

# Why hydrogen?

The EU, UK and Scottish Governments have set ambitious local policies and targets to reduce greenhouse gas emissions and increase the proportion of low carbon energy sources. Hydrogen will play a key role in helping Scotland to realise its targets. Hydrogen can be produced from water through a process called electrolysis. This involves using electricity to split the water into hydrogen and oxygen. By using electricity from renewable sources in this process, the hydrogen can be produced with very low carbon emissions.

The hydrogen acts as an energy storage medium and can be used in a wide range of applications including vehicles, generators or, in principle, anything that requires electrical energy to operate. Hydrogen can also be used in internal combustion engines.

When electricity generated from intermittent renewables, such as wind, cannot be fed into the electricity grid it can be used instead to produce hydrogen and be stored for use as required. This helps to balance supply and demand ensuring renewable energy plays a bigger part.

Aberdeen is promoting hydrogen technologies as a low carbon alternative to fossil fuels and as an energy vector to facilitate the deployment of renewable energy sources in the area.

## Contact information:

A copy of the strategy can be downloaded here:  
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# A Hydrogen Strategy for the Aberdeen City Region

2015 - 2025



In March 2015, Aberdeen City Council approved a Hydrogen Strategy for the Aberdeen City Region which outlines the key actions required over the next 10 years to ensure Aberdeen remains a world-class energy hub, leading a low carbon economy, at the forefront of hydrogen technology.

The Strategy focuses on promoting hydrogen technologies as a low carbon alternative to fossil fuels and as an energy vector to facilitate the deployment of renewable energy sources via seven key objectives:

1	Vehicle Deployments	A range of local stakeholders deploy hydrogen vehicles.
2	Renewable Hydrogen	Hydrogen produced from renewable energy sources is widespread throughout the region.
3	Refuelling Infrastructure	An accessible, convenient and safe refuelling infrastructure network is deployed across the City and beyond.
4	Non-Transport Applications	Non-transport applications are tried and tested including stationary power.
5	Supply Chain / Market Development	A robust, local hydrogen supply chain is developed which utilises the areas existing energy expertise
6	Communication & Education	A greater understanding and acceptance of hydrogen technologies encourages widespread adoption
7	Policy & Regulation	Hydrogen technologies are embedded in all relevant areas of policy and supported at a national level.



Aberdeen is home to Europe's largest hydrogen fuel cell bus fleet, with 10 buses operating on the City's roads, supported by the UK's first fully integrated renewable hydrogen production and refuelling station and a dedicated maintenance facility within the city centre. The bus fleet emit only water from their exhaust and operate with reduced noise. The Council is also trialling other vehicle types including plug-in hybrid fuel cell electric vans and hydrogen diesel hybrid vans. Like the fuel cell buses, the plug-in hybrid vans emit only water from their exhaust. The hydrogen diesel hybrid vans emit 59g/km carbon dioxide (CO<sub>2</sub>) under test, which equates to a 70% reduction in CO<sub>2</sub> and 40% reduction in nitrogen oxides (NO<sub>x</sub>) compared to a diesel equivalent. Thus helping to reduce harmful pollutants within the City, such as CO<sub>2</sub>, NO<sub>x</sub> and particulate matter (PM<sub>10</sub>). This is important for Aberdeen which has three designated air quality management areas declared due to exceedances of national air quality objectives for nitrogen dioxide (NO<sub>2</sub>) and PM<sub>10</sub>.

Hydrogen presents an economic opportunity for the City Region both in the short - medium term through local supply chain development and in the longer term through diversifying the oil and gas sector. The existing oil and gas skills base is well placed to capitalise on the opportunities presented by the hydrogen sector. The City Council is using its current hydrogen deployment activity to promote nearer term growth opportunities in the region such as working with private sector organisations to maximise local benefits (for example establishing local support centres or new assembly or training facilities) whilst also having an eye on the longer term goal of industry diversification.

## Key near-term priorities:

The Hydrogen Strategy aims to open up greater potential for hydrogen technologies in the long term and presents strong opportunities for businesses to diversify their activities in the energy sector. The Strategy aims to encourage the development of skills, know-how, and expertise in the hydrogen and fuel cell markets, initially through the deployment of H<sub>2</sub> low emissions vehicles. Given the significant investment in vehicles and infrastructure the time is right to focus initially on nurturing other non-Council end-users to adopt the technology whilst ensuring that renewed investment is available in the medium-term to fund additional bus and hydrogen refuelling station deployments.

The key near-term priorities are to:

build a second refuelling station capable of refuelling all hydrogen vehicle types in order to attract early releases of passenger cars. This station will be accessible to the public

work with local partners and suppliers to deploy hydrogen vehicles to support the refueling network

support the Council fleet as an early adopter for new vehicle types

work with other regions to seed a Scottish refuelling network linking to the work of the UK H<sub>2</sub> Mobility programme

