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**MCS Foundation response to OFGEM’s Call for Input: Frameworks for Future Systems and Network**

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**Introduction:**

Our vision is a world where everyone has access to affordable and reliable renewable energy and zero carbon technologies – for the benefit of our environment, our communities and the general public. As a Foundation we work to increase public confidence, awareness and access to renewable energy and zero carbon solutions across the UK. We support education and engagement programmes, fund research and facilitate innovative solutions to drive widespread adoption.

In addition, the Foundation oversees the [Microgeneration Certification Scheme (MCS CHARITABLE FOUNDATION)](https://mcscertified.com/) which defines, maintains and improves quality standards for renewable energy at buildings scale.

**Summary:**

MCS Charitable Foundation does not intend to respond to the specific questions in the consultation, but nevertheless would like to provide our overall position on this subject to be considered.

From now until 2035, the UK need to connect unprecedented amounts of renewable energy to the grid to decarbonise the power sector. It is predicted that renewable technologies will generate from 70% to 90% of all electricity, a capacity of between 80GW and 280GW.[[1]](#footnote-2) There will also be a significant increase in distributed energy resources for the UK to meet its transport and heat electrification targets. For example, the UK government have set a target to install 600,000 heat pumps per year by 2028 and the sale of new combustion vehicles will come into place in 2030. It thus becomes clear that reaching net zero relies not only on our success to generate an increased amount of renewable energy, but also on the energy system’s capacity to transport this electricity across the system efficiently and reliably.

In the up and coming years, the electricity grid at all system levels, including low-voltage, high voltage, and transmission levels, will need to undergo its largest transformation since the 1960s. Whilst this is a significant challenge, recent research that we commissioned from Regen[[2]](#footnote-3) has confirmed that this is achievable: “The priority now is moving from action plans to delivering reform and investment at pace”.

For this reason, we warmly welcome this consultation from Ofgem and the acknowledgement of the need to reform network regulation. From our perspective, the shortcoming of the existing RIIO-2 framework is the strong emphasis on ensuring that investments are efficient and at the lowest cost to consumers. Whilst keeping costs as low as possible for consumers is an important consideration, this has started to act as a barrier to necessary network development. For example, for the recent RIIO-2 period (2023-2028) which was completed in 2022, network reinforcements budgets proposed by the networks were reduced 17% by OFGEM.[[3]](#footnote-4) We believe that Ofgem have taken a significant risk in potentially delaying transition to net zero in an effort to improve the efficiency and lower costs for consumers. The consequences of this are already posing a threat to the UK’s net zero targets:

* Renewable energy generation and battery storage projects already in the pipeline are facing up to 15 year waiting times for high-voltage connections.
* If spare capacity predictions are correct, the distribution network headroom will run out in 2035, however this could be as early as 2028.[[4]](#footnote-5) Anecdotally, we have heard of housing developers being forced to install gas boilers instead of heat pumps, simply of the basis that the distribution network cannot support them. We have heard similar stories regarding EV charging rations.
* Investment in network capacity has fallen behind generation deployment.[[5]](#footnote-6) The UK governments success of achieving 50GW of offshore wind power[[6]](#footnote-7) directly relies on the construction of sufficient transmission infrastructure to support extra supply.

For this reason, we strongly believe that regardless of which framework is chosen, it must move beyond the ‘Connect and Manage’ model, towards a regulatory framework that ensures capacity is built in anticipation of renewable and distributed energy resources. We strongly agree with the sentiment of Dieter Helm, Economics Professor at Oxford University:

“If the networks are not sufficiently developed, there will be no net zero. If they are slightly over-invested, the costs across the whole customer base are small, and in any event the assets will in due course probably be needed.”[[7]](#footnote-8)

For this reason we see the benefits of the Freedom and Accountability framework tool in supporting a more anticipatory approach to grid development. Nevertheless, we understand that there are respective trade-offs to both incremental and more radical change and wish to stress the importance on ensuring continued investment even during this transition period. This could be more easily achieved by an Ex Ante approach, which follows a similar archetype to RIIO-2 and thus could be more easily understood by stakeholders. If this archetype is chosen, we agree that a more simplified approach must be taken to incentives and assessment, to allow more non-experts to understand the process. Currently the RIIO process is timely (taking roughly 3 years) and complex, leading to information asymmetry. We strongly agree with the need to address this moving forward.

We agree that planning is needed to support grid development at the pace and scale needed, and that the Future System Operator (FSO) could be in a strong position to facilitate this, through taking a more cross-vector approach both at a local and national level. However, we are concerned with the level of uncertainty surrounding the FSO and believe that this must be rectified moving forward, especially as the FSO feature heavily in several OFGEM plans, including local energy governance,[[8]](#footnote-9) distributed flexibility,[[9]](#footnote-10) and network planning. We recommend that:

* Ofgem and Government should publish the strategy and policy statement for the FSO.
* Ofgem minimises uncertainty by putting the FSO in place as soon as possible.
* The FSO has a clear strategic direction to deliver net zero and the independence and capacity to deliver.
* Ofgem publish a schematic showing the governance of the proposed system, including the likely interaction between consumer energy resources, flexibility providers, the Future System Operator (FSO), DNOs and energy suppliers.

Equally, to support the FSO and planning, we encourage the development of a detailed, real-time model. This model would cover connected generation, transmission and distribution capacity and the behaviours of demand-side products (including peak demand, average demand and flexibility capacity). Overtime this could evolve into a digital twin, providing increased efficiency and more strategic planning.

We agree with Ofgem that there needs to be the right balance between developing, smart flexibility, and maintaining assets. Distributed energy resources (DER) technologies have the potential to contribute to a more stable and secure energy system and that this relies heavily on the success of deploying flexibility. A holistic approach must be taken to fully unlock distributed flexibility potential. There are some fundamental problems with the design of energy markets that create barriers for distributed flexibility participation. For example, distributed flexibility is undervalued in the energy system, which leads to little incentive for participation.[[10]](#footnote-11) Some of the main services provided by flexibility services include[[11]](#footnote-12):

1. Electricity balancing from Frequency Restoration Reserves (FRR) and Replacement Reserves (RR),

2. Addressing internal or cross-border congestion management in the transmission network and

3. For congestion management in the distribution network.

Distributed flexibility allows for the connection of more renewable electricity in the distribution system, without having to invest as much in the distribution grids, making the transition more cost-effective for consumers.[[12]](#footnote-13) It also limits the extra renewable generation needed, by making use of surplus electricity generation, reducing the operating cost of low-carbon generation. [[13]](#footnote-14) If Ofgem returns to a RPI-X model for at least some areas, it is important that this does not disincentivise the networks’ investment in flexibility markets where they are more cost-effective on a lifetime basis than capital investment.

We strongly feel that Ofgem must put pressure on the Government to make a decision on hydrogen for heating at the earliest date possible (by 2024). The evidence is increasingly demonstrating that hydrogen for heating is not the most efficient or cost-effective pathway to heat decarbonisation.[[14]](#footnote-15) Using green hydrogen to heat our homes is up to five times more expensive than current natural gas prices[[15]](#footnote-16), and up to seven times less efficient than using renewable energy to power a heat pump[[16]](#footnote-17). Furthermore, delaying this decision adds further complexity to grid network planning.

On this point, we believe that the maintenance and decommissioning of the gas grid needs to include consideration of the introduction of heat network zones and the development of regional heat networks. This is important because the majority of connections to these heat networks, which may be upwards of 80-90% of buildings in a given regional zone, will replace the existing gas connection. If this is not considered carefully, it could lead to decommissioning parts of the gas network earlier than planned and therefore, higher costs than envisaged.

Finally, we would suggest that regardless of the archetype chosen, there should be the unbundling of networks from generation and energy supply. Energy networks should provide services to all market participants on equal terms and unbundling is one way to ensure this. We welcome Ofgem clarifying whether they see 3 these proposals altering unbundling requirements. For instance, whether Ofgem sees a role for energy suppliers or generators building or operating parts of the distribution network.

1. <https://green-alliance.org.uk/wp-content/uploads/2023/01/The-building-blocks-of-a-zero-carbon-power-system.pdf> [↑](#footnote-ref-2)
2. Regen (2023). *Building a Great British electricity network ready for net zero* <https://www.regen.co.uk/> [↑](#footnote-ref-3)
3. Regen (2023). *Building a Great British electricity network ready for net zero* <https://www.regen.co.uk/> p.24 [↑](#footnote-ref-4)
4. Regen (2023). *Building a Great British electricity network ready for net zero* <https://www.regen.co.uk/> p.22 [↑](#footnote-ref-5)
5. Regen (2023). *Building a Great British electricity network ready for net zero* <https://www.regen.co.uk/> p.36 [↑](#footnote-ref-6)
6. <https://www.gov.uk/government/news/uk-signs-agreement-on-offshore-renewable-energy-cooperation> [↑](#footnote-ref-7)
7. Regen (2023). *Building a Great British electricity network ready for net zero* <https://www.regen.co.uk/> p.24 [↑](#footnote-ref-8)
8. <https://www.ofgem.gov.uk/publications/consultation-future-local-energy-institutions-and-governance> [↑](#footnote-ref-9)
9. <https://www.ofgem.gov.uk/publications/call-input-future-distributed-flexibility> [↑](#footnote-ref-10)
10. <https://www.ukri.org/wp-content/uploads/2022/11/IUK-011122-SmartLocalEnergySystemsPolicyAndRegulationNov22.pdf> [↑](#footnote-ref-11)
11. <https://eepublicdownloads.entsoe.eu/clean-documents/Publications/Position%20papers%20and%20reports/170809_Distributed_Flexibility_working-paper_final.pdf?Web=1> [↑](#footnote-ref-12)
12. <https://www.nordicenergy.org/publications/distributed-flexibility-lessons-learned-in-the-nordics/#:~:text=Distributed%20Flexibility%20is%20a%20key,costly%20investment%20in%20distribution%20grids>. [↑](#footnote-ref-13)
13. <https://www.ukri.org/wp-content/uploads/2022/11/IUK-011122-SmartLocalEnergySystemsPolicyAndRegulationNov22.pdf> [↑](#footnote-ref-14)
14. <https://www.sciencedirect.com/science/article/abs/pii/S2542435122004160> [↑](#footnote-ref-15)
15. <https://pubs.rsc.org/en/content/articlelanding/2020/ee/d0ee02016h#!divAbstract> [↑](#footnote-ref-16)
16. <https://www.theccc.org.uk/publication/hydrogen-in-a-low-carbon-economy/> [↑](#footnote-ref-17)