

Written Evidence Submitted by The Energy and Utilities Alliance (EUA) (HNZ0070)

The role of hydrogen in achieving Net Zero

The Energy and Utilities Alliance (EUA) provides a leading industry voice helping shape the future policy direction within the sector. Using its wealth of expertise and over 100 years of experience, it acts to further the best interests of its members and the wider community in working towards a sustainable, energy secure and efficient future. EUA has seven organisational divisions - Utility Networks, the Heating and Hotwater Industry Council (HHIC), the Industrial & Commercial Energy Association (ICOM), the Manufacturers of Equipment for Heat Networks Association, the Hot Water Association (HWA), the Manufacturers' Association of Radiators and Convectors (MARC) and the Gas Vehicles Network (GVN).

Suitability of Government plans

The approach to scaling up hydrogen production set out in the Government's *Ten Point Plan for a Green Industrial Revolution* are to be welcomed as they finally give a clear signal to the industry that hydrogen will be supported as a key fuel in the UK's future energy mix. The target of ramping production of low carbon hydrogen up to 5GW by 2030 is an ambitious one and, if supported by necessary associated policies and investment, will kick-start the supply chains and infrastructure needed for us to develop a hydrogen economy in the longer term.

Whilst the rhetoric of the UK becoming a world leader in hydrogen production and usage to decarbonise sectors such as domestic heating is positive, the current plans set out very little detail on how this will be achieved. The long-promised policy route map for heat decarbonisation, for example, will be needed to ensure the industry has a clear strategy to work towards and avoid slippage in the rapid progress needed to achieve the 2030 target. Policies needed in the coming decade to kick-start demand for low carbon hydrogen will include mandating all gas boilers installed from the middle of the 2020s to be hydrogen-ready and gradually increasing the blend of hydrogen in the gas grid up to 20% of total volume.

A co-ordinated approach across a number of Government departments will be crucial but is not something we typically see when it comes to major energy projects. BEIS will clearly play a central role but the DfT will need to evaluate the use of hydrogen to decarbonise transport modes which are not suitable for electrification, MHCLG will need to introduce new building regulations to phase out on-grid fossil fuel heating in favour of hydrogen and the Treasury will need to provide the scale of funding necessary to support the transition to net zero. Co-ordination outside of Whitehall should not be overlooked either. Some forward-thinking local authorities, such as Leeds City Council, are already planning their transition to an all-hydrogen gas grid and they should be supported and empowered to become early adopters. Close working with the devolved administrations will be essential. Scotland is particularly keen to leverage the skilled workforce and significant infrastructure assets of its oil and gas sector to facilitate the creation of jobs and an economic advantage in low carbon hydrogen; this should be seized upon and built on.

Carbon capture and storage will be crucial to producing hydrogen in a low carbon way, particularly as a hydrogen economy is being developed. The Government's previous prevarication due to the cancellation of a previous demonstration competition in 2015 has delayed the development of this vital technology and meant other countries have moved ahead of the UK. The Government has signalled its intention to catch up and make the UK a hub for the development and scaling up of CCS with a dedicated hub in the Humber region. This is to

be welcomed but we would stress that a commitment to rapid development of CCS will need to be maintained now. If there are further delays to this process, then the decarbonisation of the gas grid and many difficult to decarbonise industries could be jeopardised.

In order to attract private investment, continued positive policy signals to the industry will be important. Some private investment is already taking place, particularly amongst gas network operators, but once production of hydrogen needs to become mainstream and commercialised, a long term subsidy framework for low carbon hydrogen may need to be developed.

Hydrogen trials

A key set of trials being conducted as a partnership between Government and the gas industry is the Hy4Heat project. Demonstrating the viability and safety of hydrogen storage and usage is clearly crucial and this is being done across a wide range of projects from the quality standards for hydrogen to be injected into the grid through to safety assessments as well as appliances and meters. BEIS has the option to approve preparatory work on community trials are part of Hy4Heat which could push the demonstration of hydrogen's viability to real world settings.

The HyDeploy project is also carrying out vital work to establish the viability of blending hydrogen into our existing methane-based gas grid, up to 20% of total volume. This work is being carried out on a discrete gas network by two major gas network operators as part of Ofgem's Gas Network Innovation Competition. Early results are very promising and indicate that blends of up to 20% could be achieved without disruption to consumers and their existing appliances. This could be a game-changer in the move towards a decarbonised gas grid as it would not only kick-start demand for low carbon hydrogen, it would also make a significant contribution to reducing emissions from heating, the equivalent of taking 2.5 million petrol and diesel cars off of our roads.

The H21 project is also investigating the safety of hydrogen transmission in the existing gas grid with a view to undertaking live trials in the next two years. A long term vision of the project is the conversion of the major conurbations of Leeds, Bradford, Wakefield, Huddersfield, Hull, Liverpool, Manchester, Teesside, Tyneside and York to pure hydrogen between 2028 and 2035. This would equate to 85 TWh of hydrogen per annum and would cover 12.5% of the UK's population. This is a fully formed vision which incorporates production, storage and 20 million tonnes of CCS capacity.

These kinds of projects are ripe for the Government to build on with their long term strategy for heat decarbonisation and the creation of a hydrogen economy.

Required infrastructure

One of the main advantages of hydrogen as a future fuel of the gas grid is that the replacement of old iron mains with plastic pipes means major infrastructure futureproofing is already taking place, and is nearly complete. Leveraging the significant national asset that is the gas grid rather than paying billions to decommission it should be an accepted long term fact in Government and the industry.

As previously mentioned, carbon capture and storage will be essential to ensuring hydrogen produced from steam methane reformation can be classed as low carbon. It also goes without

saying that strategic investment in hydrogen production from both steam methane reformation and electrolysis will also be needed.

Advantages and applications of hydrogen

A clear advantage of using hydrogen for heating buildings compared to alternative, electrified low carbon heating technologies such as heat pumps is the lack of disruption to consumers. Heat pumps will typically require extensive and costly in-home changes such as several insulation measures. Cost is also a significant factor; a study commissioned by the Climate Change Committee found that the average cost of retrofitting a heat pump into an existing property is £26,300, a figure clearly out of reach for many consumers. Hydrogen, by contrast, can be used in decarbonised gas appliances, such as boilers, ovens and hobs, which will be familiar to and popular with consumers.

Protecting and promoting consumer choice should also be central to the transition to net zero. Forcing one-size-fits-all approaches on consumers will jeopardise their acceptance of the changes they need to make and their ability to afford those changes. By transitioning the gas grid to hydrogen, consumers will be able to choose to take advantage of this net zero fuel but they would also be able to switch to electric alternatives should they wish. If the gas grid is not converted, consumers' options will be severely limited which could have a significant impact on vulnerable fuel poor households that may not be able to afford the higher fuel costs that greater usage of electricity would likely bring.

We believe that usage of hydrogen should be prioritised in difficult to decarbonise sectors. This would include domestic and commercial heating as well as energy intensive industries, certain industrial process and large vehicles such as heavy goods vehicles. Electrification would be costly or impractical for many of these applications and therefore low carbon gas alternatives should be prioritised. The impact of tackling these sectors with disproportionately high emissions could be significant; for example, diesel HGVs and buses currently emit 17% of UK transport emissions despite only making up 2% of vehicle registrations and 6% of miles driven.

(January 2021)