

## **Energy Networks Association Response to Cost of Energy Review: Call for Evidence**

Energy Networks Association (ENA) 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.

Understanding the track record of our energy networks since privatisation in 1990 is key to understanding the role that they can play in helping the Government meet its short, medium and long-term objectives for energy policy.

Our energy networks are recognised around the world for their strong track record of safely and securely providing the UK with the gas and electricity it needs in three key areas.

1. *Trusted performance* - The average gas customer will experience an unplanned interruption once every 140 years and for electricity customers, since 1990, there has been a 50% reduction in number of customer interruptions, and a 60% reduction in length of customer interruptions.
2. *Reduced costs & increased investment* - Network costs are now 17% lower than they were when at the time of privatisation and are projected to remain flat, and in some areas fall, into the next decade. By 2020, the UK's energy networks will have attracted some £80 billion of investment since 1990. New investment in the networks is forecast at £45bn between 2017 and 2023.
3. *Energy innovation* - Independent research carried out by Pöyry has shown that innovation projects by local electricity Distribution Network Operators (DNOs) could deliver up to £1.7bn of benefits by 2031. Additional benefits will flow from the innovation undertaken in the other network sectors.

### **Recognising the value of a Whole-System Approach to decarbonisation**

Whilst the Helm Review is focused solely on the electricity system, we believe that the greatest efficiencies in delivering a secure, low-carbon sustainable energy system will be best realised through the adoption of a ‘Whole-System’ approach. A Whole-System approach means looking at optimal network investment and operational decisions for the whole energy network, not just the individual parts in isolation. It also means considering interactions across energy vectors (e.g. heat networks, energy storage or transportation) so that wider options and value can be taken into account. This work is supported by consideration of the connections, data links, interfaces, coordinated planning opportunities, potential impacts and shared learnings across electricity and gas network and other energy vectors, both currently and in the future.

ENA members believe that if our power, heat, transport and waste sectors are all interdependent, then so must the solutions for their decarbonisation. A Whole-System approach is based on our energy networks using new smart technologies to work together in an integrated way, building on the strength of our existing gas and electricity network assets. This is well illustrated by the fact that over 80% of peak energy usage is currently derived

from gas and without the gas grid there is simply not enough energy for the UK to function, or the means to transport that energy to end users during peak periods. With the population expected to increase by 22% by 2050, total energy demand will increase significantly. We therefore need to look at the energy system as whole in delivering future investment and developing smarter solutions needed to deliver our energy objectives and clean growth.

## **Response to specific questions raised by the Call for Evidence**

### **Electricity Transmission and Distribution**

#### ***What are the longer-term challenges for electricity transmission and distribution?***

The UK has ambitious carbon targets which rely heavily on electricity and gas networks to deliver decarbonisation through the connection of renewable generation and through the decarbonisation of heat and transport. Each of these has unique challenges:

- Whilst we are connecting renewable generation at transmission and distribution voltages, more generation and other resources, are being connected at distribution voltages than ever before (currently 28GW of generation). Increasingly, renewable generation is coupled with electricity storage to enable peak load shedding, demand smoothing and electricity storage. The electricity network challenges through increasing levels of Distributed Energy Resources (DER) are local congestion, lower grid inertia and fewer transmission connected resources being available to the System Operator for system control.
- We are enabling the decarbonisation of heat and transportation through biogases, innovative hybrid heating systems, natural / biogas HGVs and buses and the connection of heat pumps and through the local facilitation of Ultra Low Emissions Vehicles (ULEVs) and plug-in hybrids. Challenges here include large additional loads on local distribution networks causing constraints, bi-directional energy flows and non-typical load profiles.
- As the use of electricity networks changes, this introduces challenges around how network access is managed and how network costs are recovered.

Network companies are already addressing these challenges and engaging with customers to understand their needs, evidenced by over 28GW of generation capacity connected at distribution level in the last three years alone. The technologies, innovation and approaches deployed by network operators will enable the continued connection of more low carbon and innovative technologies onto networks which, in turn, will help create new businesses, increase UK investment and create new jobs. We believe that we are already making rapid progress through initiatives such as the ENA Open Networks Project<sup>1</sup> (ON Project) a major energy industry initiative that will transform the way our energy networks work, underpinning the delivery of the smart grid. This world leading project brings together 9 of UK and Ireland's electricity grid operators, respected academics, NGOs, Government departments and the energy regulator. Ofgem's Innovation Programmes and business as usual activities also provide routes for the development and introduction of smarter approaches.

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<sup>1</sup> ENA Open Networks Project <http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-overview/>

Looking at the ON Project, this shares the same goals as the BEIS/OFGEM 'Smart Systems and Flexibility Plan' and seeks to unlock further value for consumers by using resource flexibility as an alternative to new assets and network upgrades. The ON Project has many ongoing areas of work to address the challenges outlined above:

- It is developing and improving smart network techniques such as Active Network Management, to enable the connection of further DER.
- It is developing new markets for the flexibility services provided by DER and third parties across transmission and distribution. In doing this, networks can be controlled with fewer transmission connected resources and traditional network investment can be deferred.
- It is developing a whole system approach to network investment to enable more diverse and more efficient solutions to overcome network capacity limitations.
- Through the ON Project, we are designing the 'DNO to DSO transition' whereby DNOs move from their traditional role of delivering electricity, to one where they facilitate smart energy technologies. As 'neutral market facilitators', DSOs will provide a platform for various markets, including flexibility and peer-to-peer trading.
- On network access and charging, as transmission and distribution networks will continue to play a crucial role in providing reliable energy and connecting low carbon sources, we believe all users should pay a 'fair share', for this service. Through the ON Project, we are supporting Ofgem in addressing immediate challenges by direct involvement in Ofgem's charging review.

In summary, network companies are already engaging to address network challenges. Given that there are many scenarios that could play out in terms of supply, generation, storage and demand side technology uptake; we will remain technology neutral and we will help facilitate a level playing field whilst providing reliable and affordable service delivery. Many of the attributes highlighted above, including the procurement of new distribution and transmission system service providers, are already happening and will continue to evolve and expand as the DSO transition continues. This to a large extent mirrors the NSO/RSO type models suggested in the Professor Helm report but captures already proven efficiencies.

***What matters should the Government take in account in considering the framework for network regulation, and its associated institutional framework?***

Network regulation under RIIO-1 has been a success story for consumers with network costs reducing and service to customers improving. We believe that the framework for network regulation is working well and so developments should be built around similar objectives and goals to the RIIO-1 framework as these are customer and stakeholder focussed. The framework could be further strengthened around those areas we are addressing through the ON Project by:

- promoting a whole energy system approach including electricity & gas transmission-distribution interactions.
- facilitating new markets, connecting new and innovative technologies and taking a technology agnostic approach.
- using innovative and low carbon technologies to assist with security of supply. These have the potential to significantly contribute to the capacity margin in a cost-effective way.

This approach is most likely to continue the success of the UK's energy networks in attracting investment, reducing consumer costs and delivering new sources of low carbon generation. Incentive regulation in Great Britain is widely recognised as being very effective whilst network companies continue to deliver world class service quality. Eurostat datasets show that GB network costs for both domestic and industrial consumers are lower or comparable with other major EU economies (Germany, France & Italy), service standards have improved markedly under the price control framework since privatisation in 1990, with the RIIO framework recognised as an exemplar and replicated across other jurisdictions.

We have the following specific points regarding licences and regulation:

- Licences – networks provide critical national infrastructure and are crucial in facilitating competition and delivering a low carbon system. We believe that this will continue and network licences should not be treated equivalently to generation and supply.
- Regulatory Regime – an informed and independent regulator such as Ofgem operating within government policy will help enable a stable regulatory regime. A single regulator across several sectors is likely to be less effective as the challenges around energy are very pressing and different from other sectors.
- RIIO Framework – this has been positive for consumers and has more strongly aligned network companies with the interests of their customers and stakeholders. We don't agree that it should be replaced when the RIIO-1 periods end. Through RIIO, network company revenue is linked to incentives, innovation and delivering clear outputs. The "sharing factors" in the framework ensure both customers and networks share any outperformance in a regulatory period.

RIIO-1 has led to positive outcomes for consumers, for example, it has driven costs saving together with increasing standards of service through the use of mechanisms and incentives. Further, the RIIO innovation mechanisms are supporting cost savings.

RIIO also ensures that network companies maintain an appropriate level of debt. Fixed periods for regulatory controls allow effective planning and delivery, and signal stability to investors to encourage investment. Where adjustments are required, these can be addressed via uncertainty mechanisms and re-openers.

Progress to date suggests that RIIO-1 is working well and the RIIO-2 Framework Review currently underway seeks to identify further improvements that can be made going forward.

- RIIO-1 Returns – the perceived returns outperformance of network companies during RIIO-1 is exaggerated. The Return on Regulated Equity (RoRE) figures quoted by Ofgem recently are derived such that they overstate the true company performance.

On the development of new system operator arrangements, we support a more co-ordinated approach as a key to a secure, reliable and lowest cost supply. We believe that the ongoing licence separation of the National Grid System Operator and development of Distribution System Operator (DSO) functionality will be effective. Whilst the RSO proposals in the Professor Helm report are not sufficiently detailed to compare with DSO proposals, we have the following observations:

- We support proposals to separate the GBSO. However, we believe that the role of the SO fits best within the wider National Grid organisation. It should be market orientated with the technical capability to be a system architect and to understand electricity networks and assets.
- We agree that DSOs are required, and as previously highlighted, the transition to DSO is already well underway, as is the identification and realisation of the benefits it will deliver for consumers, in part through neutral facilitation that is opening up new markets for service providers. There is a risk in having only a National SO as distribution systems become more complex. Going forward, DSOs will need to more actively engage with local customers whereas the GBSO will need to focus on wider national control and balancing issues including exchanges with other networks.
- On ownership, we believe that privately run companies deliver better value for consumers which is evidenced by the fact that the costs of networks have fallen by 17% since privatisation as well as customers experiencing improved service levels. Since privatisation, there have been improvements in efficiency, and the increasing levels of incentivisation introduced through RIIO is enabling further improvements. In other sectors (e.g. water), those elements in public ownership have lagged their private counterparts. The recently published RIIO Network Sector Annual Reports<sup>2</sup> evidence this and show that customer satisfaction with local networks is at records levels. In 2016/17 the score was 8.8 out of 10 for electricity distribution, 8.8 out of 10 for gas distribution and 8.0 & 7.9 out of 10 for gas and electricity transmission respectively. This the highest level since records began in 2013. In 2016/17 the number of power cuts across Great Britain reduced by 3% compared with 2015/16 consistent with the 50% reduction in number of customer interruptions and 60% reduction in length of customer interruptions since privatisation. More than 2.8 GW of smaller scale generation such as solar farms was connected to the electricity distribution network in 2016/17, a 60% increase on the previous year.

***What additional evidence should the Government consider to reduce the cost of electricity networks in the longer term?***

Apart from enabling network companies to open up flexibility markets, so that services provided by the market can be used instead of traditional reinforcement of the networks, we recommend that the following techniques for reducing the cost of electricity networks are considered:

- Improve charging signals (connection, access and use-of-system) to more accurately represent system costs and to incentivise more flexible resources.
- Develop mechanisms to further incentivise greater innovation.
- Promote cheap, low carbon generation, storage and vehicle-2-grid services.
- Promote new markets, for example peer-to-peer trading.
- Ensure that vulnerable customers are not left behind.
- Align network initiatives such as Open Networks, FPSA, Ofgem Innovation projects and other innovation funding trials relating to smart grids.
- Ensure DNOs can help to enable the take up of energy efficiency measures that will lower bills to consumers and reduce emissions.

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<sup>2</sup> <https://www.ofgem.gov.uk/network-regulation-riio-model/network-performance-under-riio>

These methods are already being progressed under the ON Project, and we look forward to working with BEIS to further this work and increase the benefits to UK consumers.

Collaboration will be key; as we expect to see network companies working even more closely with local actors (e.g. Local Authorities) with the aim of developing whole system approaches that deliver secure and efficient networks acting as an enabler of the low carbon energy transition. These smarter grids of the future will present new regulatory challenges but also opportunities for ensuring that there is a fair distribution of costs across system users.

We believe that greater focus could be placed on policy outcomes and priorities. For example, there is a drive towards greater cost reflectiveness and market forces, however, there are also calls for greater socialisation of energy bills. Whilst this is complex to resolve, there needs to be a debate around how policy costs are distributed fairly and to promote efficient behaviour.

We would also encourage that policies are aligned as far as practicable. For example, UK and devolved governments may have differing agendas such that a joint approach is needed. For example, in January 2017, the Scottish Government consulted on its Draft Energy Strategy and set a new 2030 'all-energy' target for the equivalent of 50% of Scotland's heat, transport and electricity consumption to be supplied from renewable sources. Further, the Scottish Government has outlined a commitment to phase out Petrol and Diesel vehicles by 2032 that contrasts with the Westminster Government which has outlined a ban on the sale of new Petrol and Diesel vehicles from 2040.

Regarding some specific aspects of the Professor Helm report:

- Whilst we agree with more auctioning of services to encourage the delivery of a true price, we only favour this approach when the market can be proven to deliver. The RIIO model already allows for this, and DNOs, like the GBSO, are beginning to tender for flexibility services. Our view is, if the market can deliver something cheaper than network operators could deliver – why would network operators not look to do this?
- An overarching organisation contracting out all services to deliver value is a model that is best suited to large, high cost infrastructure projects. Where work is largely multi-disciplined, higher volume and lower cost (e.g. fault repairs and low value connections), the administrative burden, contractual issues and overheads can result in greater cost and poorer service to consumers. The rail sector has illustrated this in the past, e.g. Railtrack/Network Rail.

Finally, there is a risk that the Professor Helm report to government further increases the perceived level of regulatory risk and uncertainty in the sector that could manifest into costs to consumers. We therefore welcome government coming to a view on fundamentals of energy network policy in a timely manner.

## **Cross-cutting**

### ***What matters should the Government take into account in considering the wider recommendations of the Review?***

We have made a number of points regarding electricity networks under the electricity transmission and distribution related questions. More generally, we would highlight the following matters to take into account in considering the Review recommendations.

Change is Already Underway – we are well along the path of major change in electricity networks. From our perspective, we are already deeply involved in making changes to ensure that electricity networks are developed and operated effectively going forward. For the most case, we feel that the current regulatory framework will support these changes such that customers and consumers will benefit. As we are already moving along a positive change path, we would be wary of a period of major energy policy and industry structure upheaval as this could delay the implementation of effective change for customers and consumers.

In our response to the earlier questions, we also noted that the Professor Helm review is increasing the perceived level of regulatory risk and uncertainty in the sector that could manifest into costs to consumers. To address this, we would encourage government to come to a view on fundamentals of energy network policy in a timely way.

Consider all Consumers – we would encourage that the drive towards greater cost reflectiveness and market forces is balanced alongside the need to distribute costs fairly and to protect those sections of society that are less likely or able to engage with more active energy supply.

Collaboration is Key – through the work that we have done, we are encouraged that there are huge gains to be made by industry stakeholders engaging more closely with each other in the pursuit of common goals. For example, by working more closely together to provide additional network capacity in specific areas, transmission and distribution companies have been able to create more detailed network models and implement more complex control schemes to release capacity for consumers.

This type of approach should be feasible in other areas of the electricity supply chain and indeed in areas where electricity supply overlaps with other energy vectors. Where clear policies are in place and where there is a willingness for stakeholders to work together, those interested parties can bring their combined expertise to bear to make collective gains.

This type of approach is working under the existing frameworks. Whilst it could also be productive after industry framework revisions are made, such revisions are likely to delay the benefits of collaboration at a time when progress is most needed.

The Need for a Proportionate Response – the scope of the Professor Helm review is wide ranging and the proposed measures are extensive. We would argue that the implementation of new approaches should be proportionate. For example, the introduction of certain market arrangements will be effective where there are sufficient volumes of requirement and where there are sufficient numbers of participants to meet these requirements. In some cases,

these conditions may not be met and create the risk to consumers of inefficient pricing and service delivery by immature markets.

***Are there any other matters that the Government should consider to reduce the cost of energy in the longer term?***

We have three broader observations here.

Stable Policy – longer term cost reduction will be helped by stable government policy and industry structures. Change in the UK energy industry is needed but we believe that wholesale change would not be good as many elements of the UK market are already effective. For example, UK network reliability is good and costs compare well to similar economies.

Collaboration – as we outlined in the previous question, by encouraging collaboration across industry stakeholders, requirements and capabilities are better understood and challenges are more effectively resolved. Such collaboration needs to be broader than collaboration between network companies or indeed between traditional industry participants. Government should set policy with this in mind and it should actively bring together different stakeholders to search for and implement more effective solutions.

International Dimension – given that the UK does take a lead in addressing energy system changes, the Government should look to further build and support the UK's position in the wider international context. There will be further opportunities to sell UK produced energy internationally and to source energy from abroad when this is cost effective. In addition, the models and approach we adopt in the UK may have merit in other areas.

If you have any questions on the points raised in this response, please contact John Spurgeon, Head of Regulatory Policy, Energy Networks Association email: [john.spurgeon@energynetworks.org](mailto:john.spurgeon@energynetworks.org)

Energy Networks Association  
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