

Call for Input: Potential spectrum bands to support utilities sector transformation

Consideration of bands at 400 MHz, 450 MHz, 700MHz, 800/900 MHz and 1900 MHz

6 September 2023

Dear Ofcom,

Confidentiality: Nothing

We welcome the opportunity to provide the National Gas perspective on the Call for Input and reflect on the importance of spectrum access for the Energy Network Operators to facilitate the 'Net Zero' transition.

National Gas is the provider of the backbone of Britain's energy system and is playing a leading role in the transition to a clean energy future that works for every home and business. We own and operate the national gas transmission system (NTS), delivering energy to where it is needed in every part of the country. We keep households warm and underpin their quality of life. For business, we fuel growth and innovation, and we are looking to the future by developing the hydrogen transmission system of tomorrow. As the Gas System Operator (GSO, National Gas also has responsibility for the overall security and integrity of UK gas supply; resilient operational communications will be an essential enabler of a low carbon, resilient and secure energy system, ensuring that we have the capability to co-ordinate with the Gas Distribution Networks and the broader supply chain.

A whole systems approach to accelerating decarbonisation

As detailed within our RIIO-GT2 business plan, enhanced operational communications are essential to ensuring that the gas transmission network remains resilient, secure from external threats, and ready to deliver the net zero future.¹ Enhanced network flexibility, agility and responsiveness are essential prerequisites to decarbonising the UK's gas infrastructure while minimising consumer bills: powering electrolysis and hydrogen production, enabling blending, and supporting the connection of other low carbon gas transmission and distribution technologies. As outlined within both the National Gas' Hydrogen roadmap to 2050 and the UK Government's updated hydrogen strategy, hydrogen has an essential role within the wider UK energy system as a low cost, green energy storage medium. With the UK seeking to invest to establish 10GW of hydrogen production in less than 7 years, enhanced operational resilience and control will be essential to ensuring that the energy system is hydrogen ready.

Securing energy security and resilience

Net Zero will require the gas network to develop new technologies and approaches to deliver its evolving role within the energy system. Innovations will be necessary to connect new hydrogen production, blending transmission technologies, while the gas network becomes more resilient, integrated and responsive to the wider needs of a low carbon energy system and able to swiftly adapt to support the increased role of intermittent renewable generation. This will necessitate enhanced operational resilience to manage the dynamic transmission or distribution of methane and hydrogen, while hardening the network to external threats, such as the actions of third-party actors or respond to a high impact low probability event. As recent analysis of the Russian invasion of Ukraine have indicated, even a couple of hours without power would be significantly disruptive to UK society and economy². To this end, cyber secure operational telecommunications will be a key component of UK national security and resilience, enabling energy network operators to rapidly identify risks and coordinate a decisive response to restore the UK's energy system should a disruption occur.

Delivering affordability

A study undertaken by Gemserv³ demonstrated that the initial investment to implement a shared, radio-based operational telecommunications capability to enable a UK smart grid will more than pay for itself, conservatively identifying £12 billion in savings over the period to 2050. These savings are made up through avoided network reinforcements, reduced electricity generation capacity and associated capital costs. If passed on, energy customers would save around £25 a year off their annual energy bills,

¹ National Grid Gas Transmission, Delivering the future gas transmission system, p40 (2019)

² National Grid ESO, Winter Outlook Report (2022)

³ <https://www.jrc.co.uk/Plugin/Publications/assets/pdf/ICT-Economic-rationale-for-enabling-Smart.pdf>

CONFIDENTIAL

helping them to manage the rising cost of living. Whilst, the savings / benefits noted in the Gemserv study are attributable to enhancements to the Electricity Networks there is an obvious alignment with the future needs of the Gas sector to also leverage enhanced, resilient and flexible Operational Telecommunications to support the transition to greener gases – and hence additional economic benefit would be realised.

Developing the UK's smart grid capacity based upon an enhanced operational control capability will deliver a win-win; accelerating decarbonisation, boosting resilience and energy security, while keeping energy bills down. However, it can only be implemented cost-effectively with dedicated radio spectrum access.

UK Policy Developments

We note that in April, the Department for Science, Innovation & Technology published their radio spectrum policy statement. In this [statement](#), the Government officially recognised that radio spectrum will play an important role in enabling the digital connectivity needed for future low carbon energy networks. The statement details that the UK is “*...moving towards a smarter, more flexible and more integrated energy system which will require significantly enhanced connectivity and digitalization throughout the network to support the coordination, automation and control of energy network assets.....Certain communications functions may require enhanced power resilience and reliability. If meeting these or other requirements is best served by private wireless networks, the identification of suitable and sufficient spectrum may be necessary*”. Importantly, the Department says that they are “*working closely with the Department for Energy Security and Net Zero, Ofcom and Ofgem to assess the energy (and wider utility) sector's communications requirements and ensure that timely decisions are taken on any resulting spectrum needs*”.

Alongside the above Policy Statement DSIT (Department for Science, Innovation & Technology) also published the [UK Wireless Infrastructure Strategy](#). The document recognises how the shift to net zero is driving the need for increased monitoring, control, protection and automation across the entire network. It states that a “*significant component of the increased connectivity requirement of electricity DNOs is likely to need to be addressed by private wireless networks – particularly to cover critical monitoring, control and teleprotection functions which require high levels of availability and power independence over a number of days*”.

The strategy document goes on to say “*Alongside the Department for Energy Security and Net Zero, and as part of the Energy Digitalisation Strategy, we will continue to encourage collaboration between telecoms and utilities providers to support the digitalisation of the energy sector*”. In so doing acknowledging the key role that private wireless networks (subject to dedicated spectrum access) can play in enabling net zero.

Spectrum Access Options

In light of the substantial benefits of enhanced operational communications as a core component of the NGT and other energy networks' development strategies we are encouraged by Ofcom's Call for Input. In particular we note the sub 1-GHz spectrum bands that have been identified as potential options. All sub 1-GHz bands are aligned to the needs of the Energy Network Operators; notably they are 3GPP designated bands, have a developing device eco-system and in the case of the 400 / 450 bands are aligned to existing radio network infrastructure. Whilst, the 400 and 450 bands present challenges from an access perspective we note that 700 MHz band is un-used and hence available to be allocated. We therefore encourage Ofcom to move forward with its consideration of spectrum access arrangements for the Energy Network Operators and concentrate its more detailed investigations on the sub 1-GHz bands identified. Recognising the focus being placed on the 'Net Zero' transition by Government and the Energy Network Operators, there is an urgency to seek spectrum to enable the Network Operators to be able to monitor and control their rapidly growing infrastructure to identify issues early and allow prompt action to prevent disruption to customers' energy supplies – keeping the UK's lights and industrial processes on.

Summary

We welcome the direction that Ofcom has set from a spectrum policy perspective in this Call for Input which aligns with the policy statements from Government and we are encouraged that Ofcom in identifying the sub 1-GHz bands has recognised the needs of the Energy Network Operators. NGT and the broader industry are ready to work with Government and Ofcom to drive energy security,

CONFIDENTIAL

affordability and decarbonisation subject to having the appropriate enhanced operational communications capability.

Yours faithfully,

A handwritten signature in black ink, appearing to be 'RM', with a long horizontal stroke extending to the right.

Richard Murphy,
Chief Information Officer
National Gas Transmission,
Warwick Technology Park,
Gallows Hill,
Warwick,
CV34 6DA
Richard.Murphy1@nationalgas.com