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National Grid Gas Transmission (NGGT) response to Ofgem's Open Letter on the next price control review process

Dear Akshay,

Thank you for the opportunity to respond to the Open Letter on the next price control review process.

National Grid Gas is proud to play a critical role in meeting the energy needs of consumers and industry today and enabling future net zero ambitions. We have a significant role to play in delivering affordable energy securely for the UK throughout the journey to net zero and beyond. We understand the vital role we can play in decarbonising our own system and providing hydrogen solutions for the UK. This will grow GDP, create skilled jobs and provide export opportunities to meet the economic growth ambition of our country.

Success in achieving this ambitious agenda requires collaboration and partnership across our industry and with the communities we serve. We started a conversation with our stakeholders on this earlier this year¹. A lot of the feedback we gathered is relevant for the questions you ask in the Open Letter; we're pleased to share this feedback with you along with our reflections on what action is needed.

The regulatory framework which governs our activities should ensure a net zero transition that is secure, at least cost to current and future consumers and leaves no one behind. We recognise that the Open Letter is an important early milestone in ensuring the regulatory framework is fit for the needs of all energy consumers over the coming decades.

We hope the key points detailed in our response will support appropriate evolution of the framework to best navigate the challenges of delivering a **safe and secure energy system**. In summary:

- **The framework needs to facilitate whole energy system optimisation.** A whole energy system objective should be introduced into the framework to ensure all decisions are considered through this lens. Focus on this is needed ahead of the establishment of the Future System Operator. For the next price control review period, this should be facilitated by the Gas and Electricity System Operators leading the development of common planning assumptions for consistent use within networks' business plan development.
- **Hydrogen network requirements must be part of the framework.** This needs to be enabled within the next price control review period to ensure the necessary hydrogen network is in place by the mid-2030s. Significant interdependencies exist across methane, hydrogen and electricity – therefore it is essential that the price control review framework enables optimisation across all these energy vectors. Including hydrogen requirements within the gas sector regulation will deliver consumer benefits in terms of reducing overall cost and facilitating the necessary pace of the transition to net zero. These benefits come from the fact that a hydrogen network will be delivered through repurposing of existing gas transmission pipelines benefiting both existing and future network users in delivering the required infrastructure at a fraction of new build costs for the same capability and reliability. We have been developing a transportation cost / charging model to determine what this would mean for consumer charges and believe an approach can be adopted to deliver repurposed and new hydrogen infrastructure with more effective cost allocation than other non-regulated models.

¹ Playback from our "Evolving the regulatory framework to ensure the least cost and secure net zero transition" Stakeholder consultation:
<https://www.nationalgrid.com/gas-transmission/regulatory-frameworks>

- **The RIIO framework has driven consumer benefits, with key aspects continuing to be fit for the future.** Periodic reviews with ex-ante regulation are still wholly appropriate for many activities, including a strong incentive package to drive innovation, efficiency and strong performance in the interests of current and future consumers. Maintaining the core principles of the framework is important for many aspects of the Gas Transmission sector's baseline business planning components. Alternative approaches can then be considered for aspects of our plan with a high degree of uncertainty during a 5-to-10-year planning cycle with little or no fundamental impact to the baseline.
- **Refinements can be introduced to ensure the process to manage uncertainty delivers optimal outcomes at the pace needed.** This needs a combination of keeping options open to leverage the opportunity to make decisions in the future and enabling action to be taken now by focusing on the value to society of acting now, even if uncertainty means that the future unfolds differently. A broader set of tools to support timely decision making should be used which takes account of the full range of societal costs and benefits (for example using Real Options Analysis) and volume drivers or pre-defined thresholds can be identified up front (beyond which Ofgem would review any changes to investment levels).

For Gas Transmission we need to ensure recognition is given to the critical role the network provides in energy security in having the infrastructure to move energy where it is needed at peak times². This includes taking a far wider view on the level of resilience needed and the benefits to all energy consumers of having a resilient network that is the only viable and economic power generation solution at these peak times and decoupled from a potential decline in annual demand.

We look forward to further dialogue over the coming months to develop this thinking. If you have any immediate questions, please do not hesitate to contact our Regulation Director, Tony Nixon (tony.nixon@nationalgrid.com), who looks forward to working with you and your team to support the evolution of the framework.

Yours Sincerely,



Jon Butterworth

Chief Executive Officer, National Grid Gas Transmission and Metering

² A key component of energy security is accessibility of energy: <https://researchbriefings.files.parliament.uk/documents/POST-PN-0676/POST-PN-0676.pdf>

Q1 Do you have any views on the strategic issues we must consider in the development of the next price control review process?

The framework needs to facilitate whole energy system optimisation that promotes a safe, secure, timely and lowest cost net zero transition.

The demands placed on our energy system are becoming increasingly complex and interdependent:

- Power generation will become dominated by more variable and less flexible renewable sources.
- As intermittent renewable generation deployment increases, the UK will become even more reliant on flexible dispatchable power which can only be provided by gas, including the need for significant volumes of gas storage.
- The ability to respond appropriately to high impact/low probability asset and/or market events will continue to be absolutely critical to provide the energy resilience consumers need.
- In the future, hydrogen will play a crucial role in both power generation and in achieving net zero.

A smart combination of gas and electricity in an integrated energy system will minimise consumer disruption and deliver the lowest cost pathway to Net Zero. In a recent study conducted by Guidehouse³ it was identified that; in all net zero scenarios, integrated infrastructure planning across electricity and hydrogen transmission can provide energy system savings of up to £38 billion by 2050, which will be supported by no-regret network investments common across all scenarios over the next decade. In addition, utilising green hydrogen electrolysis in the energy mix reduces renewable generation curtailment from 26% down to 1% by 2050.

The acceleration of offshore wind capacity is an example of where whole energy system optimisation could drive considerable value. The UK is the windiest country in Europe with the most offshore wind installations in the world and has natural storage locations for hydrogen and CO₂, essential for hydrogen production and a resilient hydrogen economy. The UK's gas transmission network is located in the right places to transport hydrogen from where it is made to where it is needed. The potential for "hydrogen as an electricity asset" is discussed in the recent Delta-EE publication⁴.

We asked our stakeholders about the need to align and plan around a whole energy system. We heard that an early approach to whole energy system was essential; we need early alignment of collective decisions on which to plan; and that low carbon gas has a key role in the energy transition.

"As the energy system evolves there will need to be greater emphasis on resilience and contingency as the maintenance of a diverse range of energy sources and providers." (Trade Association)

"Greater opportunity for whole system thinking." (Shipper/Supplier)

The strategic context should recognise the role of natural gas across the net zero transition.

In GB today, around 85% of homes depend on gas for heating, as do many businesses and public buildings. Gas is also crucial for many large-scale industrial processes and plays a crucial role in producing reliable and flexible electricity generation with around 40% of the electricity we use today being produced using gas. When considering the needs of the network, we must also recognise the demand of our customers. Even today, dispatchable generation may only be needed periodically, and therefore the gas network peak capacity may only be needed for a certain number of periods, but if the network capacity is not available, the consequences will be significant.

In the UK Government's Energy Security Strategy published in April 2022, it describes gas as the "*glue that holds our electricity system together*" because of its role in providing resilience and the flexibility that has underpinned the growth of electricity production from renewables.

The gas transmission network will form an integral part of the solution to ensure that net zero targets are met, whilst addressing the energy security concerns and the cost pressures that consumers face. Recognition needs to be given to the inherent value of the gas network to consumers and society as a whole

³ On behalf of National Grid Gas, National Grid Electricity and National Grid ESO, Gas and Electricity Transmission Infrastructure Outlook 2050 (separate document attached)

⁴ <https://www.delta-ee.com/report/report-summary-hydrogen-as-an-electricity-system-asset/>

and the services it provides in maintaining critical energy security and resilience for power generation, industry, and high-grade heat today, as well as the transformative role it can play in decarbonising for the future.

The interaction between the gas and electricity systems is growing and placing greater stress on the available, but ageing, network assets that will be required to respond more quickly and flexibly to peak demand requirements from drops in renewable output. The potential for upwards of 100 new oil and gas licences being granted in the North Sea, needs to be balanced with increased supply from other entry points into the GB market (such as LNG importation terminals and EU interconnectors) and clear Government commitments such as decarbonisation of the continued use of gas in power, including through the deployment of power CCUS⁵. This will require timely investment to transport the flows to centres of demand without creating entry constraints.

Whilst in the short to medium term the total overall annual gas volume transported may drop, the gas network will be critical to providing the majority of UK energy at peak periods in the middle of winter in times of little renewable generation.

"It is important that gas transmission fits into wider energy security and planning strategies" (Anon - webinar comment)

"Natural gas will indeed be the backbone of UK energy system even though the quantities of gas being used will fall. Similarly, the existing gas system provide a low-cost route for energy transmission where we expect hydrogen and biomethane to be important parts of the net zero future. Ongoing investment in gas networks is certainly in the interests of many UK energy consumers, both business and households, both in terms of cost of delivery and system resilience." (Trade Association)

Net Zero cannot be achieved without hydrogen due to the whole energy system role it performs: across power generation, storage, industrial decarbonisation, transport and beyond to heat⁶.

The Government recognises the critical role of hydrogen transportation infrastructure in achieving this, describing it as a *"critical enabler for the necessary growth in the hydrogen economy to meet our 10GW ambition"*⁷.

The recent study by Guidehouse concluded that strategically located investments in hydrogen transmission infrastructure are needed in the next decade to deliver the benefits of integrated system planning. Taking investment decisions promptly will allow for better network integration, which will result in optimised energy generation and attract investments to build the required supply capacity.

Q2 Do you have any views on the case for change outlined?

The RIIO framework has driven benefits to consumers and wider GB society, with key aspects continuing to be fit for the future.

Working with our customers and stakeholders, the RIIO framework has enabled the investment needed to deliver secure, reliable, and affordable network infrastructure. And through appropriate incentivisation it has driven world-class levels of innovation and efficiency.

We recognise the uncertainty presented in the case for change, but a significant proportion of our activities can be planned for and executed with a high degree of confidence where there is certainty over the needs of our customers and stakeholders and/or the activity is driven by policy and legislative requirements.

⁵ This being recognised as key to meeting the commitment to decarbonise the electricity system by 2035 whilst maintaining security of supply: Call for evidence on the future policy framework for the delivery of power with CCUS:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1093437/power-ccus-call-for-evidence.pdf

⁶ In all credible pathways to net zero hydrogen is needed: <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf>; <https://www.nationalgrideso.com/document/199871/download>

⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1101296/hydrogen-transportation-storage-consultation.pdf

Periodic reviews with ex-ante regulation are still wholly appropriate for many activities. The framework needs to be adaptable to consider which elements of networks' responsibilities are the subject of major uncertainty, what the likely triggers of change are, and whether it is appropriate for these areas to be treated differently from areas where greater certainty exists.

It should be noted that for activities not subject to uncertainty, five years isn't long in terms of long-term investment planning and delivery. A longer price control period gives more scope for companies to innovate and drive efficiencies across core activities while some areas naturally lend themselves to greater consumer benefit over a longer duration, i.e. network risk targets for asset health.

We recognise the resource intensity across industry associated with periodic reviews and welcome the drive to simplify the process whilst maintaining a sharp focus on consumer outcomes and costs.

Refinements can be introduced to ensure the process to manage uncertainty delivers optimal outcomes for consumers today and tomorrow at the pace needed.

The RIIO framework also has a range of mechanisms in place to protect consumers from uncertainty whilst ensuring network companies remain investable long-term propositions. We have seen these mechanisms change from RIIO-1 to RIIO-2; with periodic reviews allowing for the individual mechanisms to be reviewed. A pathway through the uncertainty can be navigated that isn't overly prescriptive, doesn't prevent flexible and innovative approaches to delivery, does not delay the required investment and delivers security of supply, affordability and net zero. This requires a combination of options to:

- Leverage the opportunity to make decisions in the future, and
- Enable action to be taken now if it delivers value to society, even if uncertainty means that the future unfolds differently.

The objectives set at the heart of the framework will have significant implications for how a needs case might be developed and presented. An evolution of how we present, and how Ofgem assess, the economic needs case for investment is required to allow a shift away from the current resource-intensive, granular reviews of needs cases, to taking a more holistic view of the overall savings and benefits such investments could deliver to consumers. This should take account of the full range of societal risks and benefits associated with a range of investment options and the value our natural gas network provides in delivering resilient energy supplies to our nation. In an increasingly interdependent energy landscape, it is important we bring in broader societal benefit to the building of our needs case. *Please see response to Q4 on tools that could be utilised to navigate uncertainty.*

We explored with our stakeholders whether the approach to economic assessment needs to be refined to allow for no-regrets decisions in the interests of consumers. We heard from our stakeholders that appropriate tools are needed to support decision making (ensuring investment decisions are not delayed); care is needed on transition planning to find a way through uncertainty, and a more inclusive approach to planning is needed which takes account of societal risks and benefits. Our stakeholders also recognised the complexity of the current regime and expressed some concerns over the scope for increasing amounts of capital expenditure going through reopener and uncertainty mechanisms.

"Societal risks should clearly be included to ensure medium- to long term risks are considered and Net Zero is achieved at the lowest cost" (Consultant)

"As the energy system evolves there will need to be greater emphasis on resilience and contingency as the maintenance of a diverse range of energy sources and providers." (Trade Association)

"...a way needs to be found through the uncertainty currently faced with respect to net zero pathways and the investment required to support these. Least regrets options being pursued initially. (Trade Associations)"

Q3. Do you have any views on whether the changes in the E or G sector mean that there is a case to consider alternatives to the approach taken in RIIO2?

A whole energy system objective needs to be embedded in the framework to provide a clear driver for decisions.

This needs to cut across energy vectors, including hydrogen, to ensure the full value chain is considered. It is unclear why treatment of uncertainty is different across sectors, particularly when it is essential to drive whole energy system optimisation across the framework. There are significant benefits to be gained from alignment across energy vectors, providing the structure to take forward net zero investments in a coordinated, integrated and societally optimal manner that will reduce the cost of net zero and energy independence compared to building entirely new infrastructure.

Hydrogen network requirements must be part of the framework

The next price control offers an opportunity to meet the needs of existing consumers, whilst developing the hydrogen system of the future. There are benefits to aligning the natural gas and hydrogen framework, supporting efficient repurposing of the natural gas network for hydrogen⁸.

The existing natural gas network will also fulfil a critical initial role in stimulating hydrogen demand through blending and will need to play a transformative role as hydrogen demand gathers pace. The framework must be able to support that growth.

We asked our stakeholders whether there are benefits in aligning the regulatory framework for natural gas and hydrogen. We heard the importance of the role of regulation in the development of a hydrogen transmission network and that early direction is needed.

We need to fairly allocate costs and risks across generations and beneficiaries.

We head into the price control amidst economic volatility and challenges with regards to energy security and cost-of-living both in the UK and on the world stage. This underlines the need for resilience and self-sufficiency in energy supply, but this must be affordable for everyone.

Ongoing investment in the natural gas network will be required to maintain resilience and support energy independence as we transition. Strategic investment to repurpose existing infrastructure to transport hydrogen can provide a cost-effective solution to significantly decarbonise industry, transport and heat. Supporting the required ongoing investment whilst managing uncertainty, economic volatility, and stranding risks across time horizons all have a financial impact.

Regulatory frameworks can provide solutions as to how these costs can be most fairly balanced across society and intergenerational beneficiaries. There are inevitably trade-offs that need to be managed, and there is rarely a perfect solution. For the next price control period, we need to take stock of the range of potential solutions to effectively balance financial risk and cost across generations.

We have been developing a transportation cost / charging model to determine what this would mean for consumer charges and believe an approach can be adopted to deliver hydrogen infrastructure with more effective cost allocation than other non-regulated models.

We explored this topic with our stakeholders. They recognised the macro-economic uncertainty and the importance of balancing investment costs across generations. They also called out the need to ensure focus on the value from big decisions.

"Need to shift focus from fractions of pence and think about the bigger picture." (Trade Association)

"Repurposing of network to decarbonised gas will extend the life of assets... [and] has a value to current users. We would expect a balance to be struck between current and future users of gas networks in terms of cost allocation. This may require, for example, particular users covering the incremental cost of conversion." (Trade Association)

⁸ The approach of primarily repurposing assets from natural gas to hydrogen is up to five times more cost effective compared to new build. It also minimises the environmental impact of new build.

Q4. Are there any broad frameworks or options that you think we should consider, including variants or alternatives to those set out?

A number of new regulatory models are explored in the Open Letter which would require robust analysis of the implications on our ability to deliver for current and future consumers and stakeholders.

Further understanding of the detail of the models is essential to complete a robust assessment of their suitability. We offer some early reflections below.

Refinements are needed to unlock timely decisions given the uncertainty.

The framework needs to find a way to live with uncertainty and unlock optimal decisions given the multiple potential routes to achieving net zero and the long lead times associated with delivery of network investments. This should not shy away from making strategic or anticipatory investment decisions which could deliver the optimal solution for consumers and society⁹. The tools to manage uncertainty need to be more targeted in the future, quicker and more accessible and should ensure the regulatory regime incentivises and enables efficient investment in net zero technologies at pace, helping the country meet its net zero targets whilst lowering costs to consumers. There are number of ways this can be managed through refinement to the existing framework.

- We have significantly enhanced our asset management planning capabilities recognising the multitude of parameters impacting on investment decisions. This will allow us to move towards an annual asset management process, with a rolling ten-year view. Through targeting those identified areas of uncertainty we can optimise annually based on all the latest available information, assumptions and stakeholder need. This will facilitate the presentation of appropriate needs cases at the right time and could allow simplification in regulatory reviews. To supplement this, volume drivers or pre-defined thresholds can be identified up front (beyond which Ofgem would review any changes to investment levels).
- Adaptive planning, which is currently being used in the water price control for PR24, could also play a role. Elements of the adaptive planning approach could be applied to our existing framework to account for critical decision points in the future. Such an approach could help to differentiate elements that could follow a periodic approach from those better suited to more flexible mechanisms with key factors that may impact the plan identified up front.
- Real Options Analysis is another tool to support unlocking strategic decisions where it can be demonstrated that the value of taking the decision faced with the uncertainty outweighs the cost of getting the decision wrong or delaying the decision.

Our stakeholders recognised that the energy market faces increasing uncertainty and appropriate tools are needed to support decision making.

“Using other evaluation techniques such as real options is an area that should be examined more closely. Net zero requires progress on infrastructure to be accelerated. Infrastructure availability is beneficial ultimately to consumers and promotes more rapid change.” (Trade Association)

Interim focus on whole energy system optimisation is needed whilst the FSO is established.

As indicated in our response to Q3, a whole energy system objective needs to be embedded in the framework to provide a clear driver for decisions. We recognise the important role the FSO will play in optimising across the whole energy system – arguably to achieve whole energy system optimisation such a central role is a necessity. The FSO will not be in place until 2024 and there will be a necessary transition to fulfilling the many responsibilities identified within its role, including expansion of the remit to ensure hydrogen is included. As such, whilst it can be envisaged that the FSO will have a central role beyond the next price control review period it will not be able to fulfil this role for the next regulatory period.

In the meantime, networks need to align and plan around a whole energy system. Gas and electricity supply and demand scenarios are important to ensure energy networks invest for consumer needs today and into the future. Energy companies build their plans to meet a range of scenarios and assumptions. This means

⁹ As indicated earlier in our response, a recent study conducted by Guidehouse identified the potential for up to £38 billion in savings by 2050 from integrated infrastructure planning across electricity and hydrogen transmission.

that it is difficult for network companies and regulators to identify optimum investments across fuel types and networks, which provide best value for consumers and whole energy system optimisation. For the next price control review period, this should be facilitated by the Gas and Electricity System Operators leading the development of common planning assumptions for consistent use within networks' business plan development. This will allow us to develop consistent approaches to deal with uncertainties as we transition towards a low carbon energy system.

"FSO will deliver too late ... something needed ahead of this" (Consumer rep)

"Need to understand when FSO will come into play and its role in planning - will it be too late [for next price control]?" (Trade Association)

"Common planning assumptions are required early on in the process... to reflect government objectives for net zero and the extent of ambition ...set out in the Hydrogen strategy." (Trade Association)

Some of the options proposed are simply not appropriate for regulation of the gas transmission network.

For example, lack of comparable networks makes it impossible to effectively calibrate performance across companies.

We also urge caution with regards to movement to an ex-post regulatory landscape. Lack of predictability of future cost allowances creates uncertainty, disincentivises innovation and creates risk aversion in delivery. It is likely to drive up costs in financing and delivering investment. Retaining the benefits relating to innovation and efficiency throughout the price control encourages companies to implement ideas with a greater payback period and be more radical in their thinking. At a time when we need greater investment at pace and more innovation, we need to ensure the framework does not constrain this. Continuous management of an ex-post regime could drive increase in workload, including enduring value true ups and revenue charging impacts.

We fully support the critical role of stakeholders in a price control review, but do not believe negotiated settlement provides the optimal route for this. We note this was explored in the context of developing the RIIO-2 framework. Stakeholders did not support this as an option, believing Ofgem should retain responsibility for the final decision.

Transparency, predictability and simplicity needs to be at the heart of the framework.

This is essential to ensure delivery at pace and the value of our current and future energy networks can be unlocked efficiently, whilst maintaining networks as an investable proposition. At a time of significant uncertainty globally, it is essential that the regulatory framework reinforces stability, clarity and predictability as far as possible.

Significant changes to the framework are likely to be considered higher risk from an investment perspective and therefore cost more to finance; increasing costs to consumers. A framework which is transparent and predictable offers a lower risk investment proposition and lowers costs to consumers, this is noted in the recent BEIS Economic Regulation Policy paper: *"Economic regulation must provide a stable and predictable environment for investment to thrive, whilst protecting consumers in these markets"*¹⁰. This should be recognised in the design principles and objectives.

Adequate time to reflect any change to the framework is essential.

To plan effectively and mobilise the necessary work for a price control starting in April 2026 we need early visibility of the framework that will govern our activities. For example, the publication of minimum requirements for RIIO-2 was within 5 weeks of our initial draft plan being required. This was extremely challenging; both to deliver against and to ensure that the benefits the minimum requirements were designed to deliver, were reflected in our business plan submission. The Open Letter sets out potentially far-reaching changes to the framework. It is essential that time is set aside for discussion on the potential design options and alternatives and that there is sufficient time to plan for and enact any resultant changes.

¹⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051261/economic-regulation-policy-paper.pdf