Review of Electricity Market Arrangements (REMA) – Second Consultation

Energy Networks Association Response

About ENA

Energy Networks Association represents the companies which operate the electricity wires, gas pipes and energy system in the UK and Ireland.

We help our members meet the challenge of delivering electricity and gas to communities across the UK and Ireland safely, sustainably and reliably.

- Create smart grids, ensuring our networks are prepared for more renewable generation than ever before, decentralised sources of energy, more electric vehicles and heat pumps. Learn more about our Open Networks programme.
- Create the world's first zero-carbon gas grid, by speeding up the switch from natural gas to hydrogen. Learn more about our Gas Goes Green programme.
- Innovate. We're supporting over £450m of innovation investment to support customers, connections and more.
- Be safe. We bring our industry together to improve safety and reduce workforce and public injury.
- Manage our networks. We support our members manage, create and maintain a vast array of electricity codes, standards and regulations which supports the day-to-day operation of our energy networks.

Together, the energy networks are keeping your energy flowing, supporting our economy through jobs and investment and preparing for a net zero future.

Our members and associates

Our members include every major electricity and gas network operator in the UK and Ireland, independent operators, the Electricity System Operator (ESO) which operates the electricity transmission system in Great Britain and National Gas which owns and operates the gas transmission system in Great Britain. Our affiliate membership also includes companies with an interest in energy, including Heathrow Airport and Network Rail[1].

ENA members

BUUK infrastructure | Cadent Your Gas Network | electricity north west Bringing energy to your door | ESB NETWORKS | ESO

national gas | nationalgrid | Northern Gas Networks | Northern Ireland Electricity Networks | NORTHERN POWERGRID

Scottish & Southern Electricity Networks | SGN | SP Energy Networks | UK Power Networks Delivering your electricity | WALES&WEST UTILITIES

ENA associates

Chubu
EEA
Guernsey Electricity Ltd
Heathrow Airport
Jersey Electricity
Manx Electricity Authority
Network Rail
TEPCO

Introduction

Energy Networks Association (ENA) represents the companies that operate and maintain the gas and electricity network infrastructure in the UK and Ireland.

Serving over 30 million homes and businesses in every part of the country, they are responsible for the transmission (long-distance, high pressure/voltage) and distribution (short-distance, lower pressure/voltage) network of 'wires and pipes' that keep our lights on, our homes warm and our businesses running.

In summary:

- The electricity network in the UK and Ireland comprises of around 1,000,000km of cables – enough to go around the world 25 times[1].
- The gas network consists of 300,000km of pipelines, with 85% of homes in Great Britain relying on the energy they supply for their heating, hot water and cooking[2].
- Energy network companies' assets in Great Britain alone are valued at £64bn.

Network companies already directly employ around 36,000 people across Great Britain and support the employment of 1,200 apprentices[3], providing direct and indirect jobs in supply chains helping support long-term, good quality, high-skilled employment in the communities they serve.

Background

ENA welcome the opportunity to respond on behalf of its electricity distribution network operator (DNO), gas distribution network (GDN), gas transmission (GT) and electricity transmission owner (ETO) members to this second consultation on Review of Electricity Market Arrangements (REMA). The Electricity System Operator (ESO) have responded to the consultation separately.

This response is focused on Challenges 3 & 4 as set out in the consultation document:

- Transitioning away from an unabated gas-based system to a flexible, resilient, decarbonised electricity system; and
- Operating and optimising a renewables-based system, cost-effectively.

Specifically, we set out our views across a number of themes that together respond to related aspects of questions 20-24 (inclusive):

- DNO procured flexibility (Q. 20, 21, 24)
- Network investment to help drive down constraint costs (Q.22)
- Interaction of REMA with Network Charging Review (Q. 23)
- Improving balancing and ancillary services (Q.24)

[1] Energy Networks Association website, 'Energy Networks Explained', retrieved October 2022.
[2] Ibid
[3] Ibid

Commitment to Net Zero and REMA

ENA is at the forefront of the energy transition and is committed to facilitating the UK's pathway to Net Zero. To achieve this, we are undertaking a wide range of world leading initiatives, all while maintaining very high standards of service and quality of supply to our customers.

We are supportive of the development of a Strategic Spatial Energy Plan (SSEP), the establishment of the Centralised Strategic Network Plan (CSNP) and a role for Regional Energy System Planners (RESPs). Markets arrangements must work in a complementary fashion with strategic planning to support overall efficiency and help deliver investment in the right place and at the right time.

Through ENA's Open Networks programme, we are driving the transition to a smart, flexible electricity system that is actively facilitating the connection and rapid take-up of low carbon technologies, including large-scale generation right down to the solar panels and electric vehicles installed in homes, businesses, and communities across the country. Our electricity members are committed to the "Flexibility First" approach, under which they are testing the market to compare traditional network-based solutions to flexibility services.

We believe there is significant scope for distribution-level institutions, in particular Distribution System Operation activities, to play a greater role in maintaining operability and better facilitating markets. This is evidenced by the fact that GB DSO activities are already enabling the world's largest local flexibility markets, with rapid growth in flexibility services tendered to the market and contracted. In 2019 some 1306MW was tendered to the market with 265MW contracted, followed by year-on-year growth and in 2023/24 around 5500MW was tendered to the market with around 2500MW contracted. These markets are growing year on year, and we expect them to significantly increase as the ramp up of EVs and HPs continues.

ENA is committed to working with DESNZ to understand what we can do to further support Net Zero, balancing local and national system requirements. We are already collaborating with DESNZ, Ofgem and the industry to accelerate the connection of low carbon technologies, helping mitigate the risk and impact on our customers of future rises in fossil fuel prices.

DNO Procured Flexibility

As a principle our members support the increased deployment and utilisation of distributed low carbon flexibility (i.e. low carbon assets connected to the distribution system that can provide flexibility, including batteries and DSR).

Given the expectation that increasing amounts of flexible assets are expected to connect to the system and as we increasingly electrify our energy system, these assets must be appropriately incentivised consistent with optimal system operation and cost.

ENA members' tendering of flexibility on the GB electricity distribution networks has shown (in the absence of other stronger influences of connection location) that market participants will respond if appropriate locational signals are provided.

Since the Open Networks Flexibility workstream was launched in 2019, our work has helped to standardise and simplify processes in a transparent way, contributing to the development of world leading local flexibility markets. The latest figures reveal that Great Britain's flexibility market continues to be world leading with a record level of local flexibility contracted by electricity distribution networks. In financial year 2023-24, around 5.5 GW of flexibility was made available to the market to respond to and around 2.5GW of this was contracted. See section of this response '*Improving balancing and ancillary services'* below for examples of new products developed by DNOs needed to respond to changing demands of the network.

Therefore, in taking forward any reforms under REMA there is a need to ensure that any impacts from wholesale market reform on distributed low-carbon flexibility are carefully considered. Given that sharper temporal and locational signals have the potential to support increased deployment of distributed low-carbon flexibility, regulatory barriers to increased market participation should be removed. We also note that other (non-REMA) reforms are factors in sharpening price signals, including retail reforms to increase price-responsiveness in the retail market, and encouraging innovative product development from suppliers.

Network investment to help drive down constraint costs, speed connections, drive decarbonisation and increase network security

Energy networks are at the heart of the UK's plans to continue the transformation of our energy system, driven by the need to decarbonise our economy on the journey to Net Zero, ensure energy security, protect against climate change and improve affordability for consumers.

As previously pointed out we are supportive of the development of a Strategic Spatial Energy Plan (SSEP), the establishment of the Centralised Strategic Network Plan (CSNP) and a role for Regional Energy System Planners (RESPs). Markets arrangements must work in a complementary fashion with strategic planning to support overall efficiency and help deliver investment in the right place and at the right time.

It is important to note that procuring flexibility is not the panacea on its own. To meet the 2035 targets, the need for traditional network reinforcements on a significant scale remains. According to the ESO FES of 2023, peak demand will rise from 58GW in 2020 to 73-87GW in 2035 and 98-113GW in 2050. DESNZ analysis meanwhile estimates a doubling of demand for electricity by 2050 with peak electricity demand (currently 58GW) reaching 90-110GW by 2035 and 130-190GW by 2050. Either way there will need to be an unprecedented build of new electricity network infrastructure and reinforcement over the next decade and beyond, including of the existing distribution network where between 200,000-600,000 km of additional distribution network cabling could be required by 2050. This represents an increase of 25% to 75% respectively on current levels of network cabling in the distribution network.

Significant progress has already been made in the necessary upgrade and expansion of our networks enabling increasing levels and greater diversification of clean indigenous affordable energy supplies and the rapid take-up of clean technologies.

In the electricity transmission sector, Ofgem's Accelerated Strategic Transmission Investment (ASTI) framework applied a flexible approach shortening the lead time for the approval of major investments and the realisation of consumer benefits. Ofgem's current RIIO-3

proposals include a new and improved framework for funding major new electricity transmission investments which builds on learning from the ASTI regime. At distribution the use of existing uncertainty mechanisms and working to extend the reach of the regulatory process will also act to facilitate timely investment and delivery of Net Zero.

Increased network infrastructure will, over time, reduce constraint costs, with savings offsetting the cost of network investment. Network development has implications for the cost-benefit analysis of different reforms. For instance, publicly available analyses on the REMA proposals to date (e.g. FTI, LCP Delta/Grant Thornton) indicate that increased network build leads to lower modelled benefits from moving to locational wholesale pricing.

However, continuing to deliver this transformation and the economic growth it drives will require a step-change in the scale of investment and pace of delivery. This will require adopting new and innovative approaches to delivery and a recognition that network companies will undertake transformational change in terms of their size and capabilities. This includes the recruitment and training of the workforce and greater innovation in both the development and utilisation of new technologies and approaches that will be needed to deliver this transformation. At the same time we must recognise the global and macro-economic overlay that will impact on supply chains resulting in upward pressures on and more volatile costs.

Interaction of REMA with other energy vectors

We note that although the consultation refers to Power CCUS, Hydrogen to Power and Long Duration Electricity Storage, it does not directly consider Power to Hydrogen nor other forms of energy storage that could then be used to generate electricity. We acknowledge that production of hydrogen is noted as a provider of low carbon flexibility services under challenge 3 and as a potential beneficiary of local constraint management under challenge 4.

Currently there are close linkages between natural gas and electricity and in future it seems likely that there will be linkages between natural gas, electricity and CCUS and hydrogen and electricity given the need for dispatchable generation for when renewables cannot generate enough electricity. We need to maximise the use of renewable generation and in particular make as much use as possible of any supply that exceeds demand which may include using the generated electricity, that would otherwise be curtailed, locally to produce hydrogen or used in other forms of energy storage. We suggest that the REMA discussions need to consider these wider issues in the interests of producing an efficient and economic energy system rather than just an efficient and economic electricity system.

Interaction of REMA with Network Charging Review

We believe network charging has the potential to contribute to addressing some of the issues identified by DESNZ. We strongly encourage Ofgem to place a renewed focus on the DUoS Significant Code Review, taking into account the reforms to Access and connection charges implemented last year and the immediate issues with the DUoS charging methodologies (largely as a consequence of the Targeted Charging Review moving residual charge recovery to fixed charges by capacity bands, levied on Final Demand).

We similarly welcome the restart of Transmission Network Use of System changes ('TNUoS') taskforce meetings, considering near to medium-term improvements to charging arrangements, focusing on cost-reflectivity, stability and predictability of charges and work on

the longer-term purpose and structure of transmission charges and potential reform to transmission charges. We believe it is important that distribution and transmission network charging reforms progress in a coordinated way to deliver a coherent set of signals for the users of our network, based on a common set of principles-based objectives for network charges and recognition of their predominant role in network cost recovery.

It is important that any future market design, and in particular wholesale market design and the delivery of low carbon power through CfDs or other mechanisms, considers how network charging may impact renewable generation operation and investment. We believe that network charges must be considered alongside other policy tools that may be better suited to delivering system efficiencies, including flexibility services, connection charges, strategic planning decisions, and potential improvements to the wholesale market. DESNZ and Ofgem must be clear about which policy tool is best suited to address which challenges such that, together, these deliver a coherent, fair, and efficient package of signals to users of the network.

We advocate that DESNZ and Ofgem continue to work closely together to avoid unintended consequences from reform to any one area of policy in isolation. A coordinated approach is needed to deliver an efficient outcome and it is important that charging reforms are not delayed by the REMA process, as they can be implemented while the case for locational wholesale pricing is being considered and deliver benefits in the near-term under all reform options.

Improving balancing and ancillary services

Increased levels of flexibility procured by Distribution Network Operators (DNOs) and the development of new products have broadened the scope, operational options and security of our electricity system.

Whilst the current framework can be improved and adapted to better support the take-up and utilisation of flexible technologies continued investment in innovation will be central to meeting the challenges set out under the consultation.

The importance of innovation cannot be understated, and this is reflected in the government's target for total research and development spending to reach 2.4% of GDP by 2027. The drive towards whole system planning and delivery and associated challenges will require additional and sustained innovation funding.

The following are examples of networks' investment to develop and implement innovative technologies that support system balancing and operability:

Distribution network voltage control services - CLASS

DNOs can provide network voltage control and network management services via the remote management of deployed network assets. These services are commonly referred to as CLASS.

CLASS can only be provided by DNOs as it requires the use of existing distribution network assets, although DNOs do need to invest in separate technology, software and expertise to deliver the service. Since 2016, DNOs have been allowed to offer CLASS to the ESO and,

for the past six years, one DNO, Electricity North West has used CLASS to participate across three balancing service products.

Ofgem consider that CLASS is one of the many low cost, low carbon and reliable technologies that will be needed to meet the ESO's future balancing service requirements, helping to reduce consumer bills and strengthen electricity system security. Across GB, Ofgem believe there is potential to invest in around 3GW of flexible demand reduction through the use of CLASS, which could unlock consumer benefits of up to £1.8bn in net present value (NPV) terms.

DNOs have been incentivised to deploy CLASS only when there is a strong investment case, and increased competition in the balancing services market helps to bring down market prices.

Demand Diversification Services for Load Managed Areas (LMAs)
SSEN's 'Demand Diversification for LMA's' project will test the concept of procuring demand diversification services, where Flexibility Service Providers (FSPs) are contracted to schedule consumer's load to keep aggregated demand within network capacity.

DDS is looking to minimise the potential additional complexity and restrictions that an LMA has on the range of suppliers and tariffs that consumers in these areas can access. Successful implementation of DDS could help increase supply competition in these areas, resulting in more competitive pricing for consumers, including those in vulnerable situations, such as consumers struggling with fuel poverty. DDS would contribute to ensuring that no customer is left behind in the transition to Net Zero.

Resilience as a Service - RaaS
The Resilience as a Service - RaaS - innovation project seeks to improve the operational resilience of electricity distribution networks in remote areas. The aim is to develop and trial a new market-based solution which can swiftly and automatically restore supply to customers in the event of a fault, using services provided by a local Battery Energy Storage System, and incorporating local Distributed Energy Resources.

The application of RaaS would improve Security of Supply for customers, reduce the use of temporary diesel generation, and enhance the use of local renewable schemes, supporting the UK's transition to Net Zero.

The project is a partnership between SSEN Distribution, EON and Costain, and has been awarded funding of £10.9m through Ofgem's Network Innovation Competition. In addition to demonstrating the technical concept, the work will develop the commercial framework for RaaS - evaluating the financial case from a DNO perspective and assessing the investment case for RaaS Service Providers with options for revenue stacking in other flexibility services markets.

The first phase of the project focused on site selection, system design for the chosen demonstration site, and refinement of the business case for RaaS. The purpose of this stage was to evaluate the technical feasibility and financial viability of the RaaS concept. The conclusions from this work together with feedback from external stakeholders though a

series of consultation events informed the decision to proceed to the trial phase with installation of a demonstration scheme supporting Drynoch primary substation.

BiTraDER project

The BiTraDER project will design and trial options for the introduction of a bilateral trading market through which large connected customers can trade their contracted curtailment obligation. The innovative BiTraDER project has been awarded funding through Ofgem's Network Innovation Competition and Electricity North West will deliver this £8.4m, four-year project alongside project partners Electron, AFRY and Delta-EE.

The BiTraDER project will investigate, design, build and trial – live on the network – options for the introduction of a bilateral trading market through which large connected customers can trade their position in the merit order stack, which determines the order in which they are asked to curtail their output at times of high demand on the network.

BiTraDER aims to reduce barriers to the connection of low carbon generation on the network, boost value for connected resources, and bring down whole system costs by adding value to the flexibility market.

The pilot scheme is a first in the UK to test bilateral trading on a live network setting and aims to encourage greater participation in flexibility services and uptake of renewable energy resources.

If you have any questions on the points raised in this response, please contact Energy Networks Association via email: regulation@energynetworks.org

Energy Networks Association
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