

## Written evidence submitted by the Energy Networks Association (PEG0234)

### Energy Networks Association

Energy Networks Association represents the companies that operate and maintain the gas and electricity grid network in the UK and Ireland. Serving over 30 million customers, they are responsible for the transmission and distribution network of “wires and pipes” that keep our lights on, our homes warm and our businesses running.

#### 1. Background

As well as the significant human impact, COVID-19 has posed an unprecedented threat to our economy.

Governments around the world are creating financial stimuli and the energy networks support the ambition to ensure that these drive a green recovery, benefitting of the economy, the environment and the public. We welcome the Government’s ambition to use this opportunity to ‘level up’ the economy, investing in the industries and jobs of the future.

The forthcoming Energy White Paper will be a core component in ensuring that net zero is hardwired into the policy and regulatory frameworks which govern not only our industry, but the wider economy.

The UK’s energy networks companies are the very “industries and infrastructure that can turn the tide on climate change” that Prime Minister Boris Johnson described when setting out his own ambitions for the green recovery. Ensuring that they have the right policy framework and that regulatory regimes like RII0-2 are fit for purpose is critical in delivering on a green recovery.

- The networks are forecast to invest and spend over £60bn over the current RII0-1 price control period. Given the energy networks’ geographic footprint, this expenditure is happening across the length and breadth of the UK.
- The networks support 36,000 jobs in the UK, as well as vast regional supply chains. The unique opportunity to accelerate the transition to a carbon neutral future while creating long-term economic growth and high-value jobs is not one that industry, government or civil society should ignore.
- We have connected well over 30GW of renewable generation in the past ten years and are now undertaking a project which is set to create the world’s first zero-carbon gas grid.
- During this period of exceptionally low energy demand, the networks have worked with BEIS, Ofgem and other stakeholders to ensure security of supply and enable the lowest carbon energy system since the Industrial Revolution – facilitating the UK’s longest ever coal-free generation run.

The scale of the challenge ahead is vast. The networks are looking to the future and the ‘difficult to reach’ sectors which we need to decarbonise to fulfil our net zero obligations. We are ready to provide the digitalised backbone to the national uptake of electric vehicles (EVs), a fully flexible energy system and decarbonisation of heating systems.

National Grid predicts around 400,000 jobs in the energy sector will be needed to deliver the net zero target. Of this, 260,000 will be new roles and 120,000 will be roles created in the next decade. Accelerating investment now will bring forward these job opportunities.<sup>1</sup>

As we look to move forward, the series of measures taken by government should deliver economic growth and jobs across the whole of the UK, help the UK achieve its net zero targets, and be fair for the public. This is why a green economic recovery is so important – because it has potential to achieve those objectives.

As sectors become increasingly interconnected, investing in a green economic recovery presents opportunities for jobs and growth across not just in the energy system but for transport and waste too. This will not just include more jobs within the energy networks but for supply chain and new services.

New businesses will open and others will diversify as we build on our world-leading innovation in smart grids, technologies and services. Businesses that could subsequently see their products be exported globally.

The networks are already scaling up for offshore wind and planning the infrastructure requirements for future developments. There will also be significantly more investment in the low voltage network which will be the primary enabler of the increase of EVs and heat pumps. These market changes will also require a ramping-up of customer service support as customers' contact points with network companies exponentially increase. It will be crucial that Ofgem's proposals for RIIO-2 are able to support innovation and the pace of delivering net zero.

The hydrogen economy also presents a huge opportunity for the UK to take a global lead on a key zero carbon technology that has the potential to create over 220,000 jobs and £18bn of GVA across the UK.

A clear direction on green gas is vital. This would include mandating hydrogen-ready boilers by 2025 and announcing the sites of the first CCUS projects receiving the £800m announced in the Budget. Doing so would accelerate deployment of private capital into those projects with associated jobs and growth.

## **2. Whole system approach to a green economic recovery**

ENA members believe that if our power, heat, transport, waste and industrial sectors are all interdependent, then so must be the solutions for their decarbonisation. Solutions will be driven locally as well as nationally. To accelerate economic recovery there are a number of areas in which industry and government can focus on with the right regulatory support and we are working with Ofgem and the Government to support this. Ofgem will be determining the network price control period (2021-2026) at the end of 2020 making this a crucial time for all stakeholders to collaborate and ensure that the price controls are fully reflective of what's needed to deliver government's ambitions.

### **a) Accelerating the road to zero**

Government should power forward with its ambition on EVs which will help drive investment and create jobs across both transport and energy systems.

EVs are anticipated to be one of the main reasons for a forecast doubling of peak electricity consumption by 2050. Electricity networks are primed to deliver a smart-charging system which, based on the National Grid Future Energy Scenarios from 2018, with 20% of flexibility could reduce the new investment in electricity generation by 20% and with 40% of flexibility could reduce the cost of reinforcing the network by 36% - around £6bn.

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<sup>1</sup> <https://www.nationalgrid.com/stories/journey-to-net-zero/net-zero-energy-workforce>

Accelerating the upgrading of infrastructure is something that with the right regulatory conditions industry could start delivering almost immediately. These conditions include a supportive regulatory framework whereby Ofgem more fully align with government ambition. Doing so will allow for necessary network reinforcement to be done over a longer period of time, spreading and minimising the disruption and cost to the consumer. There is a need for greater collaboration between industry and government to define suitable mechanisms and ensure an effective and efficient rollout.

Detailed local plans and coordination in conjunction with local authorities, utilities and community groups would help identify the priority decarbonisation needs, co-designing of plans for network investment. We believe this should go beyond the long-term targets outlined in the Government's current Road to Zero strategy.

The networks can deliver a full, smart-charging system for EVs and, similarly, could enable customers' homes to become aggregated, flexible generators allowing consumers to take full control of their energy use.

Network companies have delivered a number of grid-based efficiency projects and trials are under way across the country. With the right conditions and steer from government these could be scaled up at pace. With these trials expedited, so would be the creation of new jobs installing EV chargers and in developing and manufacturing the smart in-home appliances which will drive full system digitalisation.

We also support measures being introduced to incentivise decarbonisation of larger vehicles: trains, buses and heavier goods vehicles including LGVs, PSVs and HGVs. Electricity, hydrogen and biomethane vehicles all have a role to play in the future decarbonised transportation mix. This means looking at a whole energy system approach i.e. making optimal investment and operational decisions for the whole energy network.

## **b) Green gas**

Through ENA's Gas Goes Green programme, Britain's gas network companies have made clear their commitment to creating the world's first zero carbon gas grid and delivering the innovation projects needed to tackle the operational and technical challenges associated with the deployment of hydrogen and biomethane.

The hydrogen economy presents a huge opportunity for the UK to take a global lead on a key zero carbon technology that has the potential to create 221,000 jobs and £18bn of GVA across the UK whilst also protecting existing roles in carbon-intensive sectors.

The UK has the opportunity to create the world's first zero carbon gas grid. However, other countries (e.g. Germany and Australia) are pushing ahead. Establishing a world leading hydrogen economy in the UK could deliver:

- 221,000 Jobs and £176bn of private sector investment across the UK
- A major contribution to our net zero targets across power, heat, transport and industry
- Help deliver the decarbonisation of heat in the least cost way, minimising disruption for consumers and up-front costs
- Create new UK-based green industries and a whole new supply chains

As companies investing in this sector, we are ready to move ahead with c£1bn of investments, including a series of 'shovel ready' projects to start delivering the benefits

across the country. These projects include the trials which will demonstrate the technical feasibility of a hydrogen economy – something which will be critical in bringing stakeholders and customers along.

### **c) Capitalising upon the UK's strengths in innovation**

In order to deliver the low carbon economy of the future we will need to ensure that the technologies being developed and delivered can work cohesively. 'Full systems' end-to-end testing of the green economy in a region or island of the UK would achieve this.

Possibly centring around the low carbon industrial clusters being deliberated by Government, this would provide an opportunity to test the integration of flexible generation, hydrogen, EVs and high-volumes of renewables as well as other technologies, all connected by a smart, data-driven grid.

Whilst trials of this nature take time to coalesce, the early stage, high-skill developmental work could begin now, creating opportunities for the engineers, system designers, planners and other roles a project of this scale needs.

Government support through match-funding would drive investment of significant volumes of private capital. Central coordination from the Energy Systems Catapult could enable the cohesive, cross-industry collaboration needed from the parties needed to take this big step towards net zero.

### **d) Decarbonising heating**

Accounting for 50% of global final energy consumption in 2018, heat is the largest energy end-use and contributes 40% of global carbon dioxide emissions. Around 85% of homes in the UK are currently connected to the gas network.

The Committee on Climate Change (CCC) recommends that all new homes should be fitted with low-carbon heating systems and ultra-high levels of energy efficiency from 2025 at the latest. We support this move and would urge the Government to follow-up their recent £2bn commitment by beginning to plan the next phase of energy efficiency retrofit support as it will be central to cost effectively hitting net zero.

We envision a much more diverse future domestic heating market than we currently use. That means more electric boilers, domestic heat-pumps and district heating as well as shifting from natural gas to low- or zero carbon alternatives such as hydrogen and biomethane.

In a report by Imperial College London for the CCC, it is stated that the cost and disruptiveness of distribution network reinforcement can be minimised if investments are future-proofed. However, the current price control framework "does not cover the required multi-decade time horizon".

The CCC states that low-carbon hydrogen at scale is critical to achieving net zero. There is no realistic scenario whereby the UK can achieve net-zero carbon emissions by 2050 without hydrogen playing a role in the decarbonisation of large emitting sectors such as domestic heat, industry and heavy transport.

Given hydrogen's potential to accelerate decarbonisation across multiple sectors, a cross-cutting vision and strategy for a hydrogen economy will be required from the Government, with production and use starting from the early 2020s.

There is an opportunity for the UK Government's 2020 Heat Roadmap to embrace innovation. More must be invested in trials – from heat pumps to hydrogen and hybrid heating systems – driving UK research and development.

Setting clear policy intent and the right incentive framework for low carbon heating systems will help increase consumer confidence in adopting these measures. This will also allow networks to unlock investment to facilitate electrification and use of alternative gases in heating.

There is an opportunity for the energy networks to advance plans and speed up the way local green gas producers, such as farmers and other small businesses, can connect to local gas grids.

Safety must be at the core of this shift. The networks are ready to bring forward the changes necessary to gas standards and safety regulations in an evidence-based manner to ensure the safety of our customers is maintained as we transition to a zero-carbon gas grid.

Heat pumps provide a viable option for decarbonising heat provided that the underlying electricity that is powering the heat pump is decarbonised.

If paired with thermal or electrical storage, including hot water tanks, heat pumps can provide a significant amount of flexibility, which in turn could be used by local DNOs or National Grid ESO. In turn this could help reduce the socialised costs of electricity networks and facilitate alignment of heating usage requirements with the availability of zero carbon electricity generation. This local storage could also help reduce the need for system-wide electrical storage or the over-provision of generation capacity.

### **3. Opportunities within the network companies**

Increasing our investment in the energy networks will create new services, driving efficiencies and opportunities for consumers such as vehicle-to-grid charging and domestic aggregation.

Should the RII0-2 price control period allow it, industry will create new roles to take full advantage of new technologies, such as those using artificial intelligence or digital skills, which will require different combinations of competencies within the workforce.

For the energy networks alone we can expect to see new job opportunities across every country and region of the UK arising in a range of areas including:

- Frontline: A green economic recovery will require more people employed on the frontline – installing new hydrogen-ready boilers, EV charge points and associated infrastructure alongside a much bigger nationwide energy efficiency programme.
- Digital: To help us manage a future 'Internet of Energy' we will need staff with competencies in managing new data, cyber and artificial intelligence.
- Engineering: New roles will be necessary in every form of engineering including mechanical, electrical, structural, civil etc. along with requirements for more surveyors. Traditional craft skills will still be essential.
- Surveyors: As is the case with engineers, there will be a need for a full spectrum of surveyors, quantity and structural, capable of assessing the needs of both homes and infrastructure.

- Customer service: Following an acceleration of new products and services (such as EV infrastructure and heat pumps) there will be an increase in customer service opportunities to manage consumer experience. Operating a more active, smarter power grid that fully embraces flexible use of energy requires more customer contact. We will also likely see an increase in the number of staff required to support vulnerable customers.
- Environmental: Infrastructure build-out at the scale needed will necessitate more environmental and ecological scientists as well as engineers and surveyors.
- Specialist (back office): As a result of new technologies and services, network companies, supply chain and new businesses will require staff with competencies in legal, compliance/regulation and supporting vulnerable customers.

It will be important to focus on maintaining sector attractiveness, recruitment and workforce diversity while reflecting the population that we serve. Government and industry must maximise investment in skills to help us deliver the jobs needed while building public recognition of the careers available in the sector.

#### **4. Taking steps towards a green recovery**

There are a number of steps government and the regulator can take to make sure that homes and businesses across the UK are able to benefit from a green economic recovery

- a) Create and implement a hydrogen strategy: Creating a hydrogen economy is vital to hit our climate targets and drive forward green, economic growth. Government should commit to build on our world-leading expertise and develop a UK hydrogen strategy, otherwise we risk being left behind in the international hydrogen race. A UK strategy will help to maintain our global leadership position as well as delivering long-term benefits to homes and businesses across the country whilst also protecting jobs in those sectors most exposed to the transition to net zero.
- b) Develop a detailed local and national transport plan: This plan should go beyond the government's Road to Zero strategy, supporting the rapid up-take of EVs and the growth of green gases as a fuel for transport in trains, buses and heavy goods vehicles.
- c) Increase the ambition of the UK Heat Roadmap: Drive growth in heat-pump and hybrid boiler deployments and expedite the shift to green gas solutions while also mandating the introduction of hydrogen-ready boilers by 2025.
- d) Commit to future full-systems testing of a net zero economy: Build on existing innovation by investing in trials including EVs, high-renewables volumes, system flexibility, the hydrogen economy and other technologies.
- e) Align government policy and regulation: We need to attract significant investment in a competitive global market in order to deliver a green economic recovery at least cost to customers. Network companies have historically been able to raise billions of pounds of capital at best value for the public. Ofgem needs to set a regulatory regime that allows network companies to continue to deliver this investment along with the benefits for homes and businesses across the UK. The recently published RIIO-2 Draft Determinations for the electricity transmission and gas distribution networks do not, as they stand, provide this. It is essential that the RIIO regime provides a stable and predictable regime in order to unlock net zero infrastructure at pace and at least cost to the consumer. The next few months will be a critical period for all parties to come together to deliver a framework fit for the challenges of the 2020s and beyond.

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