NON-VERBATIM MINUTE

DATE: Tuesday, January 18 2022

TIME: 10:00 - 11:00

METHOD: Zoom Meeting

CHAIR: Jacob Young MP, Chair of the All-Party Parliamentary Group on Hydrogen

Jacob Young MP opened the session and explained its focus, and introduced speakers and the **Parliamentary Under-Secretary of State for Transport, Trudy Harrison MP**.

Trudy Harrison MP introduced herself and set out her role as Parliamentary Under-Secretary of State for Transport. She said her family had a background in renewable energy and the industrial sector, and thanked Jacob Young MP for inviting her to speak. She said she was grateful to be leading on hydrogen in transport, which covers road, rail, maritime and active travel, and noted that her constituency is home to 76 energy companies. In the past 12 months, she has been fortunate to see the role hydrogen has to play. She noted the important role of the Decarbonisation Plan in the role the Government expects low carbon hydrogen to play in decarbonising transport. She added that the focus is on the use of low carbon hydrogen, produced by electrolysis and nuclear energy, and stated that hydrogen's role is key in heavier forms of transport. She reiterated the important of the Hydrogen Strategy and Net Zero Strategy in building on the progress previously made, and noted that a key highlight of transport decarbonisation was COP26.

She stated that now, we must build on the work done last year into the three-year Spending Review period, including on hydrogen hubs, and stated that further information would be released in the coming months. There are a lot of unknowns regarding hydrogen's role, and added that the Government will trial battery electric, hydrogen fuel cells and electric fuel systems in trial schemes, and will support industry in developing these. She reiterated that hydrogen's value lies in utility in larger vehicles and long distance travel, paying tribute to EDF, Arcola Energy, Scottish Power, the University of Nottingham and Elemental for their work in this field. Regarding the Tees Valley Hub, she stated that work this year focused on seeding demand and catalysing activity between local authorities and business. The first hydrogen fill-ups are already taking place, while the Government believes hydrogen hubs have real potential for R&D and will explore the use of hydrogen in different transport forms – the beauty of doing it in the North-East is that it is near different transport hubs. She noted that BP have given a commitment to scale up hydrogen production in the area, and that the Government working with industry to have other companies do the same. She noted the potential of the Holyhead hub in North Wales as well. She said she was excited by the work of the APPG and looked forward to continue to work together, and handed back to Jacob.

Jacob thanked the Minister and, opening the floor to brief questions to her, asked her how the Government intended to scale up production and rollout of infrastructure for hydrogen cars.

The Minister said that in many areas, it is not possible to roll out EV infrastructure. Many manufacturers are predominantly producing EV's, with some now overtaking petrol/diesel cars. The question is over the efficiency of EV cars v hydrogen cars.

Hilary Benn asked about battery production – are battery vehicles an interim technology, and will H2 fuel cells replace them long term? How will renewable energy production and green hydrogen production be scaled up quickly enough to meet targets?

The Minister said some of that was down to BEIS, while the RTFO can support green hydrogen production. She said the production question was interesting and the DfT would continue to look into it. The DfT are funding trials to explore what technology can do to assist production, and will need sustainable and indigenous technology to support future development, noting issues over, for example, the cost of platinum.

Jonathan Wood noted that there are many different types of battery and that there is no single silver bullet answer – we need to continue the R&D process on different types of technology.

Tony Young asked about the role carbon capture and storage would play in this. The Minister said it was important to be able to replicate the system we currently have with petrol and diesel cars with hydrogen. Hubs need to be able to advance hydrogen transport solutions.

Lord Birt asked if hydrogen posed an uncertainty for transport, and Baroness Hooper asked what the Government's plans were for international cooperation on hydrogen. The Minister said that the Government were focused on the hydrogen the government produced being low carbon, and on international cooperation said she would come back to Baroness Hooper, as it was primarily an issue for BEIS. Hydrogen needs to be able to support the levelling up agenda and support towns' transition to low carbon economy.

Jacob thanked the Minister and handed over to **Mike Muldoon, Head of Business Development UK & Ireland at Alstom.**

Mike Muldoon explained his role and Alstom's work on hydrogen. He said Alstom was the world's largest rail systems supplier, and know how to decarbonise rail using electrification, hydrogen and batteries, which add up to complete decarbonisation, which makes them unique in the transport sector. There are still issues over heavy freight vehicles which require a considerable amount of energy. Rail is in a difficult position at the moment, as the Government currently runs rail system and operations and owns infrastructure, but operators run the actual trains. For the next 2-3 years, DfT will effectively be running UK rail. Regarding operator plans, Northern Rail have submitted plans for deployment of hydrogen trains, and Network Rail have issued a strategy for decarbonisation of rail. Both proposals suggest we act now, as there is a lot to do before 2050. On modal shift, people can assist in decarbonisation of transport by shifting from personal transport to mass transport, as the rest of the decarbonisation process is done for them by mass transport companies such as Alstom.

Jacob thanked Mike and handed over to **Jonathan Wood, Vice President – New Power Engineering at Cummins Inc.**

Jonathan Wood introduced himself and briefly explained his role and that of Cummins, stating that he was responsible for technology that Cummins sees as the next wave of decarbonisation. They are now deploying technology and innovation for zero emissions, and see multiple solutions. For example, they are actively growing hydrogen capability in fuel cells in their work with Alstom, and have over 2000 fuel cells deployed globally and 6000 electrolysers. They see hydrogen fuel cells as key technological development, and see them as an absolute necessity going forward, hoping to deploy them globally and see the advanced deployment of fuel cells. Building technology such as this at scale to drive down the cost of technology such as hydrogen fuel cells is critical, and something Cummins are working on. They see rail as an interesting early adoption of hydrogen, and need to be able to build out infrastructure through private-public partnerships.

He concluded by reiterating that investment in research and technologies to drive down cost are critical.

Jacob thanked Jonathan and handed over to **Chris Gear, Project Director of FlyZero at Aerospace Technology Institute.**

Chris explained his role and FlyZero and the ATI's role, looking at sub-regional aircraft and the role fuel cells can play in those. They have discovered that liquid hydrogen is a very good solution for aircraft, and one that it is important for government to support. Industry needs government support for developing manufacturing and infrastructure as well. We now need to take it to the next step and demonstrate hydrogen technology on flight rigs and in testing. Large commercial aircraft make up 92% of all aviation CO2 emissions – that is what FlyZero are focusing on. He cited a recent project involving a mid-size aircraft that could fly to Australia on one stop with zero emissions, and stated that the UK is lagging behind other nations in technology development. He continued stressing how as an industry they also need development of cryogenic systems to make liquid hydrogen, and how they would recommend the Government to invest now to make the UK a leader in hydrogen development and research. The aerospace community could demand up to 10% of hydrogen needs by 2030, and by 2035 we could have a commercial aircraft flying with a liquid hydrogen solution. He added that he hopes to see fuel-cell hydrogen powering medium-sized aircraft (capacity of around 50 people) before then.

Jacob thanked Chris and opened the floor to questions. He asked panellists what needed to change in government rhetoric around the rollout of hydrogen in transport.

Mike Muldoon said we need to develop alternatives desperately, but need to talk about transport as a bigger picture, not just about EV's and roads. Jonathan added that driving down the cost of hydrogen is critical for its rollout in commercial vehicles, similar to what US are doing with the 1 dollar per kilo of hydrogen initiative. Chris Gear added that Government needs to support additional R&D in some of these technologies, as industry needs a lot of help from government to make these work.

Tony Young asked Jonathan Wood if hydrogen satisfied safety concerns in transport. Chris Gear said a lot of work had been done with the Civil Aviation Authority to satisfy safety concerns. More needs to be done though. Jonathan Wood added that safety standards continued to be developed, and a lot of work has been done. Mike Muldoon said full safety checks were done across EU member states on Alstom hydrogen trains, with no safety concerns.

Jacob thanked attendees and panellists and wrapped up the discussion.