

Hydrogen Net Zero Opportunity for North West Trusts

Q&A Initial Tech Talk 3rd August 2023

No	Trust Member	Question	Answer
1	ONGDEN, Jane (WALSALL HEALTHCARE	My connection is very poor - can i be sent the transcript please. Thank you	<u>Clive Nattrass</u> - we will upload the video onto www.nhpower.net
2	Martin, Andrew	Apologies as came in late but how does the H2 generated balance against the carbon and energy generated/ used to produce it but just heard that the steam is generated using only renewable energy.	<u>Justine Alford</u> - yes that's right, as I understand this is specifically referring to green hydrogen which is created using renewables <u>Joe Ward</u> - In both CCS enabled and electrolytic hydrogen, there is some process efficiency losses. For example, for Vertex, 1MWh of natural gas makes 0.85MWh of product hydrogen. The other 0.15MWh of energy from natural gas is used to run the process (including generation of steam). The 97%+ capture rate is of all carbon entering the plant as natural gas. Joseph Bailey from Grenian may have a better ideal of green H2 efficiency - i.e. 1MWh of renewable electricity makes X MWh of hydrogen Homepage - Grenian Hydrogen <u>Stephen Lowndes</u> - circa 70% efficient for el

No	Trust Member	Question	Answer
			<u>Joseph Bailey (External)</u> - We create hydrogen from renewable energy. As part of that we have to account for the full life cycle CO2 impact of the renewable power, however, even accounting for that we can deliver hydrogen at very low carbon intensity (close to 0gCO2/MJ)
3	Blades Michael (RTF) NHCT	is the 5MWth a peak load or annual consumption?	<u>Joseph Bailey (External)</u> - The 5MWth is a peak load. However, due to economies of scale the larger the project the more competitive it is likely to be within the Government process.
4	Martin, Andrew (Guest)	It would be interesting to have an idea of willingness of local planners not to mention Fire and Rescue services of having H2 production in high or medium conurbation areas. Also interesting to have an idea on longevity of Government subsidies.	<u>Stephen Lowndes</u> Hospital likely smaller scale production and subject to HSE and COMA regs <u>Joseph Bailey (External)</u> - Hi Andrew, we try to match generation to demand and as such dont typically include hydrogen storage within the design of the co-located green hydrogen plants. This means there is very low system inventory (a few kg) and the system is at relatively low pressure (<30barg). This means the hazard is greatly reduced. However, this would always have to be fully assessed during detailed design. We keep the site inventory < 2T which is below the 2T hazardous consenting limit and far below the 5T Lower tier COMAH site.
5	Joe Ward (External)	Clive Nattrass Do NHS Trusts have to pay Emissions Trading Scheme CO2 costs (either now or in near future)?	<u>Joseph Bailey (External)</u> - 70% is a good basis for the efficiency of an electrolyser when converting electrical energy to MWth Hydrogen out. Actual efficiencies do vary and this is a new technology area & as such we expect companies to make improvements.

No	Trust Member	Question	Answer
		Usually a very strong business case for industry to switch from natural gas to hydrogen, as they will unlock an ROI through reduced ETS payments	
6	Justine Alford (Guest)	Do you have a site list showing where the opportunities are for geothermal/hydrogen we can look at?	