



Department for
Energy Security
& Net Zero

Hydrogen Delivery Council

Fourteenth Meeting – Summary

09 October 2024

Attendees

Co-Chairs:

Minister Jones, Minister of State at the Department for Energy Security and Net Zero, and the Department for Business and Trade.

Jane Toogood, Council Industry Co-Chair

Council members:

Organisation	Name	Role
Arcadia E-fuels	Andy McNeill (Deputising for Amy Hebert)	UK Business Development Manager
BOC Linde	Armando Botello	Business President, Region UK & Ireland
BP	Matt Williamson (Deputising for Louise Kingham)	Business Development Director, Hydrogen UK
Future Energy Networks/ ENA	James Earl	CEO
Equinor	Alex Grant	VP, Carbon Markets – Senior Advisor – Policy and Regulation
Hydrogen Energy Association (HEA)	Celia Greaves	CEO of the HEA
Hydrogen UK (HUK)	Clare Jackson	CEO of Hydrogen UK
Imperial College London	Prof Nilay Shah	Director, Centre for Process Systems Engineering
Inovyn	Wouter Bleukx	Business Director, Hydrogen
ITM Power	Tim Calver	Commercial Director
Johnson Matthey	Andy Walker (Deputising for Eugene McKenna)	Group Government Affairs Director
Macquarie	Florence Deschuyteneer (Deputising for Nicholas Gole)	Senior Vice President
Mitsubishi UFJ Financial Group	Andrew Doyle	Executive Director
National Energy Systems Operator	Angus Paxton (Deputising for Julian Leslie)	Head of Gas and Whole Energy Network Development
National Gas	Jake Tudge (Deputising for Jon Butterworth)	Corporate Affairs Director
Ofgem	Akshay Kaul	Director General, Infrastructure
Orsted	Duncan Clark (Deputising for Olivia Breese)	Head of Region UK
Progressive Energy	Chris Manson-Whitton	CEO

RWE	Richard Sargent (Deputising for Sopna Sury)	COO, Hydrogen of RWE Generation SE
Ryze	Ben Madden (Deputising for Jo Bamford)	Chief Technical Officer
Shell	Amir Mansouri (Deputising for Paul Bogers)	Shell's Project Director for Holland Hydrogen 1
Siemens Energy	Darren Davidson	Vice President, UK and Ireland
SSE Thermal	Hannah Bronwin (Deputising for Alistair Phillips-Davies)	Business Development Director, SSE Thermal
Storegga	Sarah Potts	Head of Hydrogen
Trades Union Congress (TUC)	Anna Markova (Deputising for Kate Bell)	Policy Officer for Industry and Climate
UK Infrastructure Bank	Rajesh Kedia	Director (Hydrogen & Nuclear)

Observers:

Organisation	Name	Role
Department for International Trade	Josh Lawrence	Head of Hydrogen, Low-carbon Heat, CCUS sectors
Department for the Economy Northern Ireland	Edward Kerr	Head of Green Gas Team
Welsh Government	Professor Ron Loveland	Energy Advisor
Welsh Government	John Howells	Director Climate Change
Infrastructure Projects Authority	Rich Denny	Project Lead: CCUS & Hydrogen
Department for Transport	Bob Moran	Deputy Director, Decarbonisation Strategy
Department for Transport	Sophia Berry	Head of Net Zero Policy
Scottish Government	Margo MacIvor	Head of Hydrogen Policy and Funding and Sub Surface Energy Systems
Department for Energy Security and Net Zero	Paul Monks	Chief Scientific Adviser
UCL Energy Institute	Paul Dodds	Industry Chair of Low Carbon Hydrogen Standard & Certification Working Group: Professor of Energy Systems
Ensus UK	Grant Pearson	Industry Chair of Offtaker Working Group: Chairman Ensus UK
Siemens Energy	Matthew Knight	Industry Chair of Production Working Group: Head of Market and Government Affairs

Equans	James Graham	Industry Chair of Jobs, Skills and Supply Chains Working Group: CEO, Digital & Energy Services
Department for Energy Security and Net Zero	Sophie Jones	Industry Chair of Hydrogen Regulators Forum Working Group Head of Hydrogen Systems, Regulation and Markets
Waters Wye Associates Ltd	Nick Wye	Industry Chair of Transportation & Storage Working Group: Director

Also in attendance, officials from Department for Energy Security and Net Zero and external presenters: Co-chairs of the Hydrogen Internal Combustion Engine (ICE) Subgroup, Professor Steve Sapsford, Professor of Energy Systems UCL Energy Institute and Amanda Lyne, Managing Director ULEMCo Ltd. Justine Fosh, CEO of Cogent Skills was also in attendance to present.

NB: This is a summary of Council member comments made in an **advisory** capacity. The summary of member comments does not represent Government policy or views.

Item 1: Co-Chair and Council Introductions- Minister Jones, Minister of State at the Department for Energy Security and Net Zero (DESNZ), and the Department for Business and Trade and Jane Toogood

Jane Toogood (**JT**) opened the meeting welcoming the new Ministerial Co-chair to the Council. In her opening statement, she reflected on the recent government announcement of up to £21.7bn of funding for the carbon capture industry, which includes support for CCUS-enabled 'blue' hydrogen, describing this as a positive step forward and a clear sign of government's commitment to a UK hydrogen economy. She also welcomed the newest members of the Council, Celia Greaves, CEO of the Hydrogen Energy Association, Clare Jackson, CEO of Hydrogen UK, Amy Herbert, CEO of Arcadia e-fuels, and Kate Bell, TUC Assistant General Secretary. There were no outstanding actions from the previous meeting, so **JT** then passed to **MJ** who provided some opening remarks to the Council.

Minister Jones (**MJ**) reflected on the progress government has made since the general election and its commitment to the hydrogen sector. In her update she highlighted:

- Government had created Great British Energy backed with £8.3 billion and the National Wealth Fund, which will invest in the new industries of the future.
- Government's commitment to low carbon hydrogen as key player in delivering our Clean Power and Growth Missions, and longer-term net zero commitments.
- Government's commitment to delivering hydrogen projects, referencing the first Hydrogen Allocation round. She stated that government is continuing to work at pace to make sure the hydrogen allocation round one project contracts are signed at the earliest opportunity to enable all projects to move into construction.
- Government's announcement of up to £21.7bn of funding for the carbon capture industry, which includes support for CCUS-enabled 'blue' hydrogen, paving the way for the UK's first large-scale hydrogen projects.

MJ also reflected on the value of past Update to the Market publications for providing an overall sense of progress and committed to publishing our next Update to the Market, including a forward look, this winter. She concluded her remarks by emphasising the importance of government and industry collaboration to deliver a thriving UK hydrogen economy and welcoming the upcoming presentations.

Stefanie Murphy (**SM**) and Paro Konar (**PK**), co-Directors, Hydrogen and Industrial Carbon Capture, Department for Energy Security and Net Zero (DESNZ) provided a short policy update. **SM & PK** also acknowledged the need to move at pace to progress HAR 1 contract signature and highlighted the recent announcement that government has reached commercial agreement with industry and are funding two carbon capture sites. These projects will create thousands of jobs, attract £8 billion of private investment, and accelerate the UK towards net zero in 2050. They reflected on the government's focus on growth, highlighting that both supply chains and skills are on the agenda for the meeting today and are a vital part of the government's plans.

JT then opened the floor to questions and comments, reminding members to make a case on behalf of parts of the industry, rather than as representatives of their respective companies or organisations.

Council members welcomed these remarks and raised points on topics including:

- The importance of unlocking hydrogen storage and pipeline connections to derisk demand.
- Cross government policy support and alignment for hydrogen use in transport.
- Progressing contract signature for HAR1 projects.
- The role of blending in future Hydrogen Allocation rounds.
- Public forward look of government policy to maintain industry confidence.
- Government funding for UK supply chains.
- Great British Energy Bill and support for clean energy technologies.

Item 2: Working Group progress against Work Plan Summary – Olivia Flynn, Head of Hydrogen Strategy and Systems, Department for Energy Security and Net Zero

The DESNZ Strategy Lead, Olivia Flynn (OF) gave a high-level summary of progress against objectives for Working Groups (WG) that were not providing deep-dive updates at this meeting as follows:

- The **Transport & Storage working group Market Framework working group** has completed a report on the development of a market framework for hydrogen which has been shared with DESNZ for its consideration. The group is considering forming of a new, focused sub-group to address concrete policy questions on the market framework.
- The **Low Carbon Hydrogen Standard & Certification working group** is currently considering ongoing updates to the Low Carbon Hydrogen Standard, certificate use, a labelling and charging model, and the mass balance approach for tracking hydrogen. They have also recently discussed pathways to international alignment for standards and certification.
- The **Hydrogen Production working group** has established a sub-group to consider the strategic role of different production technologies. They also held a deep-dive session in September 2024 to discuss the environmental impacts of hydrogen production.
- The **Regulators Forum** was paused over the election period but plans to hold regular meetings again starting in November. Relevant members have also met in the interim to consider specific issues, for example to review standards for pipeline gas quality.

Item 3: Offtaker Working Group Demand Barriers report & next steps - Grant Pearson

Grant Pearson (GP) outlined that the scope of the Offtaker report was focussed on the immediate and short-term barriers for early adopters of low-carbon hydrogen. The key messages and ask from the report were that:

- There is no one size fits all solution to hydrogen offtake barriers, some issues vary by offtake sector or location. Specific interventions may be required.
- While subsidising the cost of low carbon hydrogen production is necessary for the vast majority of offtakers, it is not sufficient to cover the cost and practicalities of fuel switching and further measures are needed.
- Justifying investment in hydrogen offtake is difficult, primarily due to the high-level of uncertainty over future costs and returns.
- A key ask of this report is to reduce financial uncertainty faced by offtakers.

GP proceeded to outline the key recommendations of the report for industry and government. For industry, these were to: (i) coordinate around a cluster approach; and (ii) mitigate security of supply risks where possible by provisioning for a backup supply of alternative fuel. For government, these were to: (i) increase market flexibility, (ii) clarify future UK ETS free allowances & CBAM, (iii) continue to prioritise hydrogen networks, (iv) increase offtaker CAPEX funding, (v) accelerate commercial scale refuelling station roll out; and (vi) increase support for regulatory bodies.

GP then outlined next steps for the group which includes a refresh of the group's objectives and the creation of two new Task & Finish groups under the WG to further develop key recommendations from the Offtaker Report and develop our understanding of the best use cases for hydrogen.

In discussion, the Council raised questions and comments including:

- There is a need for increased market flexibility, including support to allow Risk Taking Intermediaries (RTIs) to access the HPBM and support for blending.
- There is an important role for government in developing wider understanding of hydrogen through potential offtakers.
- We need to ensure cross-government integration between hydrogen policy and sustainable aviation fuel policy.
- The right level of government policy support needed for offtakers.
- Providing support for early adopters to reduce demand barrier in the longer term.

Item 5: Hydrogen Internal Combustion Engine Sub-group report - Professor Steve Sapsford & Amanda Lyne

Professor Steve Sapsford (**SS**) and Amanda Lyne (**AL**) outlined the process by which this report was produced. The Hydrogen Internal Combustion Engine Sub-group was set up as an industry-led task & finish group consisting of OEMs, end users, trade associations, and academia, to consider evidence on hydrogen internal combustion engines, primarily in non-road mobile machinery. **SS & AL** proceeded to outline the findings, conclusions and recommendations of the report. These included:

- The non-road mobile machinery sector is of major economic importance to the UK and is 'hard to decarbonise' with unique challenges. Diesel engines are almost universal in this sector and will require a multi-technology decarbonisation approach.
- The adoption of hydrogen ICE as a net zero technology in the appropriate applications would enable near full decarbonisation and offer significant and immediate air quality improvements.
- The latest hydrogen internal combustion engines are at least as efficient and can perform at least as well as diesel equivalents.
- Hydrogen internal combustion engines present no additional challenges beyond standard challenges of hydrogen deployment, but there are some benefits which may make hydrogen internal combustion engines more practical to deploy than alternatives.
- Adoption of hydrogen internal combustion engines could enable fast and practical decarbonisation of heavy transport and machinery while delivering key economic benefits and supporting the development of the hydrogen economy.

The primary recommendation of the report is that Government should classify and promote hydrogen internal combustion engines as a net zero technology, in line with EU policy.

The Council raised questions and comments including:

- The scale of regulatory change required to unlock the use and development of hydrogen internal combustion engines.
- Wider applications of hydrogen internal combustion engines beyond use in non-road mobile machinery.

Item 6: Jobs, Skills & Supply Chains WG: Supply Chains Assessment, Hydrogen Skills Strategy & wider WG update - Clare Jackson, CEO of Hydrogen UK, Justine Fosh, CEO of Cogent Skills & Emma Bulmer, Deputy Director, Hydrogen and CCUS Sector Growth

Clare Jackson (**CJ**) outlined the work to develop the full Supply Chains Assessment, following an interim report in December 2023. She set out the scope of the full report as follows:

- Identifying the strategically important parts of the value chain
- Identifying areas where the UK can realistically anchor supply chains, create jobs and lead globally
- Understanding the barriers to procuring UK content
- Understanding the barriers to investing in the UK for supply chain companies
- Developing a set of actions to unlock investment and deliver on the voluntary ambition of 50% UK local content across the hydrogen value chain by 2030

CJ outlined the outcome of the work to identify those elements of the supply chain to prioritise as quick wins including electrolyser stacks, power electronics, compressed h2 storage tanks and hydrogen network pipes. She then highlighted some key action points outlined in the report to deliver on the voluntary ambition of 50% UK local content:

- Optimising and leveraging the hydrogen production business model to promote the use of UK supply chain companies.
- Create a central hydrogen supply chain support and funding body.
- Align skills strategy with supply chain strategy.
- Leverage existing UK assets and programmes to attract FDI in hydrogen.

Justine Fosh (**JF**) introduced the ongoing work, led by Cogent Skills, to produce a skills strategy for hydrogen that covers all skills required across the hydrogen value chain. She highlighted that the hydrogen economy will support thousands of new direct and indirect roles however the current skills picture is very fragmented with parts of the hydrogen economy at different stages of development therefore, a uniting skills strategy was essential. **JF** then went on to highlight some of the key challenges for developing skills for the hydrogen economy including the nascency of the sector, the visibility of demand and where skills will be needed, uncertainty around technology development, provider capacity, public perception and global and local competition including in adjacent sectors. **JF** then went on to describe the key ways to address these challenges including:

- Begin systematic workforce and skills data gathering, analysis and modelling.
- Make full use of the existing skills offer, leveraging the sectors expertise to ensure it remains current as the industry evolves.
- Analyse the gaps in provisions and develop a widely available new curriculum in a collaborative way.

- Position hydrogen as an aspirational career destination for anyone and any point in the career lifecycle.
- Create a hydrogen skills academy.

JT thanked **JF** for her presentation and passed to Emma Bulmer (**EB**) to provide a short update from DESNZ.

EB reiterated the importance of the government's Growth Mission to the hydrogen agenda. She outlined upcoming updates including further detail on the government's Industrial Strategy, working with the Jobs, Skills and Supply Chains Working Group on the British Jobs Bonus, and DESNZ's work to develop an Office for Clean Energy Jobs to coordinate across clean energy.

Item 7: Closing Remarks & AOB – Minister Jones and Jane Toogood.

MJ thanked the Council members for their participation and useful presentations.

JT thanked **MJ** for her remarks and the Council for their participation. **JT** emphasised the importance of continuing these conversations outside of Council meetings to ensure the focus and objectives of the Council are useful and relevant and maintain momentum.

JT thanked DESNZ officials for their efforts in coordinating the meeting.

The next Council meeting is due to take place in early 2025.