



## Gas Goes Green Advisory Group – Questions and Answers

The first Gas Goes Green Advisory Group meeting took place on 14<sup>th</sup> May 2020 via webinar. Throughout the meeting lots of questions were asked via the chat function on Microsoft Teams. Whilst as many questions as possible were answered during the meeting, we have provided responses for unanswered questions below.

We also received numerous comments and suggestions, which we will consider as Gas Goes Green progresses.

Question	Response
How is the Northern Ireland gas industry going to feed into the overall Gas goes Green programme as its networks are connected directly to GB via the Scotland to Northern Ireland transmission pipeline and therefore will be impacted by GB's energy transition programme.	The Northern Irish and Ireland gas networks are an important consideration for GGG. The programme of work is run through ENA, providing an opportunity to bring on board all connected gas operators. Projects within Gas Goes Green will also consider the interconnectors with continental Europe.
Is ENA comfortable with including blue hydrogen under a heading of Gas Goes Green? Green means green to most people.	Gas Goes Green explicitly includes activity to transition to hydrogen from any low carbon producers, alongside biomethane from a range of sources. The mix of production technologies connected to our networks will ultimately be shaped by policy and the market.
<b>Investment</b>	
Do the networks believe that Ofgem is onboard with significant cost expenditure on green gas infrastructure in RII0 GD2, such as new-build hydrogen distribution / local transmission networks, or that they think this will be GD3 onwards?	As part of the network business plans submitted to Ofgem for the RII02 price controls, the networks have set out a plan to increase investment to deliver an acceleration climate change ambition. Investment is required the gas networks during RII02 to enable carbon budgets and the net zero target to be met at the lowest incremental cost.
<b>Green gases</b>	
You suggested electrolyzers could soak up excess renewables. Are you aware of the concerns of flexing electrolyzers?	Our pathway to 2050 comprises blue hydrogen and green hydrogen (both curtailed and dedicated). Much work has been done to consider the costs of



<p>This could have significant impacts on economics and performance.</p>	<p>different production and conveyance, and we expect cost profiles to further fall during the next three decades. Technology improvements, encouraged by price and market signals, are also expected which may address concerns regarding electrolyser flexing. Nevertheless it is something that we will consider.</p>
<p>Lots of excellent focus in Gas Goes Green on hydrogen networks, which is excellent and an obvious focus for ENA given its network memberships. However, we also need a focus on hydrogen supply as well. Can you say a few words on what Gas Goes Green will do to 'encourage' large scale hydrogen supply rollout?</p>	<p>Many of the network projects trialling and testing hydrogen are linked with and are supporting hydrogen production. For example, H100 Fife will build a new network to provide hydrogen for 300 customers but is also constructing an electrolyser to produce the hydrogen. Another example is HyNet, an integrated hydrogen / CCUS (Carbon Capture Utilisation &amp; Storage) project in the North West. This joins together hydrogen production (with carbon capture and storage) with hydrogen users in close proximity to rapidly decarbonise an industrial region, enabling future blending and potential conversion of the gas grid for nearby homes and businesses. Gas Goes Green will work closely with organisations across the industry to support the development of low carbon gasses.</p>
<p>How do customers relate to the use of hydrogen for cooking - ie different flame colour</p>	<p>Hydrogen appliances including cookers are within scope of BEIS' Hy4Heat project. Nevertheless, we expect further work including integrated trials to be undertaken in regards the consumer experience of having hydrogen appliances, and indeed of having other low carbon technology in their homes.</p>
<p>Do you think beyond 2030+ we would also see biomethane replace fossil natural gas as the platform for blue hydrogen?</p>	<p>Our pathway to 2050 sees a significant role for biomethane and for hydrogen production. We also see a regionalised approach. Some end users will require a methane molecule for example for certain fertiliser production and industrial uses. AD plants produce</p>



	hydrogen as a result of acetogenesis – this hydrogen could be injected into a hydrogen network. Further research in this area is likely to be required, to demonstrate technological capability and to establish a cost model. Gas Goes Green deliverables could support this work.
<b>Gas safety and quality</b>	
The amendment of GS(M)R will presumably require legislative change. Can we combine hydrogen and other changes (e.g. Wobbe) to streamline and accelerate the process?	Following publication of SGN''s 'Opening up the gas markets report', IGEM set up a Working Group to create a new Standard for Gas Quality. IGEM has draft for Industry Peer Review of the standard and it will be supported by an evidence report, this will be discussed during a workshop on 9 <sup>th</sup> July – email <a href="mailto:GasGoesGreen@energynetworks.org">GasGoesGreen@energynetworks.org</a> to register your interest in attending. The process for change would result in a formal, legal change to the specifications currently contained in GS(M)R. After that, it would be proposed to revoke and amend the relevant parts of GS(M)R, with the new specifications being contained in an IGEM Standard. Further changes could then follow.
Will you have to add propane to h2 blending sites under current billing regs?	By the current regulations this may be required. HyDeploy 2 will investigate this as part of its remit.
Our plan for HyNet sees a newbuild hydrogen local transmission network, with direct connections to storage, industrial customers and GDN blend points. This feels like it will need a new UNC (Uniform Network Code) for this new network type. Is Gas Goes Green going to address this?	Changes to the Uniform Network Code may be required to facilitate the transition to a net zero network. Individual network projects have assessed this from the point of delivering trials and pilots but further, more comprehensive work may be required and could be considered in further Gas Goes Green related work.
<b>Whole Systems</b>	
In practice 'the devil is always in the detail'. There are constraints on	Gas Goes Green deliverable 6.1 A whole system approach to heat



<p>expanding low carbon electrification (e.g. redesign if 3 phase supplies needed to consumers) and unresolved challenges to operating a largely DC power source network. Equally transitioning the gas grid to be much more like the electric grid in terms of third party (H2) generation (and also blending / deblending activity) is likely to add significant novel operational complexity into the gas grid. Will the proposed whole system assessment go into that level of detail? How is it intended to identify optimal solutions for implementation? There will be major implications on UK plc if we get this wrong.</p>	<p>decarbonisation will begin to answer important and fundamental questions as well as signal opportunities for further work and work being undertaken by Open Networks Workstream 4, Whole Energy Systems, including their development of a whole system CBA. Other elements of this - to simplify the entry gas connections process and reduce costs - are being taken forward through deliverables 4.1 and 4.2 of Gas Goes Green.</p>
<p>With the linkage of electricity and gas systems, will this include evaluating Big Data and AI?</p>	<p>ENA has established a Data Working Group with membership across both gas and electricity network companies to focus on the digitisation of the networks and particularly network data. ENA members are working to address data issues, identify opportunities to derive value from existing datasets, identify new data and ways of accessing it and creating unified industry positions. This will form part of an ENA-wide digitisation strategy to which Gas Goes Green will contribute.</p>
<p>How do hybrid heat pumps actually help gas networks? I assume this results in much lower gas flows</p>	<p>Hybrid heat systems, using either biomethane or hydrogen, are an integral component of our pathway to net zero. The heat pump provides base load heat and the gas boiler would contribute to meet peak heat demand. A hybrid heat system reduces annual gas demand, which in turn reduces the required amount of low carbon and renewable gas – important considerations in the running of a net zero system and in terms of cost. During the summer Gas Goes Green will set out</p>



	<p>recommendations for the further learning required for hybrid heating systems and propose ways of addressing these questions.</p>
<p><b>Consumers</b></p>	
<p>The key thing policy makers want is a practical demonstration at a town/city level with Leeds and Aberdeen being seen as key options. How soon can this be delivered?</p>	<p>Subject to Ofgem approval, H100 Fife will commission a hydrogen network in 2023, providing a practical demonstration. This will produce much of the learning required to roll out new hydrogen networks. Further trials and pilots (town/city level) are in development.</p>
<p>BEIS survey showed last week public have very low awareness of NetZero, to what extent will GGG play a role in championing public (as well as stakeholder) engagement?</p>	<p>Consumers are at the centre of the gas networks' plans under Gas Goes Green. We will continue to grow the evidence base on customer acceptance for different low carbon technologies and seeking to better understand the levels of disruption people are willing to accept as we deliver net zero. Network companies have strong relationships with their consumers which will inform Gas Goes Green, but understanding the needs and wants will require close collaboration, something which Gas Goes Green will ensure through a diverse and representative Advisory Group.</p>
<p>How is the 'final 30m' being managed, ie outside of the iron mains replacement programme?</p>	<p>BEIS' Hy4Heat programme is investigating whether it is technically possible, safe and convenient to replace natural gas (methane) with hydrogen in residential and commercial buildings and gas appliances. This scope of this work extends to the Emergency Control Valve where the network boundary ends. For some network projects further testing and trialing has been undertaken downstream of the ECV to further develop this evidence base, and integrated trials will be a crucial step in our hydrogen transformation strategy.</p>