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Citizens Advice response to Bright Blue call for evidence: The Future of the Gas Network

Dear Philip,

We are pleased to be invited to respond to this call for evidence. Citizens Advice has statutory responsibilities to represent the interests of energy consumers in Great Britain. This document is entirely non-confidential and may be published on your website. If you would like to discuss any matter raised in more detail please do not hesitate to get in contact.

We have outlined answers to the questions in your call for evidence below.

Question 1: What are the primary trends and challenges currently affecting the UK's gas network?

Demand for gas for heat and domestic use is falling and continues to fall¹, although gas distribution demand is expected to remain significant and relatively flat. It is expected that reducing gas demand will be offset somewhat by gas fired power station demand and winter peak heating.

Route to decarbonisation: At this point, it is not sufficiently clear whether electrification of heat or decarbonising the gas we use is the right path for consumers. Therefore there is uncertainty within the network companies as to the nature of network upgrades required.

Unidentified Gas: Between entering the national grid and being used in our homes and businesses, up to 3% of natural gas in the UK goes missing and we're not entirely sure why².

Who should pay? With declining transmission network utilisation, there is a risk that lower income consumers who cannot fuel switch may bear a greater proportion of costs.

Question 2: What should be the key priorities and aims for reforming the UK's gas network?

Decarbonise gas supply whilst minimising distribution to consumers: Reforming the UK's gas network will involve change in some form. Utilising 'green gas' allows the use of existing assets, aligns with current customer expectations for heat, and many studies suggest would

¹ National Grid, [Future Energy Scenarios](#) (July 2018)

² Citizens Advice, [Millions in missing gas - who picks up the bill?](#) (February 2018)

be the most cost effective method³. However, it requires the maintenance of the gas network, questions over technology behind hydrogen production and injection, and potential need to upgrade appliances for high non-mineral gas sources.

Affordability: The decarbonisation of the gas grid must not be done at any cost. Consumers will ultimately pay for reforms and it is vital that this is done in a way that is affordable for consumers now and in the future.

Question 3: How can the convergence of the gas network with other networks and sectors be enabled and accelerated?

Whole-system outcomes: As part of the next Price Control (RIIO-2), network companies should be incentivised to identify whole system outcomes⁴. Ofgem needs to be mindful that in promoting whole systems thinking, it ensures that the best solution for the system is well aligned with the best solution for consumers. This should also avoid double counting for a single solution. For example, if the System Operator is able to act in a way that improves the system - and subsequently removes the need for other network companies to act on the same issue - then in this case the networks should not benefit from underspend as this would effectively place a cost on consumers under what appears to be a system improvement.

Question 4: Which technologies provide the greatest potential for decarbonisation of heat, and how can they be better supported?

Electrification of heat: Heat pumps represent a key technology in increasing the efficiency of electric heating and bringing down its running costs, however they currently involve high up-front costs and adaptation challenges. Rolling out heat pumps to off-gas grid homes has been identified as an important low-regrets option by the Committee on Climate Change, and they have proposed that 1.1 million heat pumps should be retrofitted to off-gas-grid homes by 2030 under a cost-effective pathway to the UK's 2050 climate target, covering 1 in 4 of all off-gas-grid properties.⁵ In addition the CCC recommends that 1 in 5 new homes (on and off the gas grid) should be fitted with heat pumps by 2030. Together this equates to installing 2.3 million homes with heat pumps by 2030.⁶ This could help build a market capable of supporting a wider roll-out of heat networks to on-gas-grid properties if a hydrogen pathway proves untenable. Regional planning rules should be updated to ensure that heat pumps are prioritised when building new properties off the gas grid, while subsidy programmes like the RHI and its successors can further incentivise uptake and widen the

³ We note that a recent study prepared by Imperial College for the CCC found that an electrification or hybrid pathway was more cost-effective than a hydrogen route, especially against a stronger decarbonisation target. See *Analysis of Alternative UK Heat Decarbonisation Pathways For the Committee on Climate Change* (June 2018)

⁴ Page 13, Citizens Advice, [RIIO-2 Consultation Response](#) (May 2018)

⁵ Page 52, Committee on Climate Change, [Next Steps for Heat Policy](#) (October 2016)

⁶ Page 37, Committee on Climate Change, [Next Steps for Heat Policy](#) (October 2016)

roll-out to existing off-gas grid properties until prices come down and performance further improves.

Decarbonisation of gas: National Grid's Future Energy Scenarios suggest that bio-methane and hydrogen injection could play a significant part in decarbonising the gas networks. Hydrogen could play a key part in a decarbonised energy system, either produced from natural gas alongside carbon capture utilisation and storage (CCUS) or by electrolysis using surplus renewable generation.⁷

Heat networks: irrespective of whether a hydrogen or electrification route to decarbonisation is pursued, low-carbon heat networks are expected to play a significant supplementary role in areas of high density of heat demand (particularly urban areas) making them another low-regrets option. The Clean Growth Strategy assumes that 17% of UK homes will be served by heat networks under all three of its proposed 2050 pathways,⁸ and the Committee on Climate Change sees heat networks accounting for up to 20% of national head demand in 2050.⁹ In the shorter term, the CCC proposes that 1 in 20 households should be on heat networks by 2030. Planning rules are already driving significant installation of heat networks in new buildings in London and Scotland, as well as £320 million of government funding allocated under BEIS's Heat Networks Investment Project (HNIP). Introducing a new regulator, as recently proposed by the Competition and Markets Authority, will also be essential to ensure that heat networks are built and maintained to appropriate technical standards to maximise their efficiency and keep down costs for heat consumers. If the market for heat networks is to grow, the regulator will need to ensure heat customers are protected at least as strongly as those that gas and electricity customers enjoy, as well as regulating prices to address network operators' natural monopoly over their customers heat supply.

Carbon Capture Usage and Storage could play an a very important role under either an electrification or hydrogen route to decarbonisation, both for the decarbonisation of electricity generation and industrial processes, or for the production of hydrogen for heating and transport. The Energy Technologies Institute found that a "complete failure to deploy CCS would imply close to a doubling of the annual cost of carbon abatement to the UK economy" in 2050.¹⁰ In light of the additional costs and challenges of meeting the 2050 target without CCS, the Committee on Climate Change have been unequivocal about the need for pursuing it, stating simply, "The Government should not plan to meet the 2050 target without CCS."¹¹ Nevertheless, CCS remains commercially unproven. Given its importance to the viability of the hydrogen pathway to heat decarbonisation, testing CCS at scale will be necessary for the government to make an informed decision about the future of the gas grid

⁷ Page 5, National Grid, [Future Energy Scenarios](#) (July 2018)

⁸ See Table 10 on page 152, HMG, [The Clean Growth Strategy](#) (October 2017)

⁹ Page 32 Committee on Climate Change, [Next Steps for Heat Policy](#) (October 2016)

¹⁰ Energy Technologies Institute, [Building the UK carbon capture and storage sector by 2030](#) (2015)

¹¹ Committee on Climate Change, [An independent assessment of the UK's Clean Growth Strategy](#) (January 2018)

and whether a hydrogen or electrification pathway to heat decarbonisation should be pursued.

Energy efficiency: This represents a low-regrets technology to pursue in decarbonising heat, which will be essential irrespective of future decisions about a hydrogen or electrification pathway. It is especially important for keeping down the costs of heat decarbonisation and for alleviating fuel-poverty. The government needs to strengthen new-build standards to incorporate high levels of energy efficiency from the start in order to avoid costly retrofit later on. Moreover, concrete policies need to be put in place to deliver the Government's ambition to bring existing homes up to EPC band C by 2035, including strong proposals for able-to-pay homeowners.

Question 5: What are the barriers to and opportunities for public and private investment in the upgrading of the gas network?

Not answered.

Question 6: How can the costs of gas for consumers be controlled and even reduced at the same time as upgrading the gas network?

Energy efficiency will temper the need for network upgrades and minimise energy costs for consumers.

Network companies should identify *whole system outcomes* when planning network upgrades or solutions.

Clear policy is required from government which will facilitate a 'least-regrets' pathway for network companies to pursue decarbonisation of the network.

Question 7: What policies should the Government reform or introduce to upgrade the gas network?

Not answered.

I trust that this response is clear, but would be happy to discuss any matter raised within it in more depth if that would be helpful.

Yours sincerely

Stew Horne
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