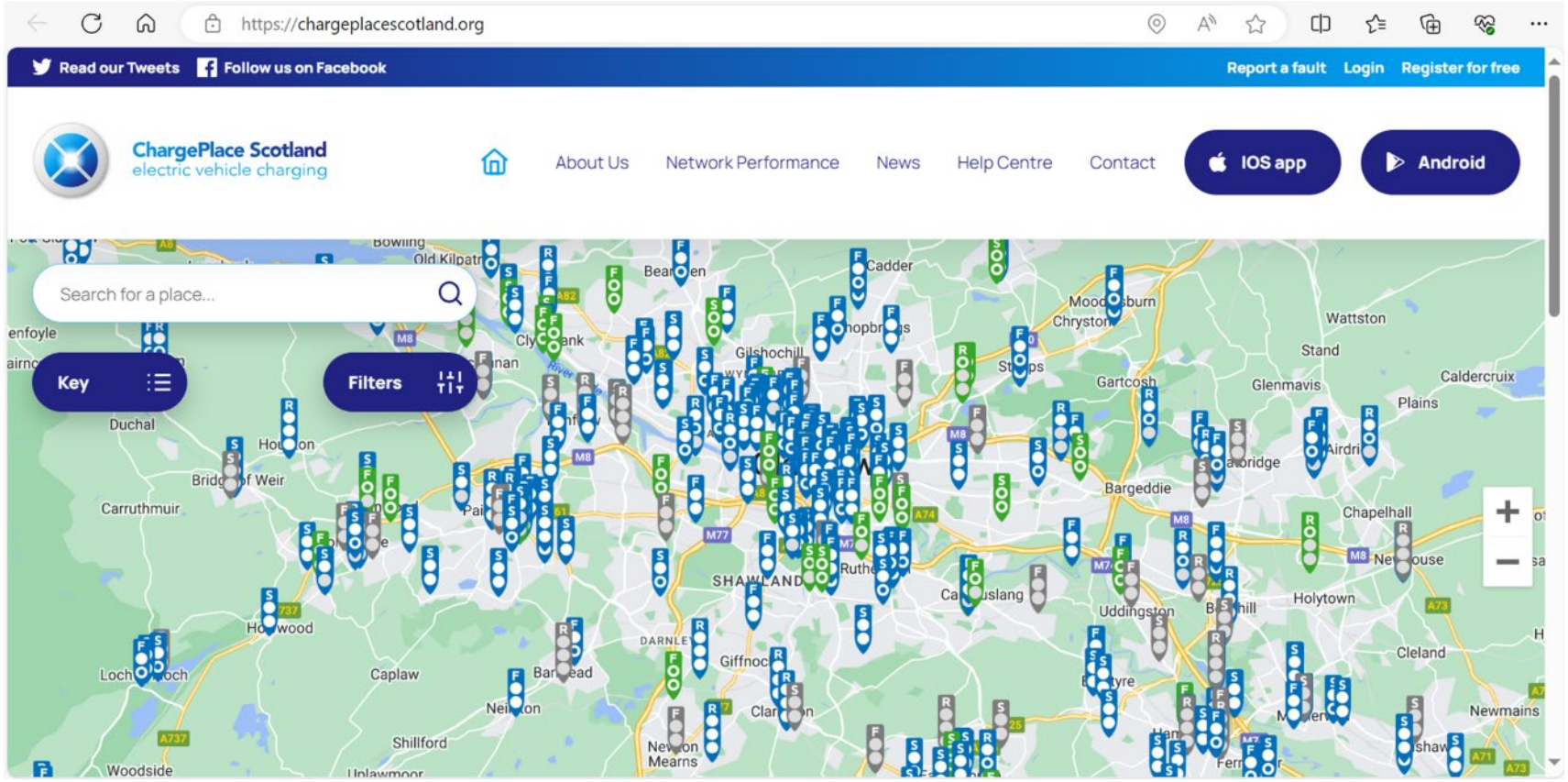
The Transition to EVs in Scotland

Zemo Infrastructure Working Group

8 May 2025

ChargePlace Scotland

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

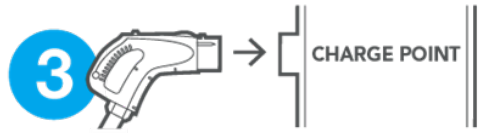


To START session

Begin the Charge Session either by presenting your CPS Access Card, using the App or by Calling **0141 648 0755**...

Plug the connector from the Charge Point into your vehicle...

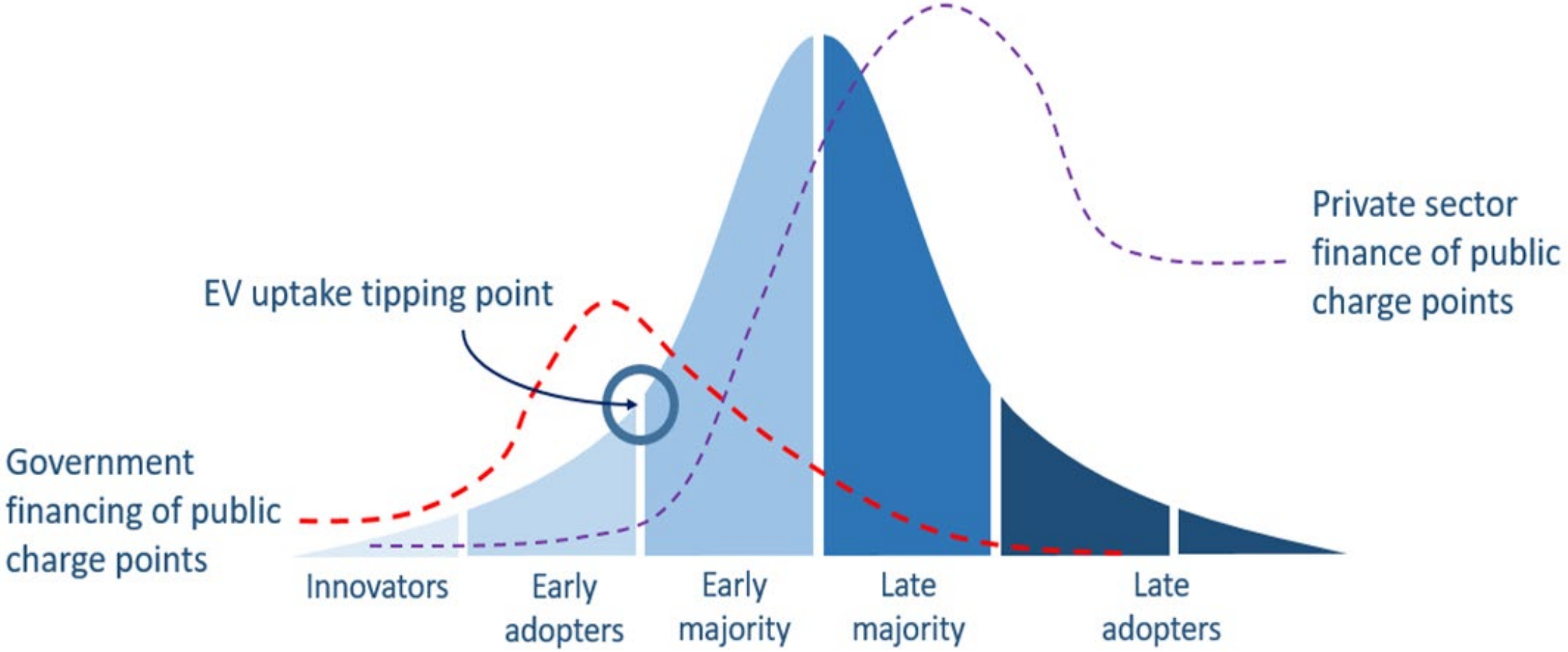
To END session



End the Charge Session in the same way you started. Please place the connector in its holder.

Evolving Driver Expectations

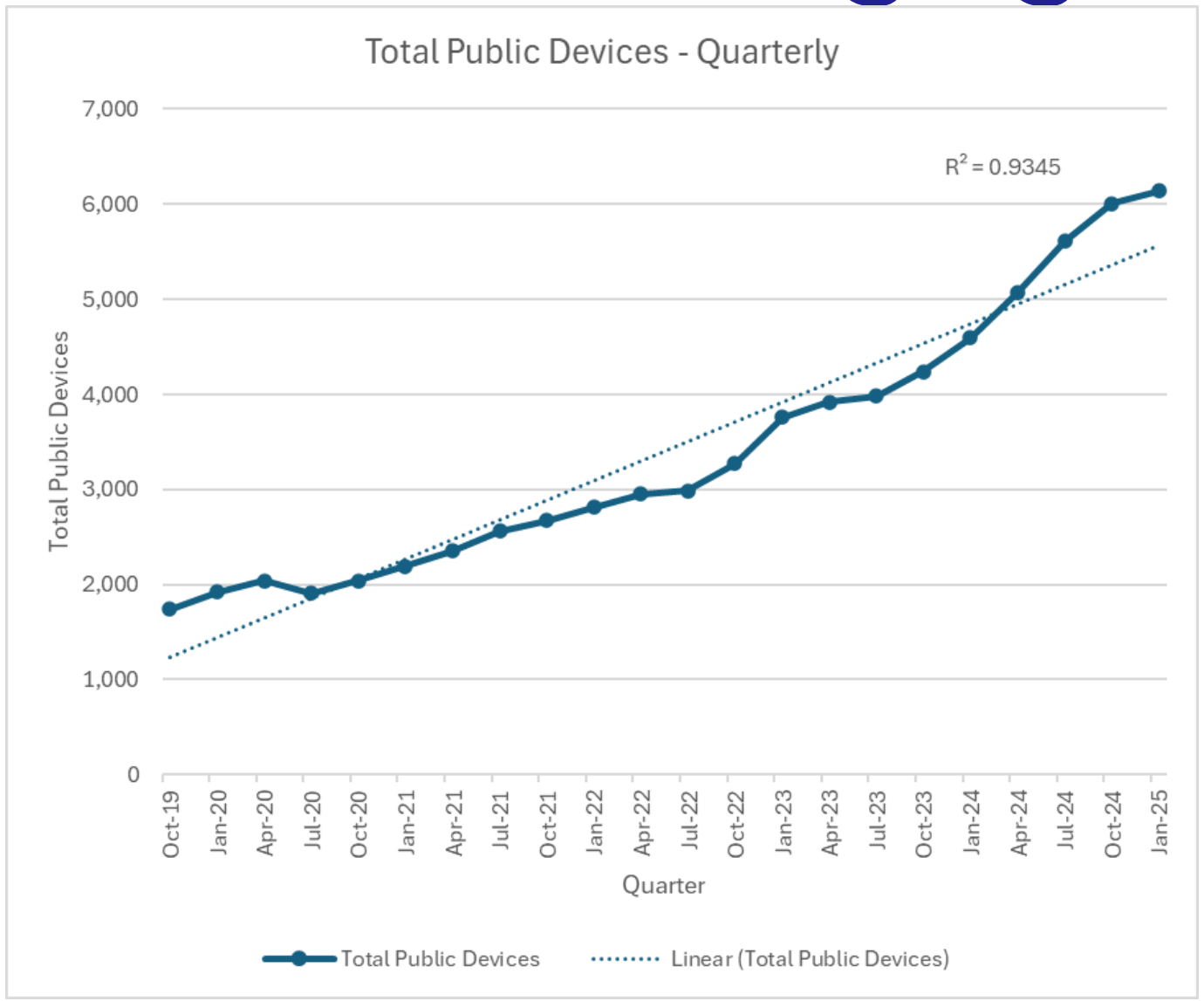
A Changing Market



Growth in Public EV Charging

33.7% Growth rate in 2024

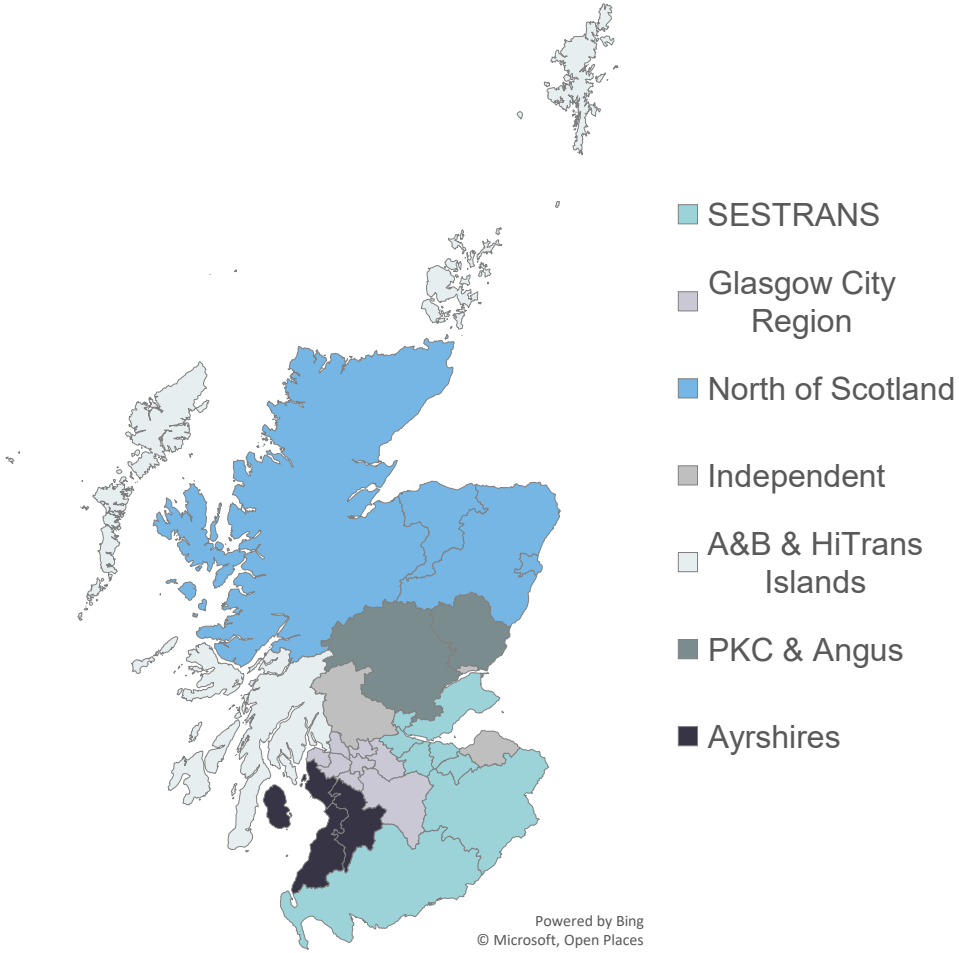
6,704 at the end of March 2025



EV Infrastructure Fund

- £30 million supporting Local Authorities to partner with operators to expand public EV charging.
- Targeting public funding at areas less likely to see private investment
- Local Authorities partnering to aggregate demand.
- Standardised procurement documentation.

Local Authority Collaborations



Vision for Public EV Charging

transport.gov.scot

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

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

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

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

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

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

Draft Vision Implementation plan

- Developed in consultation with stakeholders.
- Identifies 15 key actions to be taken forward by a wide range of stakeholders.
- Identifies a route map for the delivery of approximately 24,000 additional charge points by 2030.
- **Consultation closed 14 March.**

Policy Certainty - ZEV Mandate

- Vehicle Emissions Trading Schemes - secondary legislation under Climate Change Act, laid in all 4-nations' parliaments to ensure consistency across the UK.
- Critical in providing certainty for the companies investing 10s of millions in public EV charging in Scotland.

GOV.UK Menu

Home > Government > Government efficiency, transparency and accountability > Government missions > Clean energy > Phasing out sales of new petrol and diesel cars from 2030 and supporting the ZEV transition

Department for Transport

Consultation outcome

Phasing out sales of new petrol and diesel cars from 2030 and supporting the ZEV transition: summary of responses and joint government response

Updated 7 April 2025

Contents

Ministerial foreword

Last year, over 381,000 electric cars were sold in the UK – more than any country in Europe, and the third highest number of any country in the world. The British public is embracing the move to electric vehicles, benefitting from the cheaper running costs, cleaner air and quieter neighbourhoods that these vehicles bring.

Our domestic vehicle manufacturing industry – an industry that is critical to the UK economy – is embracing this change and rising to the challenge. Collectively, since the announcement of the ZEV Mandate, manufacturers have committed to investing over £20 billion in UK vehicle manufacturing: designing new vehicles, developing new

Future Focus

- UK Government Regulations.
- The accessibility of current public EV charging infrastructure – PAS 1899.
- Those parts of Scotland not currently benefiting from private sector investment.
- Cross-pavement charging.

HGV charging infrastructure

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- Working with fleets and electricity networks to understand where en route HGV charging will be required
- 1% of Scottish-registered trucks reflected in first iteration
- Next iteration coming soon, covering 4% of trucks and reflecting semi-private charging currently being installed in c25 depots under ScotZEB and ZEHID
- Part of the HGV Decarbonisation Pathway for Scotland

The Transition to EVs in Scotland

Zemo Infrastructure Working Group

8 May 2025

Infrastructure Programmes

HyHaul – M4 Corridor Decarbonisation

Project Update

Thomas Lee

HyHaul

HyHAUL – Zemo Update

Thomas Lee

08/05/2025

Funded by UK Government

Meet the Team

Kyle Arnold
Managing Director

Thomas Lee
Chief Engineer

Iris De Guzman
Head of Finance

Alex Spyropoulos
Senior Project Manager

Jon Perry
Commercial Manager

Zero emission HGV and Infrastructure Demonstrator (ZEHID) programme

Delivered in partnership with the Department for Transport

Funded two-year installation and purchasing phase (in 2025/26)	Five year on the road demonstration (until 2031)

Main aims:

- Support commitment to end the sale of new, non-zero emission HGVs by 2035/2040
- Understand the costs and merits of various zero emission HGV technologies, based on large real-world operations (collect data and analyse)

Focus on the heaviest vehicles and the longest routes, will include a range of duty cycles and operators

UKRI Innovate UK

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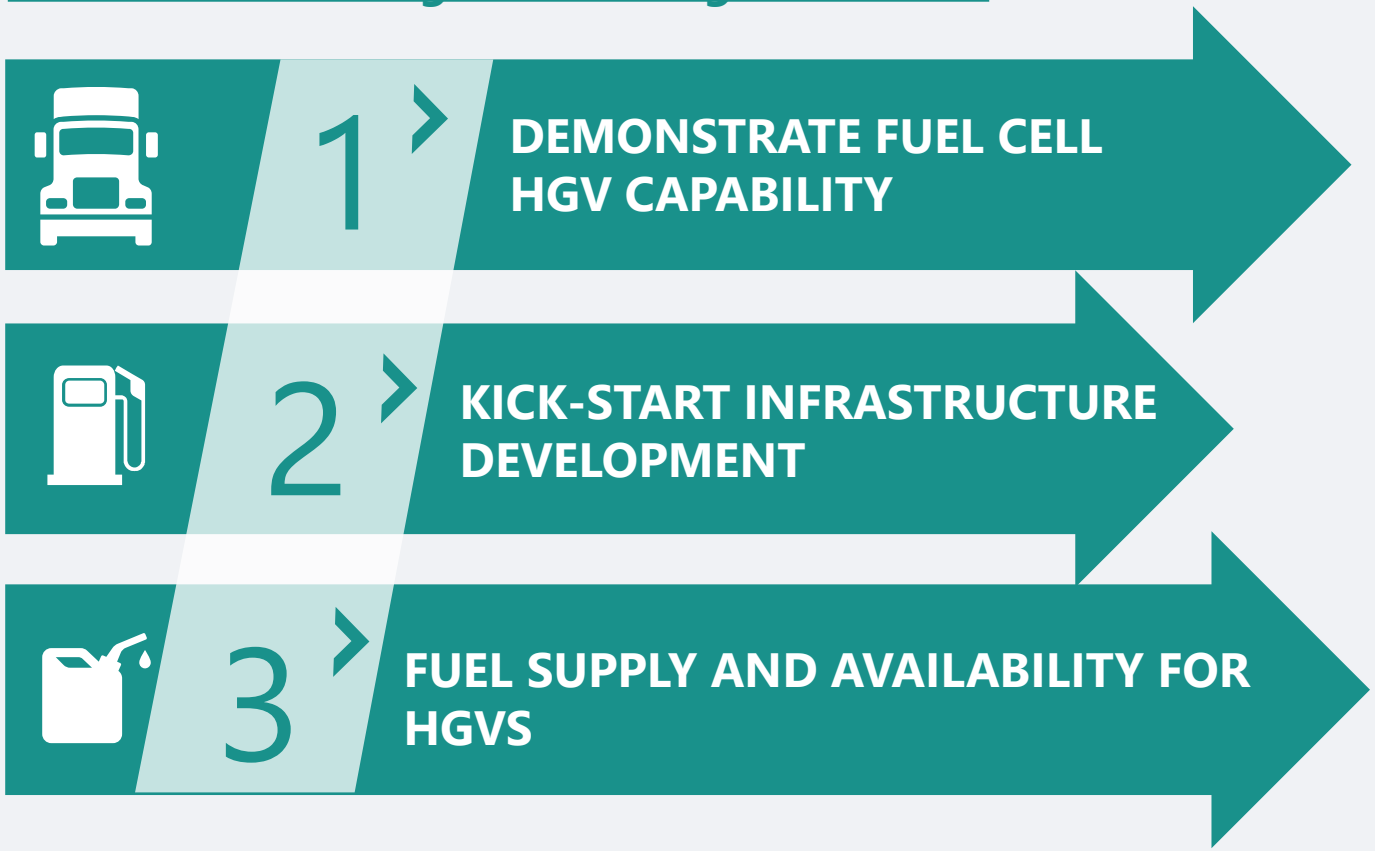
The HyHAUL Objective

Delivered in partnershipA DfT/ InnovateUK Funded Consortium Project via the ZEHID programme

£31.7M Total DfT grant funding to achieve:



By the end of the Project Delivery Period (March 2026):

Deployment of up to **30 FCETs,** majority being >40t artic tractors

Construction of up to **3 fixed refuelling stations**

Security of supply from **multiple hydrogen production projects**

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Vehicle Leases will run to end of February 2031 (i.e. nominally 5 years)

HyHAUL is delivered by experienced industry players

H_2 Supply

Protium and **Marubeni** will provide hydrogen according to the UK low-carbon hydrogen standard. Hydrogen will be sourced from various production projects, some of which already in operation.

H_2 Distribution

Reynolds Logistics will be transporting the hydrogen from the production sites to the refuelling stations. They have vast experience in the transport of industrial gases.

H_2 Refuelling

The hydrogen refueling stations will be operated by **HyHAUL Mobility Limited** (HML), comprised of an experienced team who have built, owned, and operated these stations in the past. HML is a 50/50 JV between Marubeni and Protium, securing supply for the duration of the project.

FCETs

Fuel cell-electric trucks are available from a wide range of OEMs, including **Scania, Quantron, Viritech and Electra**. Vehicles are offered via lease predominantly through HyHAUL's leasing party, **Novuna**.

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Why Focus Heavy Goods Vehicles?

HyHAUL

Dipropionate Emissions

HGV's make up 6% of the UK transport miles, however, account for 21% of emissions (1)

Operational Demand

Double Shifted vehicles and Heavy Loads

Depo logistics

Many Depo's don't have the power avaiblity to install the amount of chargers required.

Known Hydrogen offtake

Commercial vehicles have predictable routes which allows for planned offtake agreements.

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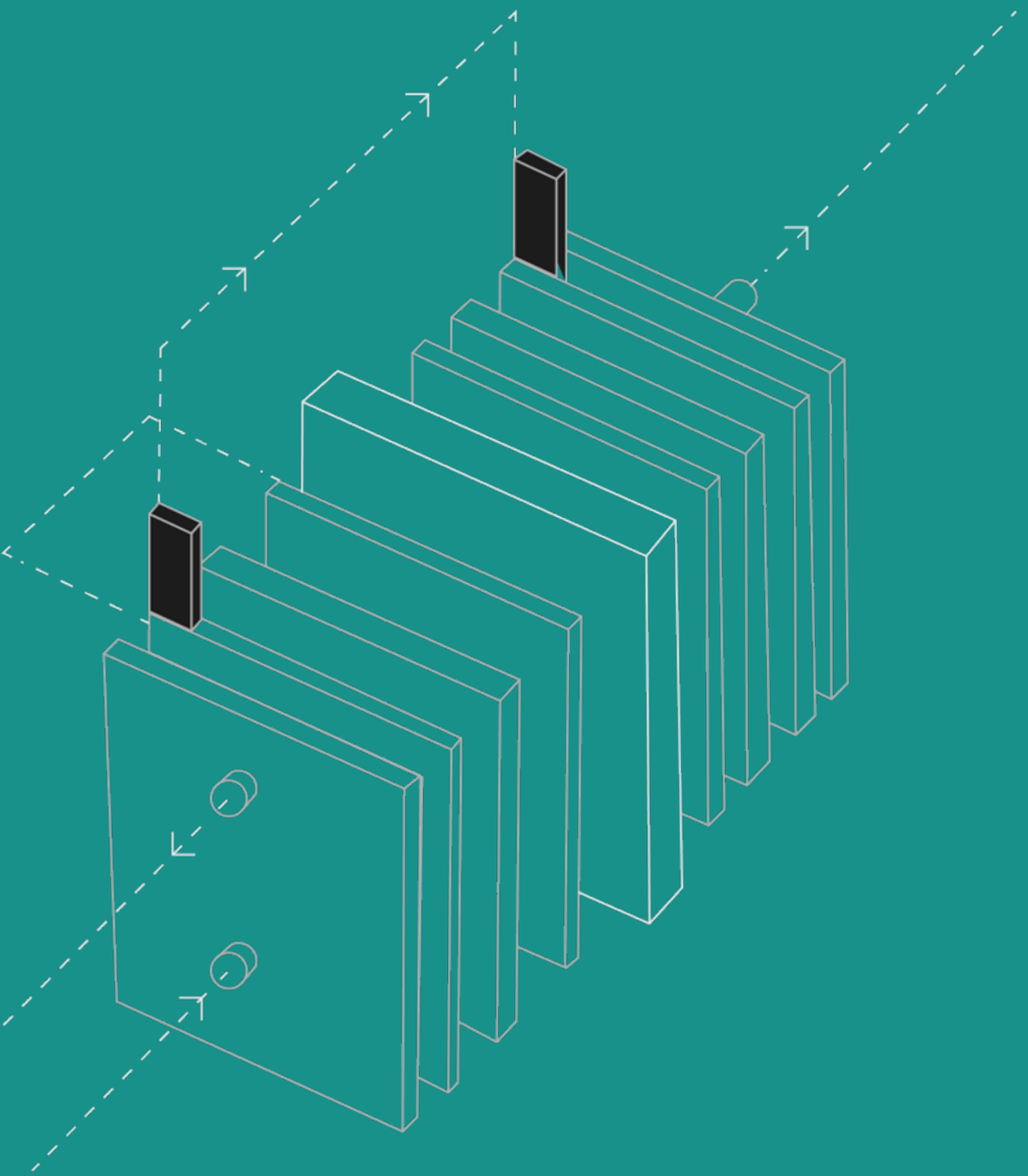
(1) https://www.gov.uk/government/statistics/transport-and-environment-statistics-2023/transport-and-environment-statistics-2023



The Network

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Ambition | Beyond 2026, HyHAUL is destined to expand with interested hauliers and partners, towards the M5 and M6 in the first instance

HyHAUL

M6 **Natural transport network extension**

>20,000 HGVs per day

Integrating **North of UK**, starting from Birmingham

Birmingham **High demand logistics hub**

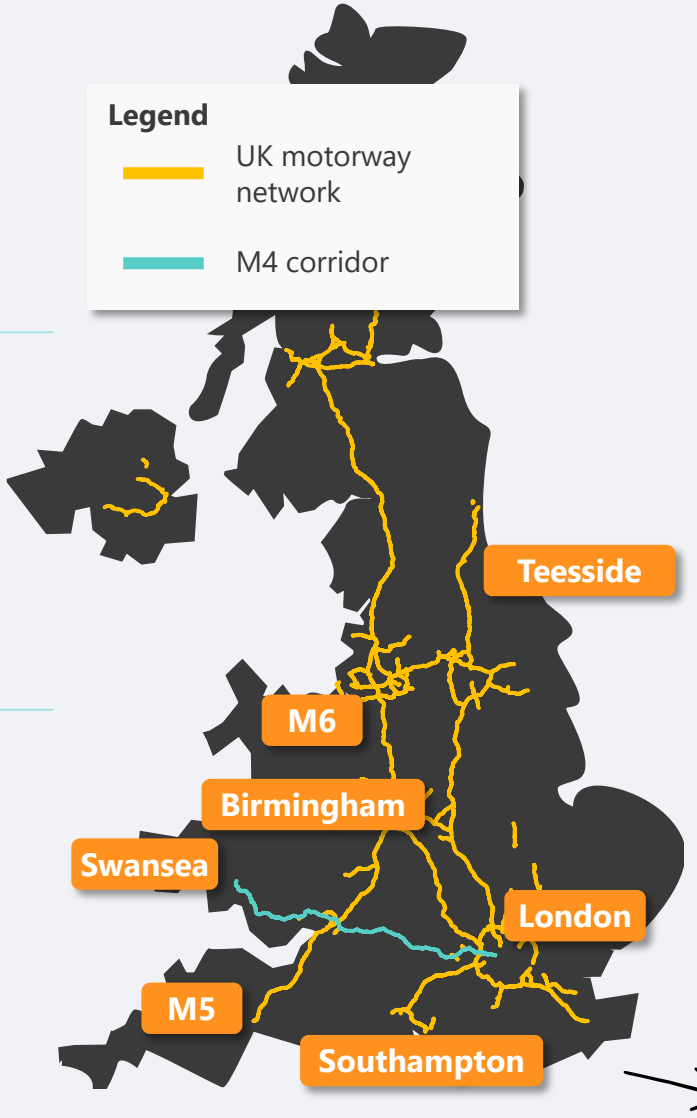
> 23,000 HGVs per day on Gravelly Hill Interchange

Access to **"golden logistics triangle"**

M5 **Natural transport network extension**

> 13,000 HGVs per day

Linking Birmingham and Bristol with **Southeast** of UK



Teesside **High demand industrial hub**

> 2,000 HGVs per day on A174 around Middlesbrough

Hydrogen hub linked via A1 (M)

Southampton **Gate to international logistics**

3rd largest port in the UK, largest hub for non-EU exports

Handling **>1.5 million TEU[1]** per year in port

EU / International **Long-term scale**

3.9 million goods vehicles

>40t representing over **22% of tonne-kilometres** in 2021 in EU

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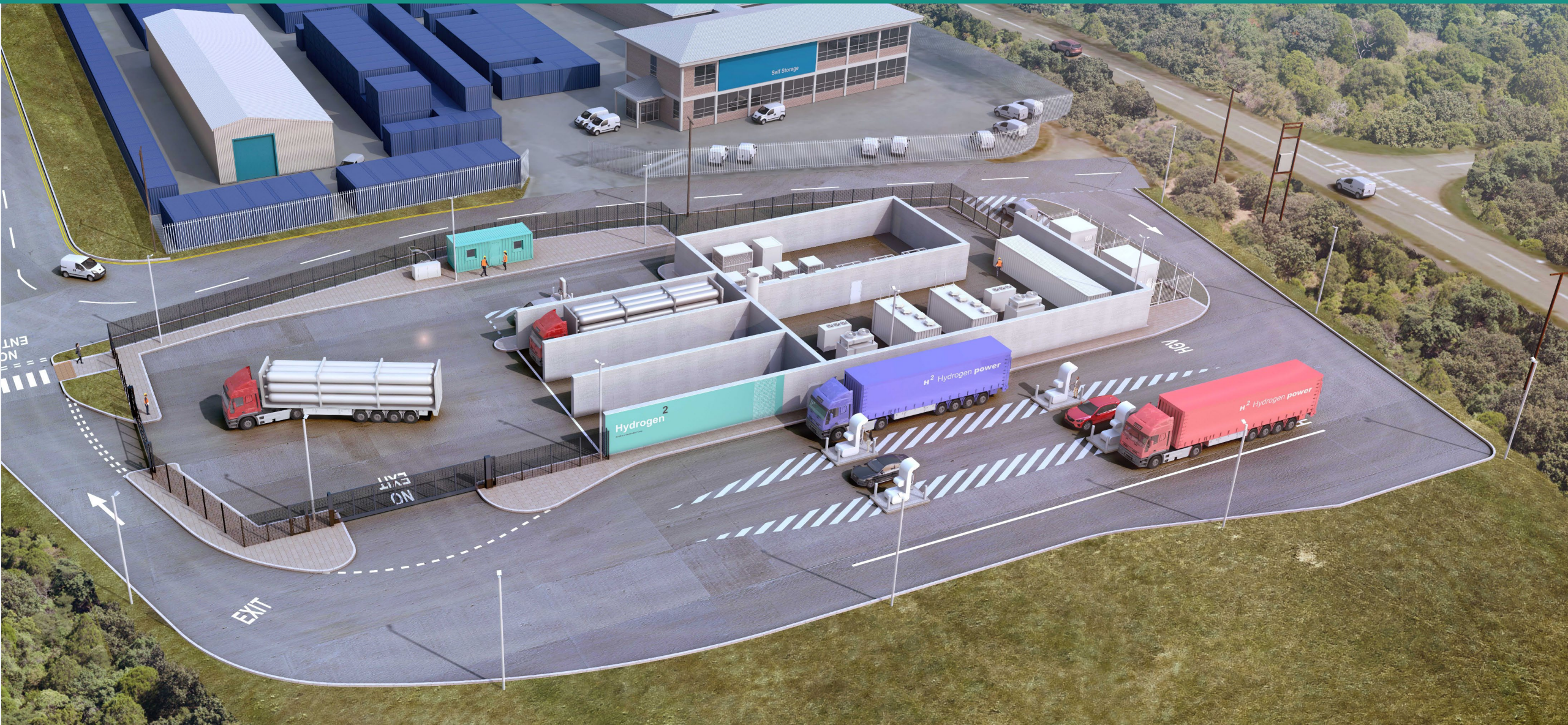
What does a Site Look like for HGV's

HyHAUL



What to expect in a hydrogen refuelling station

HyHAUL

1. Hydrogen source

From tube trailer/on-site production at up to 380bar

2. Compression

Compression to medium (e.g. 500bar) or high (e.g. 900bar) pressure

3. Storage

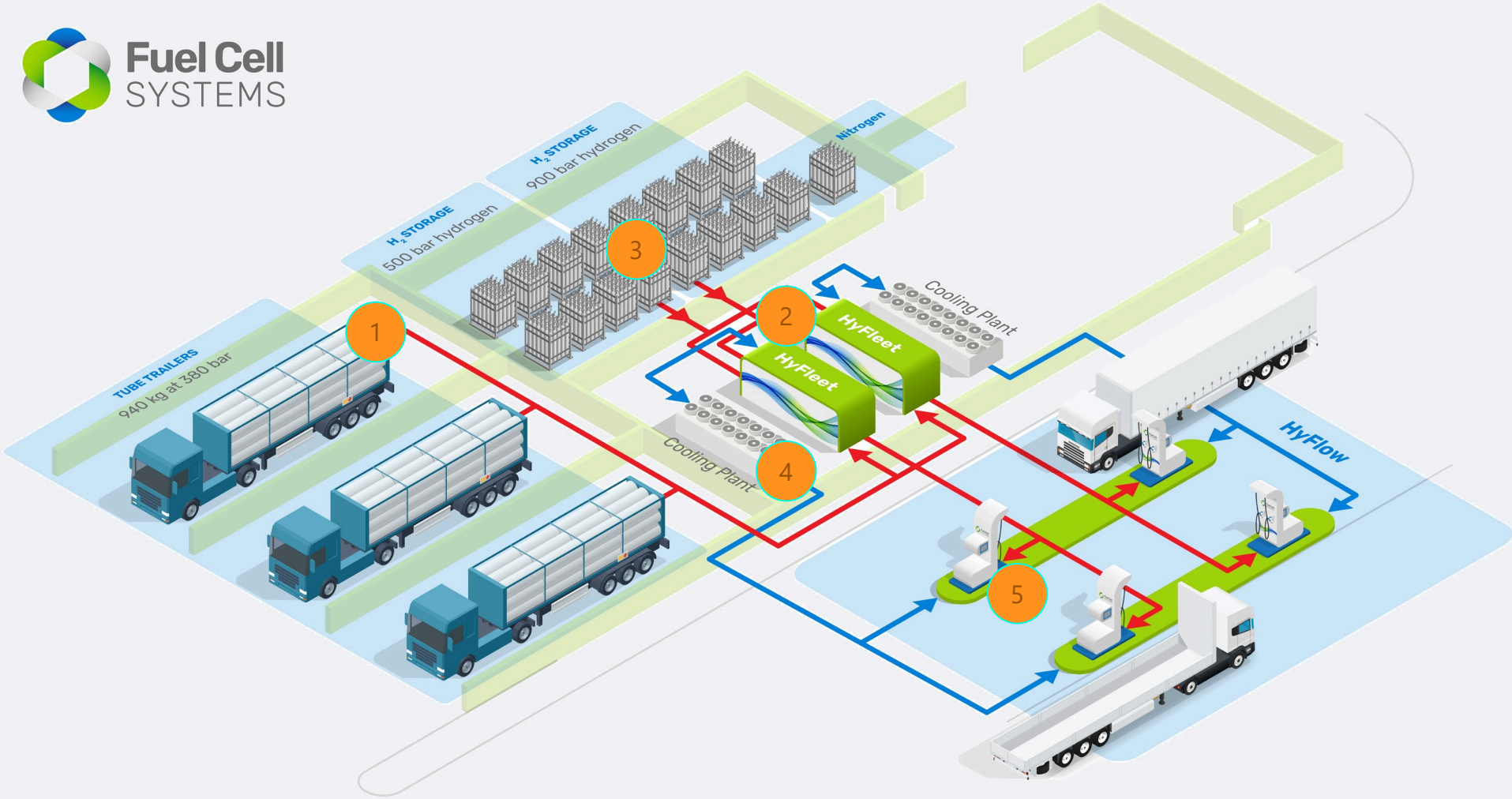
Buffer storage at medium or high pressure

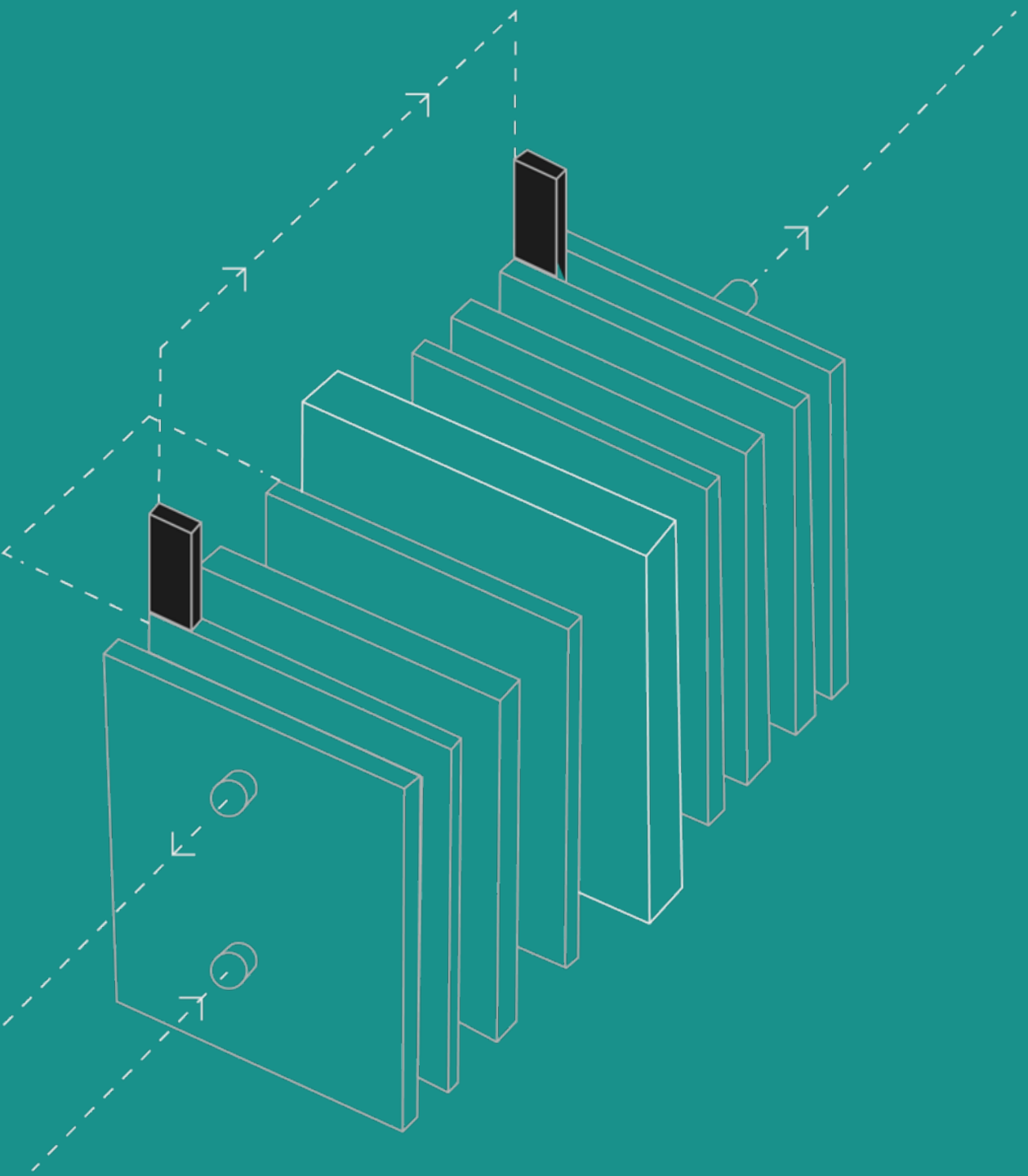
4. Chilling

Chilling capability for sub 20min 700 bar fills

5. Dispensing

Dispense hydrogen at 350bar or 700bar





HyHAUL

Fuel Cell Electric Trucks (FCET)

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FCET have a range of capabilities that position as a strong Zero-Emission Vehicle option

HyHAUL

FCET capability

Range	▪ Ranges of over to 850 km ▪ Refuelling times of 10-20 mins
Payload	▪ Small payload penalty due to hydrogen tank, fuel cell, and small battery ▪ Lower payload penalty than BETs due to smaller battery
Weather impacts	▪ Resistant to cold weather ▪ Contrast to BETs that experience reduced range and efficiency in cold environments
EPTO	▪ Ability to supply external power take-off requirements in some vehicle models ▪ Reduced impact on range due to large energy storage, contrast to BETs
Frequency	▪ FCETs benefit from high utilization ▪ Short refuelling windows also provide flexibility for irregular and non-planned duty cycles
Network proximity	▪ Proximity to refuelling stations on HyHAUL network is crucial
Duty cycle type	▪ Back-to-base operations or on-the-road refuelling requirements contribute to different requirements ▪ Double shifting requires short refuels
Terrain	▪ Gradients and road surface conditions impact power requirements and system resilience, respectively.

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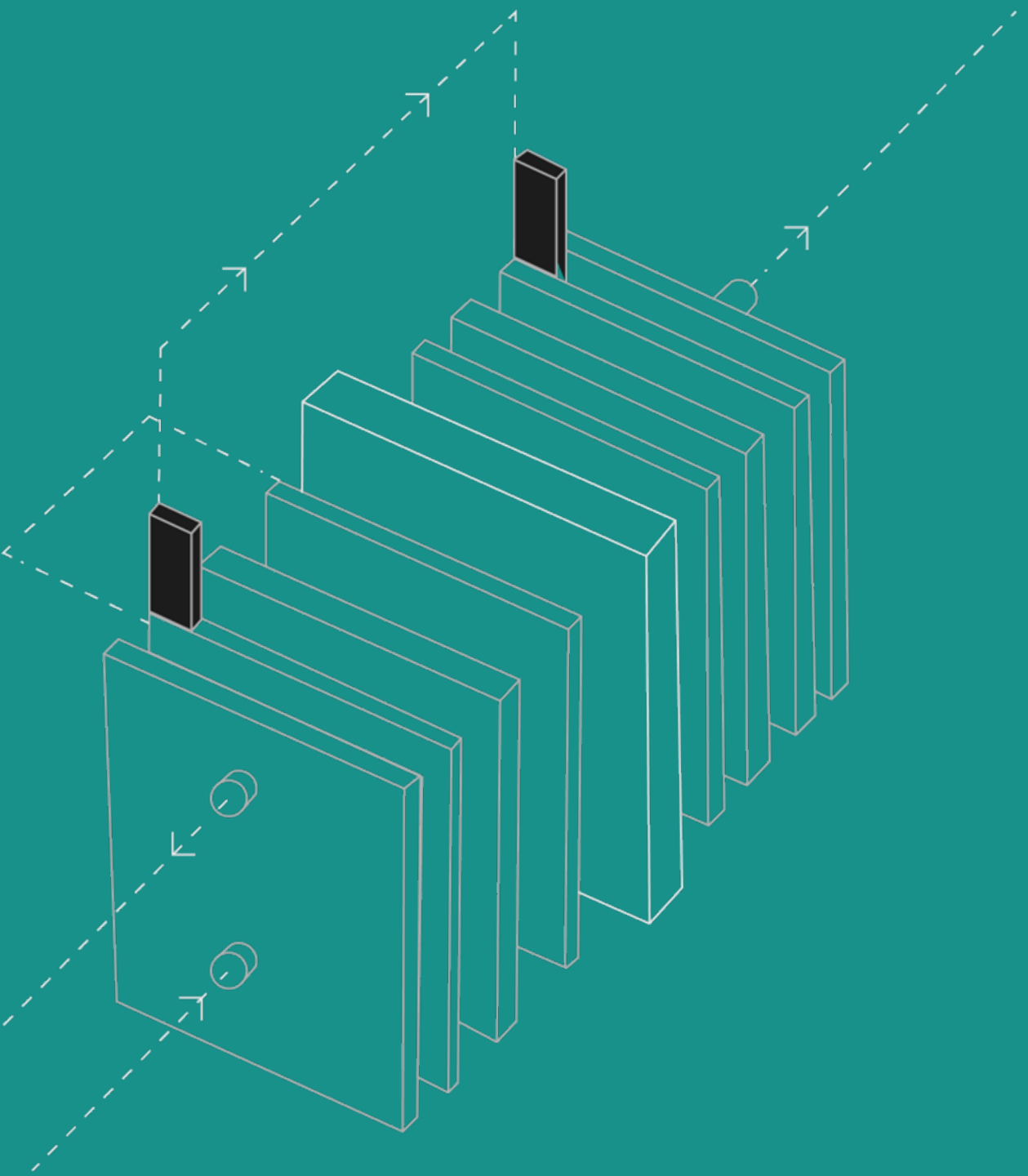
Fuel Cell Electric Trucks – example specification

Parameter	Details
Base (donor) chassis	MAN TGS/X
Sleeper cab?	Yes
Tractor weight	<10,000
GCW	42,000 kg
Fuel cells	2 x 120kW, Ballard
Batteries	124 kWh
Power Output (Cont/Max)	420/550 kW
Hydrogen storage	54kg (@ 700 bar)
Range (700 bar)	435 miles
Range (350 bar)	275 miles
Refuel time	< 20 minutes
On-board charging	22 kW AC electric.
Options	DC Charging Additional on-board storage. Additional H2 storage to client range.



Expected

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Expected Outputs

HyHAUL

Technical

- ✓ Validate HGV performance on real routes
- ✓ Monitor uptime of vehicles
- ✓ Collect operational, maintenance & reliability data
- ✓ Maintain a 98% or better uptime of HRS infrastructure

Commercial

- ✓ Compare hydrogen vs diesel TCO
- ✓ Test driver & fleet acceptance
- ✓ Refine leasing/service

Strategic

- ✓ Prove hydrogen viability in logistics
- ✓ Build case for H_2 infrastructure
- ✓ Influence policy & funding strategy
- ✓ Position HyHaul as UK zero-emission leader

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HyHAUL

Ready to Decarbonise Your Fleet?

Interested in joining our trial?
Want to explore hydrogen commercial vehicles?
Get in Touch – We'd Love to work with you

Email: Tom_Lee@Hyhaul.co.uk

Phone: 07777115879

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HyHAUL

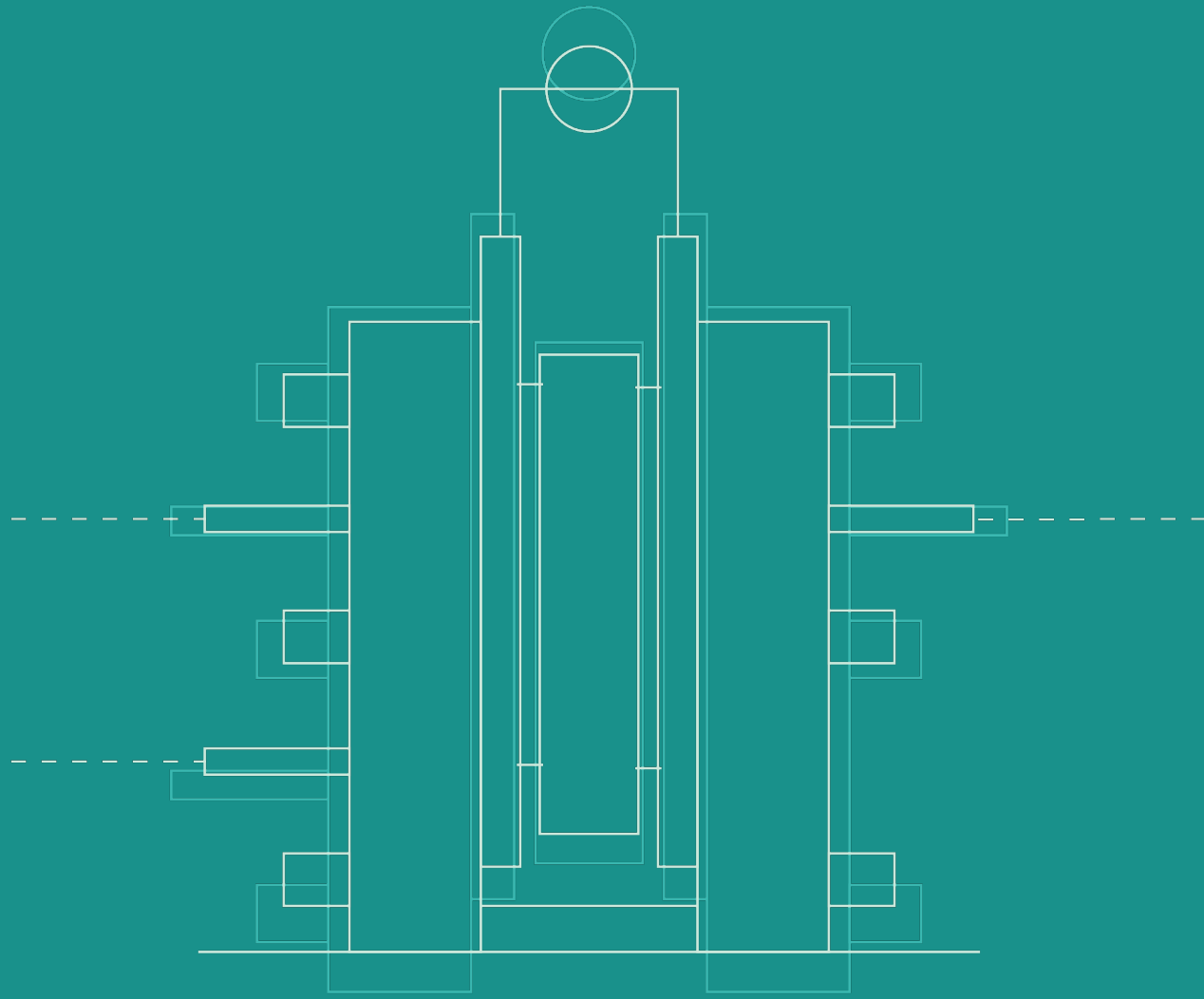
HyHAUL

Thank you for attending

For questions please contact:

kyle_arnold@hyhaul.co.uk

Tom_Lee@hyhaul.co.uk



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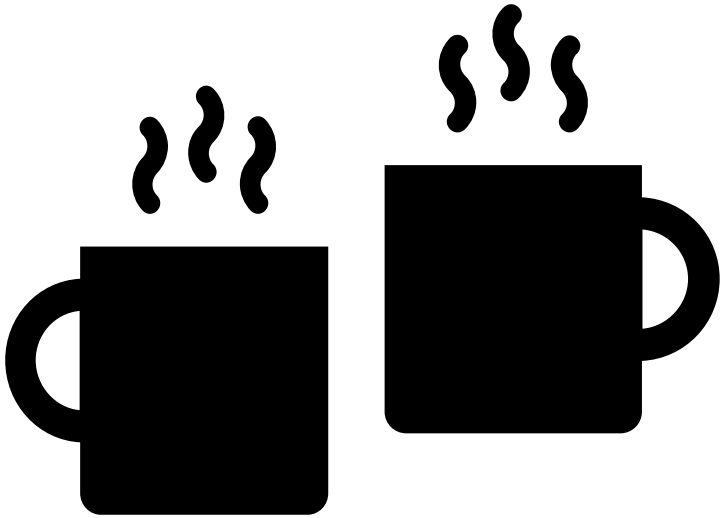
Coffee Break



Zemo Work Programme – Priority Issues

The Delivery Roadmap highlighted a number of priority areas for Zemo's work programme.

- **A Map of Missing Policies** – closing the gaps in UK net zero transport policy
- **Strengthening the economic case for net zero transport** – highlighting the sector as a driver of jobs and prosperity
- **Taking people with us** – building consumer and public support for net zero transport
- **Toolkit for Transition** – providing guidance for local authorities

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Accelerating Transport to Zero Emissions

Map of Missing Policies

Energy Infrastructure Working Group

8 May 2025

Introduction

The ‘Map of Missing Policies’ consultation paper was launched at the Council for Net Zero Transport Quarterly Briefing on 6 March 2025. This consultation provides the basis of a member and stakeholder outreach programme in the spring.

A policy paper will be published at the Council for Net Zero Transport Quarterly Briefing on 5 June 2025.

Today’s meeting gives members a further opportunity to input on the consultation paper as it relates to energy infrastructure. We will ask:

- What are our preferred policy solutions?
- What are our priorities?

Charging / refuelling infrastructure

Market Barrier	Current Policy	Questions
Cost, complexity of upgrading bus, coach, HGV depots.	Zero Emission HGV and Infrastructure programme. Zero emission HGV and coach infrastructure strategy promised for 2024.	How can the Government: • improve the processes for installing charging and refuelling infrastructure? • help to reduce the cost of upgrades?
Need for rapid chargers at en route locations (HGVs, coaches).		How should a national network of public HGV and coach recharging sites be created and financed?
Limited space for infrastructure at depots / garages. Planning rules.	National Planning Policy Framework (updated). Commitment to further planning reform; promise to consult on national policy related to decision making in spring 2025.	What further planning reforms are needed?
Shortage of public charging points for EVs Different user needs.	Target for 300,000 public chargepoints by 2030 (on track).	How should the Government ensure that public chargepoints are available where they are required and relevant to different user needs in all parts of the UK?

Grid connections and network upgrades

Market Barrier	Current Policy	Questions
Cost, coordination, lead times for securing grid connections. DNO customer service.	Ofgem/DESNZ Connections Action Plan. Ofgem has started to allow network ahead of connection requests.	How can grid connection and upgrade processes be improved and costs reduced?
Lengthy, costly planning procedures	National Planning Policy Framework (updated).	What further planning reforms are needed to speed up grid connections and network upgrades?

Further comments

If you have any further specific suggestions, please contact:

Neil.Stockley@Zemo.org.uk

Future Role of Working Group

How the Energy Infrastructure Working Group should evolve?

Future Role of Working Group

Zemo sees the working group as the primary point of member engagement.

We're looking for feedback from members on how the Zemo working groups evolve.

- Public / Private Infrastructure
- Light Duty / Heavy Duty Vehicles
- New / Used Vehicle Markets
- Supply / Demand side
- Energy Distribution
- Economic case
- Technical issues
- Policy - Regulatory / Fiscal
- UK / UK Nations / City Regions
- Market monitoring
- Topical presentations
- Professional development
- Best practice
- Networking
- Online / face to face

We will be surveying members views

Member's Roundtable

Events, Public Announcements, News Items

Upcoming Working Groups & Events

Join us!

- Commercial Vehicle Working Group – 15th May
- Fuels Working Group – 22nd May
- Passenger Car working Group – 29th May
- Quarterly Briefing (Chair: Lord Deben) – 5th June
- Parliamentary Roundtable – 11th June
- Site Visit: Go-Ahead & Zenobe at Oxford 27th June
- Offers to present / host site visits welcome

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Thank you

Any questions? Please get in touch

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Interested in joining the Partnership?

Samira Ali

Company & Membership Administrator

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