

Hydrogen in Scotland

This paper sets out the policy commitments to hydrogen in Scotland, the likely demand and deployment, and projects relevant to transport which are active or planned.

Hydrogen Policy Statement

[The Hydrogen Policy Statement](#) sets out Scotland's ambition to become a leading hydrogen nation, generating at least 5GW of renewable and low-carbon hydrogen by 2030 and at least 25GW by 2045. This ambition expects both battery electric and hydrogen systems to decarbonise transport in Scotland.

The statement details the work which is already being done to achieve this ambition and commits £100 million of funding towards the development of a hydrogen economy in Scotland between 2021 and 2026.

In terms of what is already being done, the following are of particular relevance to transport:

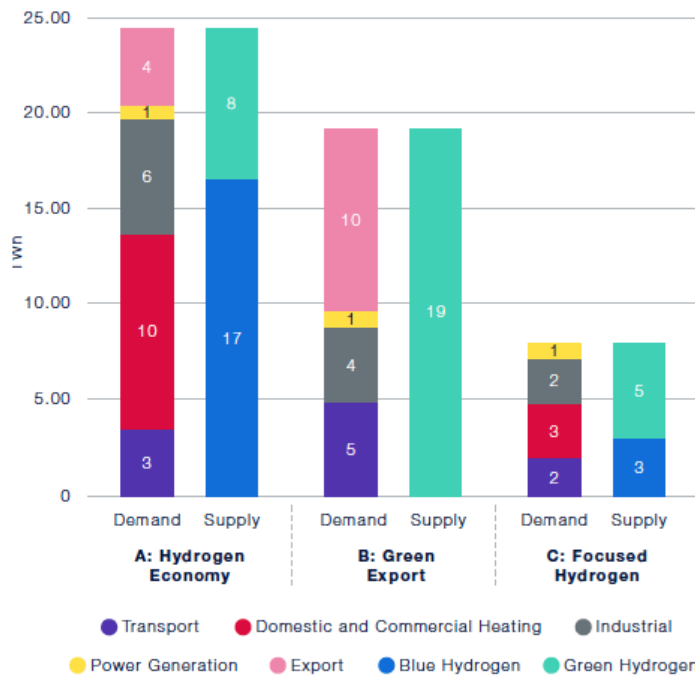
- Michelin Scotland Innovation Parc,
- the National Manufacturing Institute for Scotland and accompanying Light Weight Manufacturing centre
- the Driving the Electric Revolution centre of expertise
- Zero Emissions Heavy Duty Vehicle Programme
- Switched on Fleets programme for public sector bodies
- Energy Skills Partnership

Scottish Hydrogen Assessment

The [Scottish Hydrogen Assessment](#) estimates that Scotland could produce between 7 to 25 TWh of hydrogen per year by 2032 rising to between 20 to 127 TWh a year by 2045. In all three of the scenarios modelled, hydrogen is used for transport, with projections ranging from 2 TWh to 5 TWh in 2032.

It is expected that deployment of hydrogen in Scotland is likely to be region and geography specific, reflecting the location of production resources, existing infrastructure and demand patterns.

Figure 37: Hydrogen scenarios demand and supply 2032.



Hydrogen Action Plan

The [draft Hydrogen Action Plan](#) provides more detail on how Scotland could achieve the ambition set out in the Hydrogen Policy Statement and focuses on addressing six key challenges:

- Scaling up hydrogen production in Scotland
- Facilitating the development of a domestic market
- Maximising the benefits of integrating hydrogen into our energy system
- Enabling the growth and transition of Scotland's supply chain and workforce
- Establishing and strengthening international partnerships and markets
- Strengthening innovation and research

It includes a number of suggested actions which are relevant to hydrogen refuelling infrastructure:

- Support spatial planning in enabling the establishment of hydrogen projects.
- Support the development of appropriate Regional Hydrogen Hubs where production is coupled with multiple end-use application.
- Co-design with industry and publish a framework for enabling infrastructure to underpin Scotland's move to a zero emission transport system, including hydrogen and electricity as complementary fuels, both essential to the decarbonisation of transport.
- Join the multi-national effort to standardise hydrogen road refuelling stations in Europe.

- Work with the UK Government and approval and safety bodies on the development of a proportionate and supportive system of standards and regulation.

The consultation on the draft Action Plan has now closed and the final version of the action plan is expected to be published later this year.

Hydrogen projects in Scotland

Acorn Hydrogen project – near Aberdeen

200-Megawatt hydrogen plant which is expected to be operational by mid/late 2020s

Aberdeen Hydrogen Hub

A broad programme of work to develop a comprehensive investment in infrastructure for the production of and use of renewable hydrogen, its distribution, storage, and refuelling across the region to support the growth of broader transport fleets and the deployment of new applications. BP have been appointed as the Joint Venture partner with Aberdeen City Council in the hydrogen hub initiative.

The AHH will deliver a long list of hydrogen hardware; purchasing hydrogen buses, upgrading existing hydrogen production and refuelling infrastructure in the City and building new production and refuelling infrastructure to support an expansion of the hydrogen fleets (buses and other vehicles) and also provide supply of hydrogen for other uses such as district heating.

Green Hydrogen for Glasgow

Green Hydrogen for Glasgow is a partnership between ScottishPower Renewables, BOC – a Linde company, and ITM Power. They are currently going through the planning process for a hydrogen production facility and aim to have green hydrogen available to the commercial market by 2023.

The 20MW green hydrogen facility would be powered by the mix of technologies at Whitelee which includes a new solar farm, battery energy storage system and the existing windfarm.

INEOS – Grangemouth

INEOS believe that Grangemouth is an ideal location in Scotland to create a hub for hydrogen production, use and export.

They are taking part in a trial project with SGN to bring hydrogen distribution networks a step closer to reality in the UK. The trial which is funded by the Energy Regulator and gas distribution companies, will use hydrogen supplied by INEOS in a 29km section of decommissioned pipeline between the Grangemouth site and Granton to help determine how existing natural gas networks can be repurposed for hydrogen.

North of Scotland Hydrogen Programme

Aims to develop a state-of-the-art hub in the Cromarty Firth to produce, store and distribute hydrogen to the region, Scotland, other parts of the UK and Europe for use in distilleries, industry, transport (road, rail & aviation) and domestic applications

The project's initial phase would see the facility produce up to 50 megawatts (MW) of green hydrogen to be used in heating processes in nearby whisky distilleries. Future phases include the potential to decarbonise wider regional hydrogen transport applications, the decarbonisation of heat and industrial use in the north of Scotland (Invergordon sits strategically at the end of the gas grid,) and the potential for hydrogen export to other regions and countries, particularly Germany and the Netherlands.

Outer Hebrides

Outer Hebrides Local Energy Hub (OHLEH) aims to deliver renewable power, heat, and transport to the local community by using new and existing hydrogen-generation infrastructure to release additional renewable energy generation capacity at two key sites in the vicinity of Stornoway that are presently constrained by grid capacity issues.