

Decarbonised Gas Alliance response to the Ofgem RIIO-2 Framework Consultation

May 2018

The DGA is an alliance of gas producers, transporters, suppliers and users, hydrogen and carbon capture experts, alongside R&D, supply chain and local government specialists whose knowledge and expertise will be vital in decarbonising the UK's gas system and tackling poor air quality. Our aim is to work with all levels of government and with other expert organisations to use the gas system to help deliver our emission reduction and air quality goals.

Since the DGA was set up in late 2016, we have grown rapidly to over 40 signatories. In the months since the DGA was formed, there has been welcome support from Government, including the formation of the BEIS Hydrogen Innovation Programme, the announcement of a new £23 million fund from the Office for Low Emission Vehicles to support hydrogen vehicles and infrastructure, and confirmation of the importance of decarbonised gas and CCUS in the Clean Growth Strategy.

Why decarbonising gas matters

There is a compelling case for ensuring that the ambition for the gas system as a whole matches the ambition for the continuing growth of renewable electricity generation. Decarbonising gas can help deliver:

- **Overall emissions reductions:** Decarbonised gas can deliver substantial emissions reductions. Energy Research Partnership calculations show that 80 million tonnes of CO₂ a year could be saved from domestic and commercial heat and transport by 2050.¹ And city air quality could be greatly improved by the use of natural gas in transport, particularly in larger vehicles that are more difficult to electrify, and increasingly through hydrogen.
- **Heating decarbonisation:** It will be much more difficult to decarbonise heating through wholesale electrification and without decarbonised gas, given that peak heating demand is around five times peak electricity demand. KPMG has calculated that an electric-only solution could cost an additional £274-318 billion by 2050, compared with a predominantly gas-to-hydrogen route costing £104-122 billion.² The gas-to-hydrogen option also results in far less disruption to households, making use of existing infrastructure and avoiding the need to replace entire central heating systems.
- **Industrial opportunities:** There are enormous industrial opportunities from decarbonised gas, including the use of hydrogen to produce 'green' steel and 'green' ammonia and the opportunity for the UK to develop and manufacture the underpinning decarbonised gas technologies. Developing decarbonised gas in the UK would encourage exports, as other countries look to decarbonise their gas networks.

¹ Based on 9 million homes heated by hydrogen and 16 million fuel cell cars, with some additional commercial buildings, HGVs and buses also using hydrogen. Energy Research Partnership calculations based on scenarios in the following references: LowCVP, Element Energy, Transport Energy Infrastructure Roadmap to 2050: Hydrogen Roadmap Low Carbon Vehicle Partnership, June 2015 http://www.lowcvp.org.uk/news/lowcvp-2050-transport-energy-infrastructure-roadmaps-show-the-way-to-transport-decarbonisation_3263.htm; Northern Gas Networks, H21 Leeds City Gate, July 2016 <http://www.northerngasnetworks.co.uk/document/h21-leeds-city-gate/>

² KPMG, The UK Gas Networks role in a 2050 whole energy system, July 2016 <http://www.energynetworks.org/assets/files/gas/futures/KPMG%20Future%20of%20Gas%20Main%20report%20plus%20appendices%20FINAL.pdf>

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- **Balanced growth:** Gas and electricity networks are increasingly working together at distribution level, and this reliance is likely to increase. Using an increasingly decarbonised gas network, working closely with the electricity system, provides a synergistic and low risk approach to delivering safe, secure and flexible energy to UK plc. An increasingly constrained electricity system in some areas presents a potential barrier to new factories, businesses and industry that are critical to our economic growth. Delays in providing the capacity required can stifle or prevent planned investment in infrastructure. Similarly, decarbonised gas can help to meet new heating, cooling and transport loads which will emerge.

Decarbonised gas innovation

Industry is demonstrating considerable commitment, with numerous projects taking place across the country, including biomethane injection; hydrogen testing projects, refuelling stations and buses; and natural gas trucks. A range of projects have taken place under Ofgem's RIIO-1 Network Innovation Allowance and Competition, including:

- The H21 City Gate project is demonstrating the feasibility of using 100% hydrogen in the gas grid, and SGN is planning 100% hydrogen pilot projects in Scotland.
- The Cadent-led HyNet project in the North West – which aims to save over 1.5 million tonnes of CO₂ each year from local industry.
- The HyDeploy trials at Keele University – which will investigate how the gas grid can manage up to 20% hydrogen – are now underway.
- Wales & West Utilities and Western Power Distribution's 'Freedom Project' has tested hybrid heating systems in 75 properties this winter.
- SGN's 'Opening Up the Gas Market' project has demonstrated the potential for including a wider range of gasses in the grid.
- Cadent's BioSNG demonstration plant, which is demonstrating the feasibility of producing grid quality gas from black bag waste.
- National Grid's Project CLoCC, which is facilitating higher pressure connections for gas production facilities.

This network innovation is taking place alongside a suite of other activity across the industry, such as:

- Worcester Bosch has announced the development of a 100% hydrogen domestic boiler.
- Subject to securing funding, the Teesside Collective industrial CCS project is at an advanced stage of planning.
- Summit Power has demonstrated the feasibility of a power project with carbon capture in Grangemouth and Pale Blue Dot is studying the Acorn project at St Fergus near Aberdeen.

We note that energy networks have a vital role to play in developing decarbonised gas, and strongly advocate that the RIIO-2 Framework reflects this opportunity.

Regulatory frameworks

As the section above suggests, network innovation funding has been vital to building the evidence around options for decarbonising gas and we believe it is vital that this work continues. The networks will continue to play a crucial role in connecting, managing and distributing decarbonised sources of gas.

Within the RIIO-2 Framework specifically, the DGA would like to see:

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- **Continuing progress towards decarbonisation:** The RIIO-2 Framework clearly needs to deal with a range of uncertainties around issues like government policy, future gas demand, and the availability of different sources of gas. However, any uncertainty mechanisms must not prevent progress in the early part of the price control – progress towards decarbonising gas (for example through biomethane/bioSNG injection and hydrogen blending) and network innovation will be required in the early years of the RIIO-2 under any scenario for the future energy system.
- **Ongoing explicit innovation funding:** This should build on mechanisms such as NIA and NIC which are well established and understood.
- **Continuing to fund the Iron Mains Risk Reduction Programme:** This programme will continue to improve the safety of the network, while also providing pipework which can carry a wider range of decarbonised gasses.
- **Investment in the future of the network:** This should include new connections for offtake customers and green gas producers.

How does decarbonising the gas system benefit consumers?

A RIIO-2 Framework which supports the decarbonisation of the gas system, including the role of the networks, will benefit current and future consumers. Under RIIO-1, over 80 biomethane sites have been connected to the gas network, allowing customers to benefit from lower carbon gas without making any changes to their appliances. As explained above, decarbonising gas will help meet the UK's climate change commitments in the most cost-effective way possible, protecting consumer interests, and this should be reflected in RIIO-2:

- Reducing emissions from buildings – and in particular from heating – is a major policy challenge: heating and hot water make up 40% of our energy consumption and 20% of greenhouse gas emissions.³ Progress in carbon reduction in this sector has stalled, and the regulatory environment for the energy system in the 2020s has a vital role in reducing emissions intensity and developing the evidence for future options. This will benefit consumers by ensuring that the UK can meet its environmental goals in the most cost-effective way possible.
- In their 2016 report on “Next Steps for UK Heat Policy”, the Committee on Climate Change said that:⁴

“For hydrogen, it will be necessary for CCS to be under active development, together with forward-looking regulations, demonstration projects and innovation support.”

“Shifting to a hydrogen gas supply, whether regionally or nationally, would require a coordinated Government-led effort to overcome major obstacles. To understand whether this is desirable and how best to proceed, it will be vital to undertake pilots and demonstrations in the next decade.”

“Preparatory action, including R&D and pilots, is required in order to... test the feasibility of hydrogen for heat and to reassure the public and businesses that fuel switching to hydrogen networks can be done safely, affordably, and with minimal disruption.”

³ Committee on Climate Change, Next steps for UK heat policy, October 2016 <https://www.theccc.org.uk/publication/next-steps-for-uk-heat-policy/>, p.7.

⁴ Committee on Climate Change, Next steps for UK heat policy, October 2016 <https://www.theccc.org.uk/publication/next-steps-for-uk-heat-policy/>

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These statements emphasise the importance of continuing innovation work around hydrogen and other options for heat policy through the 2020s, to prepare for final policy decisions in the middle of that decade. Given the importance of the gas networks in these pathways, it is vital that the regulatory framework recognises the incremental steps that can be taken to integrate low carbon gas, and prepare the evidence base for future decisions. Indeed, the CCC explicitly said that progress on heat policy required “Ofgem to ensure RIIO framework reflects range of future gas options” (p.15).

- The gas networks play a vital role in the energy system as a whole. The gas network intrinsically provides by far the largest energy store on the UK system. This allows the system to meet winter peaks in gas demand and supports intermittent renewable electricity by providing a flexible, fast-responding source of power. As an increasing proportion of electricity is generated by intermittent distributed sources, and new loads such as electric vehicles connect to the electricity grid, the importance of gas in meeting peak demands is likely to increase across the RIIO-2 period.

Responses to specific questions

Q2. Do you agree with our preferred position to set the price control for a five-year period, but with the flexibility to set some allowances over a longer period, if companies can present a compelling justification, such as on innovation or efficiency grounds?

DGA notes that investments for decarbonisation can involve long-term projects or innovation which stretch beyond price control periods, irrespective of whether these are set at five or eight years. Ofgem must therefore mitigate risks to delivery of these investments, to support the development of cost-effective, decarbonised networks.

Q3. In what ways can the price control framework be an effective enabler or barrier to the delivery of whole system outcomes?

A true ‘whole system’ approach needs to consider interactions between transmission and distribution networks; their interaction with the wider energy system; and the interactions between electricity, gas and other energy vectors.

Q9. What options, within the price control, should be considered further to help protect consumers against having to pay for costly assets that may not be needed in the future due to changing demand or technology, while ensuring companies meet the reasonable demands for network capacity in a changing energy system?

We do not consider asset stranding to be a major risk. As set out above, it is clearly important for the RIIO-2 framework to take account of uncertainty. However, Ofgem should also note the role the gas networks play in mitigating third party asset stranding risk – for example, distributed gas generation may be important to ensure sufficient capacity is available for electric vehicle recharging.

Alongside the opportunity to decarbonise gas, the role that the gas networks play across the energy systems mean that ongoing investment is required through the 2020s. Any risks can also be reduced through support for network innovation, particularly around the future role of the gas networks.

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The gas network is an incredibly valuable asset that should be used to the full in the UK's decarbonisation programme. As the growth in the DGA's membership has demonstrated, this is increasingly well understood across the energy system.

Q11. Do you agree with our proposal to retain dedicated innovation funding, limited to innovation projects which might not otherwise be delivered under the core RIIO-2 framework?

DGA strongly supports the proposal to retain dedicated innovation funding. The innovation stimulus has played a highly significant role in supporting the evolution of the energy system, and providing evidence for potential future developments. It is a vital part of the UK's energy landscape and has supported a number of SMEs through their partnership in projects.

Q12. Do you agree with our three broad areas of reform: i) increased alignment of funds to support critical issues associated with the energy transition challenges ii) greater coordination with wider public sector innovation funding and support and iii) increased third party engagement (including potentially exploring direct access to RIIO innovation funding)?

We broadly support the alignment of funds for critical issues, and that a well-resourced fund should be available for large scale, strategic projects such as those supporting decarbonisation. However, this should not restrict the remit of funding compared to the current schemes: a wide scope for innovation funding is necessary to ensure that it can take account of developments and new opportunities. We also note the recent publication of the Gas Network Innovation Strategy, which provides an opportunity to align with critical issues identified by stakeholders across industry.

While coordination between funding streams is clearly beneficial, Ofgem need to take care to ensure that the network innovation stimulus retains its own identity and structure. For example, other innovation funding is generally available in time-limited pots with specific application windows, and one of the advantages of NIA-style funding in particular has been the ability for networks and their partners to register new projects when the technology or approach is ready, rather than fitting artificial windows.

We support increasing engagement across the energy industry in relation to network innovation – noting that this has been a successful part of the RIIO-1 framework.

Q13. What are the key issues we will need to consider in exploring these options for reform at the sector-specific methodology stage, including:

- (i) What the critical issues may be in each sector and how we can mitigate the bias towards certain types of innovation through focusing on these issues?**
- (ii) How we can better coordinate any dedicated RIIO innovation funding with wider public sector funding and support (including Ofgem initiatives such as the Innovation Link and the Regulatory Sandbox)?**
- (iii) How we can enable increased third-party engagement and what could be the potential additional benefits and challenges of providing direct access to third parties in light of the future sources of transformative and disruptive innovation?**

Despite the importance of gas across the energy system, opportunities for decarbonising gas have received significantly less funding and attention than the decarbonisation of electricity. The RIIO-2 sector framework for gas should support the role of the networks and their partners in preparing for low-carbon gas, and developing the evidence base for future

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policy and regulatory approaches. Approaches to identifying critical issues, coordinating with wider funding and increasing engagement should be developed in consultation with the wider energy sector.

Q14. What form could the innovation funding take? What would be the advantages and disadvantages of various approaches?

As set out above, DGA believes that a strategic fund for major projects, analogous to the current NIC, should be retained and enhanced. Opportunities for decarbonising gas should play a major role in the vision for this scheme.

Alongside that, we see an ongoing role for an NIA-style scheme for smaller projects. Under RIIO-1 these have often acted as the building blocks for larger strategic projects, delivering initial or supporting work. There is a clear need to retain both approaches to help address critical issues and support decarbonisation.

Q15. How can we further encourage the transition of innovation to BAU in the RIIO-2 period? How can we develop our approach to the monitoring and reporting of benefits arising from innovation?

Ofgem should consider how to support increasing volumes of decarbonised gas in the networks across the RIIO-2 periods. This would in turn support the transition of related innovation projects.