Gas
Transmission

Enabling the Gas Market Plan

2020 - 2022

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Foreword from Chris Logue, Head of Markets

Since publishing our first Gas Market Plan (GMaP) publication in December 2019, we have seen rapid developments in the UK's gas market and gas decarbonisation agenda. The role gas currently plays in energy security of supply and the benefits of gas decarbonisation have become front and centre for energy policy direction.

Significant UK gas market policy direction over 2020 - 2021 included the publication of The ten point plan for a green industrial revolution and the UK hydrogen strategy, outlining a vision for hydrogen development. The COP 26 in Glasgow put a spotlight on the UK and successfully raised global ambitions on climate change, including an endorsement to ensure affordable, renewable and low carbon hydrogen is globally available by 2030. In response to rising global energy prices in the aftermath of the global pandemic, compounded by Russia's abhorrent and illegal invasion of Ukraine, the British energy security strategy includes ambitions to double previous hydrogen targets to 10 GW by 2030.

Russia's horrific war on Ukraine has highlighted again the importance of diversified gas supplies, where REPowerEU outlines European Commission plans to make Europe independent from Russian fossil fuels well before 2030. This plan begins with focusing on gas, and includes hydrogen targets of 20 million tonnes by 2030 to enhance energy security.

Against the backdrop of these rapidly evolving developments, it is more important than ever for a program like the Gas Market Plan (GMaP) to look ahead at market challenges and opportunities we face in energy security and the energy transition. We continue to work with gas industry participants and decision makers to determine solutions that can drive a market for low carbon gases, as well as ensuring the existing natural gas system and market continues to deliver consumer value.

This document is a summary of our GMaP activity over 2020 – 2021 and outlines what we are exploring in 2022. If you are interested in more information or in collaborating with us, please don't hesitate to get in touch.

Chris Logue
Head of Markets
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2020 - 2021 Gas Market Plan (GMaP)

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1a) How we structured the GMaP program

Future of Gas (FoG) Steering Group:

The FOG Steering Group is a collection of stakeholders (*please see Figure 1*) that together represent the energy industry. The Steering Group plays a critical role in providing leadership and direction on what areas GMaP projects will focus on and provides expert views on the potential evolution of gas market frameworks in the transition to net zero.

The Steering Group meets regularly (every two months) to discuss, debate and explore topics concerned with the future of gas. We publish the minutes of our FoG meetings on our website. If you would like to learn more information or become involved in the FoG Steering Group, please reach out to the GMAP team or your industry representative.

Figure 1: Future of Gas Steering Group members

Gas Market Plan (GMaP):

Through the Gas market Plan (GMaP) we undertake a variety of market-based projects to progress understanding in specific market topics. We select market focus areas based on stakeholder feedback from:

- Industry engagement and the Future of Gas Steering Group
- Current policy and regulatory developments
- Evolving supply and demand landscape for gas.

Our GMaP projects look to articulate where, when and what changes may be required to existing gas market arrangements to facilitate the net zero transition. Below we have outlined the three focus areas of the GMaP program over 2020 - 2021.

2020 – 2021 GMaP project focus areas:

The Gas Quality GMaP focus area considered how market rules may need to evolve to accommodate more diverse, low carbon gases into the GB gas system.

The Hydrogen GMaP focus area considered market change activities needed to integrate hydrogen into the energy mix with minimal impact on gas market participants.

The Balancing GMaP focus area explored how the rules that incentivise balancing supply and demand may need to evolve as the gas landscape continues to change.

1b) GMaP engagement over 2020 - 2021

Figure 2: GMaP engagement over 2020 – 2021

GMaP projects delivered	7
GMaP working group meetings held	40 +
Range (min - max) of stakeholders within GMaP working groups	10 - 70

Examples of gas industry sectors in GMaP working groups:

Shippers, Suppliers, Traders, Gas Distribution Networks, Interconnection Points, Terminals, Power generators, Industrial and Commercial sites, Storage operators, Xoserve, BEIS, EU gas Transmission System Operators, Energy Subject Matter Experts, Academia, consumer groups, Hydrogen producers.

GMaP dissemination events:

1) Gas Operations Forum 2) NGGT Shaping the Future Webinar 3) IGEM 4) Gas Goes Green, Energy Networks Association 5) Gas Storage Operators Group 6) Renewable Energy Association.

Future of Gas (FOG) Steering Group meetings held	10
FOG Steering Group members	23

Website activity	450+ downloads of GMaP material

Engagement with the gas industry is critical to the success of the GMaP program.

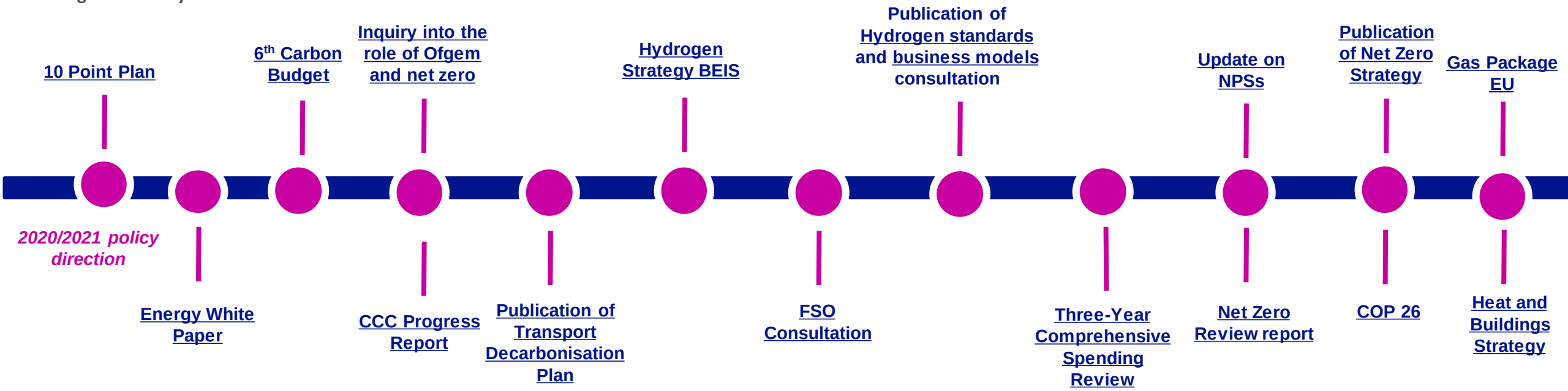
We will continue to work with gas industry participants, stakeholders and decision makers to discuss and explore areas of gas market change in the net zero transition.

In Figure 2 below we have provided a summary of our engagement over 2020 - 2021:

1c) Gas market policy direction 2020/2021

Figure 3 below illustrates the key gas market policy direction, policy decisions and policy consultations published over 2020 - 2021 that will influence the future of the UK's gas system and market, and had the most influence on the direction of the GMaP program.

Figure 3: Policy direction over 2020 – 2021



1d) Hydrogen GMaP 2020 - 2021

Hydrogen has been a core theme for the GMaP program, given hydrogen is expected to play a significant role in the decarbonisation of UK heat, industry, power generation and transport. While there is a significant pipeline of policy signals to direct short-term ambitions for hydrogen development, including the UK hydrogen strategy setting out the approach to delivering ambitious hydrogen targets, uncertainty remains on the market impacts of a hydrogen transition.

Over 2020 – 2021 the Hydrogen GMaP in collaboration with a working group of industry, decision makers and stakeholders undertook 3 GMaP projects exploring key market change activities needed to integrate hydrogen into the UK's energy mix. Our aim is to make sure the gas system and markets continue to deliver consumer value throughout the transition to a hydrogen future.

2020 Hydrogen GMaP:

Hydrogen scenarios:

The first Hydrogen GMaP project outlined a series of scenarios that explored the potential role of various hydrogen production and storage technologies, hydrogen transportation options and user conversion routes to full (100%) hydrogen. The scenarios were based on completed or ongoing hydrogen projects in Great Britain.

The purpose of generating the Hydrogen GMaP scenarios was to explore the key hydrogen events or triggers that could lead to market change. For market participants, this indicated how to plan for future market change, based on specific triggers that could come to fruition.

Market considerations to support a hydrogen town:

Based on Government ambition set out in the Prime Minister's 10 Point Plan to potentially support industry develop a plan for a hydrogen town before the end of the decade (*an ambition based on successful evidence from hydrogen trials*), this Hydrogen GMaP project set out to explore the potential market arrangements required to enable a hydrogen town.

The purpose of this project was to explore impact of a (100%) hydrogen town to existing gas sector market design and commercial arrangements.

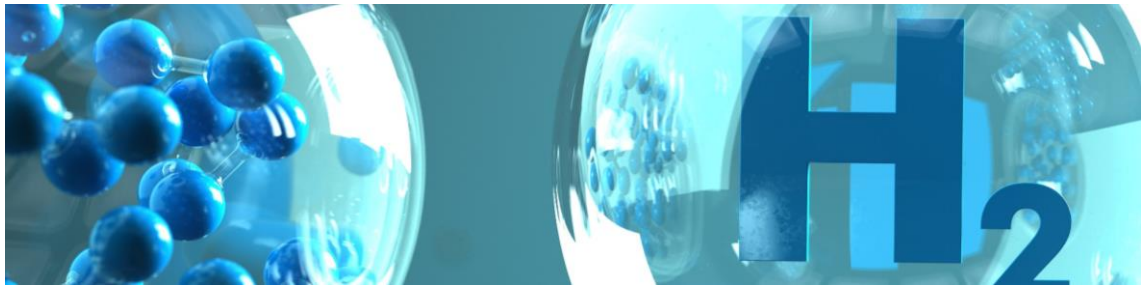
2021 Hydrogen GMaP:

The role of Guarantees of Origin in driving a future UK hydrogen market:

This first-of-a-kind project explored the role a hydrogen Guarantee of Origin (GoO) scheme could play in the development of a UK hydrogen market.

We evaluated existing GoO schemes in the UK and the EU, explored the benefits a hydrogen GoO scheme could generate for market participants including hydrogen producers, transporters and end-users, and set out recommendations for industry to consider to implement a UK hydrogen GoO scheme.

Our output demonstrated that a hydrogen GoO scheme could accelerate the development of a UK hydrogen economy and unlock a hydrogen market. *(Please note, publication of final report expected early 2022)*



1d) Gas Quality GMaP 2020 - 2021

Gas Quality is another core theme of the GMaP program, as to deliver additional low-carbon gases to UK consumers the existing Gas Safety Management Regulations (GS(M)R) will need to evolve. In our 2020 Gas Quality GMaP project, we worked with industry to explore how changes to GS(M)R do not automatically mean changes can be immediately accessed, where it will be vital for industry to have clarity on how such changes can be accessed in an efficient manner considering operational, commercial and end-user impacts.

The 2021 Gas Quality GMaP built on our previous work to outline a timeline of changes to existing gas market frameworks to enable hydrogen blending. We focused on hydrogen network blending considering the numerous benefits, including carbon savings at potentially minimal disruption to domestic end consumers.

2020 Gas Quality GMaP:

Implementing the Proposed Gas Quality Standards:

This first gas quality GMaP project looked at how the market rules for changing gas quality limits at system entry points could be improved, with a lens on future change over the next decade. The project's final report recommends and commits to delivering tangible improvements to the regime in the short term, alongside longer-term actions to be undertaken after a trigger event.

Regulatory changes will likely lead to an increase in the frequency and volume of change requests from parties at individual entry points to the NTS. These arrangements are currently managed through a contractual connection agreement process underpinned by Uniform Network Code (UNC) rules for NTS sites.

It is therefore important that the market frameworks are set up to handle the likely increase in the volume of change requests. This project analysed the current UNC market rules related to changing a gas quality parameter in a connection agreement and provided a range of recommendations, some of which have already been implemented.

2021 Gas Quality GMaP:

Britain's Hydrogen Blending Delivery Plan:

The process of mixing natural gas with up to 20% hydrogen could play a leading role in the transition to a hydrogen economy, including significant carbon savings without the need to change end consumer household appliances and also providing a demand reservoir for new hydrogen production. As hydrogen blending would be an intermediate step towards a 100% decarbonised gas future, it is vital that blending delivers the maximum benefit at minimum outlay. It needs to be delivered quickly, simply, and efficiently to give momentum towards the transition towards a 100% decarbonised gas future.

Therefore, this project created two timelines to map out how the existing gas market frameworks could be changed to enable hydrogen blending. For the purposes of this project, the gas market frameworks were broken down into five market pillars, these were primary legislation, regulation, licence, code, and safety change. From this basis, two timelines were created, a target driven "Target 2023" timeline and a slower "Sustained Progress" timeline. The timeline development process lead the project to 5 key conclusions.

1) 2023 is ambitious yet achievable to deliver minimum viable commercial framework change
2) Early clarity on policy can accelerate change.
3) Delivery of the timeline requires central coordination of change plans.
4) There is a need for industry collaboration before a final policy decision is made.
5) Implement quick win solutions first.

1d) Balancing and Access GMaP 2020 - 2021

Natural gas arrives in GB from many sources including from offshore gas fields in the North Sea, interconnection with Belgium and the Netherlands, and delivery of liquefied natural gas (LNG) tankers. Growing variability in where and how gas is brought on and off the gas National Transmission System (NTS) drives the need to consider whether the current balancing regime is still fit for purpose. In the 2021 Balancing GMaP we explored the changing role of shipper incentives, linepack and commercial services in balancing the NTS.

On the same theme, following on from the Capacity Access Review (*commenced in 2019 under UNC 705R*) it was agreed with industry that a further review of access arrangements in a net zero transition should be undertaken. The 2021 access review GMaP explored the functions of a future capacity access regime for the future decarbonised gas system.

2021 Balancing GMaP:

GB Gas Balancing Regime review:

This gas balancing GMaP project looked at how balancing arrangements within GB may need to change and adapt as we move through the energy transition.

The project centred its analysis around the levels of linepack swing seen within the NTS at the within-day timeframe. Analysis has shown that the levels of linepack swing are increasing and resulting in increased balancing related operational actions being taken by the Gas System Operator. With projections showing that linepack swing will potentially increase further as we transition towards a decarbonised gas system, this project explored how balancing arrangements could be adapted to help manage this characteristic.

The project concluded that gas balancing arrangements are believed to remain appropriate for the next ~5 years and therefore presented a number of potential ideas of how arrangements could change to promote discussion within industry. A range of recommendations were also provided, some of which have been taken into other project workstreams to progress.

2021 Access GMaP:

Long Term Access Review:

This project considered how current NTS Capacity access arrangements may need to evolve in the coming years as the gas landscape continues to change.

The Long Term Access Review Project Consultation Report builds on a previous consultation (Jan 2020). It firstly defined a scenario by looking at the anticipated physical characteristics of the NTS in 2030 and what changes in the behaviour of Users this could result in. It then outlined a spectrum of potential solution options that were developed with external stakeholders, using the ambition statement agreed as part of the January 2020 consultation as a benchmark to develop the solution options, and the functions agreed to assess those options against.

The consultation was published in September 2021 and sought industry views on the 2030 scenario and solution options for future access arrangements presented within the consultation document. Responses will contribute towards the identification of early indicators and the further development of preferred solution options at the appropriate time.

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2022 Gas Market Plan (GMaP)

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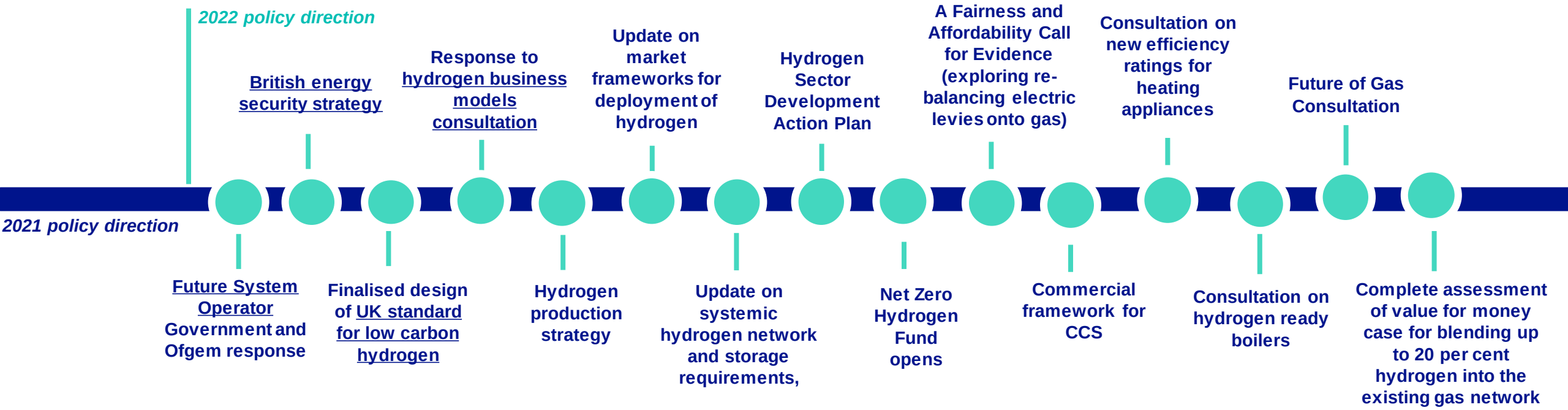
2a) Gas market policy direction 2022

There is an abundance of gas market policy direction expected in 2022. Figure 4 below indicates the (*currently known from publication date April 2022*) updates to gas market policy direction, policy decisions and policy consultations that will impact the future of the UK's gas system and market.

Upcoming policy direction will also play a hugely important role in shaping our GMaP focus areas. The key areas of gas market policy direction that we are focusing on include the role of hydrogen, hydrogen blending, and how existing gas market rules may need to evolve to meet current and future gaseous energy needs for the UK.

Figure 4: Policy direction over 2022



2b) 2022 GMaP themes

Over 2022 we will be exploring three key focus areas for potential market change, including hydrogen (*full/ 100%)*, hydrogen blending and natural gas.

Below we have outlined a summary of why these focus areas have been selected and the projects we will be developing with industry in these areas.

Hydrogen (*full/ 100%*):

Hydrogen continues to be an important GMaP focus area, as hydrogen is expected to play a significant role in decarbonising UK heat, industry, power generation and transport.

The Hydrogen GMaP project we are progressing is:

Commercial framework exploration for Project Union

- We are working with industry to explore how the development of Project Union could impact existing gas sector market design and commercial arrangements.
- Project Union is a NGGT project exploring repurposing sections of the NTS to develop a hydrogen backbone network.

Hydrogen Blending:

Hydrogen blending is gaining increasing momentum, considering Government commitment to make a decision on the role of hydrogen blending in 2023.

The Hydrogen Blending GMaP project we are progressing is:

Hydrogen deblending feasibility study (*phase 2*) markets workstream

- Through this NIA (Network Innovation Allowance) funded project we have commissioned Frontier Economics to collaborate with an expert industry working group to explore how existing market frameworks may need to evolve to accommodate de-blending technology on the UK's gas networks.

Natural Gas:

The Future Energy Scenarios show a need for natural gas out to 2050. However, the introduction of hydrogen and hydrogen blending is likely to impact the requirements of the natural gas market.

The Natural Gas GMaP project we are progressing is:

Reviewing the principles of the natural gas market

- Continuing the work carried out to date, in 2022 we will expand on this to review the principles of the natural gas market (*such as, potential further provision of gas quality information*) to ensure a well-functioning natural gas market is maintained as we decarbonise the gas system.

These activities align to our ongoing progress on establishing a 2 – 10 year gas market development roadmap

GMaP team and contact information

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You can find more information on the **Future of Gas Steering Group** on our website:
Future of Gas – FoG

You can find more information on the **GMaP program** and outputs on our website:
Future of Gas – GMaP

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