

SUBMISSION FROM ENERGY NETWORKS ASSOCIATION

ENA Written Submission

Energy Networks Association is the trade organisation for the UK's electricity and gas transmission and distribution networks. Our members in Scotland include Scottish and Southern Energy Power Distribution, Scottish Power Energy Networks, and National Grid who operate the transmission network across Great Britain.

*** *The Scottish Government aims to have a “largely decarbonised electricity system by 2030”. What does this mean in practice, and are there sufficient tools in place to bridge the move from fossil fuels to renewables?***

*** *How predictable peak demand is at present, and how is this likely to change in the coming decade. In particular, what impact will the development of demand side response have? What could be done to improve developments in this area?***

*** *What role will the distribution network play?***

Networks and the low carbon transition

A low carbon energy transition requires electricity networks which are able to adapt to the undoubted challenges posed by decarbonisation. These challenges include:

* The increased demand on the electricity network from low carbon electric vehicles and heat pumps. The electrification of heat will also mean the network will need to accommodate changing demand patterns and new seasonal peaks in winter.

* The increasing amount of generation from intermittent renewable energy such as wind and solar.

*The proliferation of distributed and micro generation connecting homes and communities directly to the distribution network.

In order to meet these challenges the electricity network needs to move away from a passive fit and forget infrastructure which carries energy in one direction, towards a more intelligent grid which communicates between all parts of the system to manage energy demand and flows, through advances in data monitoring, communication, control and automation.

New products and services will facilitate the smoothing of the load curve to reduce the need for conventional reinforcement of the grid; enable the efficient integration of renewable generation within the distribution network; encourage electricity consumers and generators to play a part in improving the performance of the entire electricity system and give consumers fuller information on electricity consumption, choice of supplier and cost.

Through innovation funding mechanisms established by Ofgem in 2010 network companies are trialling new technologies and smart grid solutions:

SSEPD Northern Isles New Energy Solutions (NINES) Project – SSEPD’s NINES project in Shetland has included the installation of a battery which will provide learning regarding the operation of MW scale batteries on a constrained distribution network. The project is also demonstrating the significant role that domestic storage heating can play via demand side management in managing renewable generation. Both technologies have potential to help overcome the challenges of decarbonisation, particularly by increasing the ability to balance intermittent generation with demand within each day. A 2MW battery has also been installed to help balance the grid and support renewable generation in Orkney, where total annual output from renewable sources exceeds annual demand from customers on SSEPD’s network.

SP Energy Networks ARC project - The ARC (Accelerating Renewable Connections) project looked to facilitate the increased penetration of renewable generation gaining access to the distribution network in a timely manner, whilst making efficient use of network capacity to reduce the need for traditional reinforcement work. By accommodating renewable connections at a reduced cost network operators will play an important role in facilitating the bridge from fossil fuels to a decarbonised electricity system.

Continued support for such innovation projects through the regulatory framework will be crucial to enabling network operators to deliver smarter networks; and to enabling policy-makers to understand where approaches such as Demand Side Management may need to be supplemented by larger scale storage technologies to provide enhanced intra-day storage capacity on an economic basis.

ENA maintains the Smarter Networks Portal, which provides a comprehensive account of all smart grid projects funded through the LCNF and RIIO streams established by Ofgem:

<http://www.smarternetworks.org>

The vital role of gas

The gas network will also play a role in a secure and affordable transition to a decarbonised energy future. Without a role for gas in the energy mix over the coming decades, the cost of reinforcing the electricity network to meet the challenges of decarbonisation will be £16-28 billion. If gas plays a role in a balanced transition to a low carbon future it will reduce the cost of this investment by £8 billion.¹

As well as a transitional role, gas can have a long term future in Scotland’s energy mix. Natural gas will continue to generate a secure supply of electricity in 2050 as Carbon Capture and Storage technology continues to advance. The injection of green gas into the UK grid has also grown rapidly in recent years. Biomethane capacity has grown every year since 2011 and more than quadrupled in 2014. It is expected that by 2020 it could meet over 10% of domestic heat demand, making a significant contribution to energy security in a low carbon future.

¹ Delta EE [“Pathways for Domestic Heat”](#) (2012)

*** A number of new transmission network projects are currently under construction or being planned. What role will these have in securing electricity supplies, and where should future investment be directed?**

Transmission Networks

The rapid growth of renewable energy sources in Scotland has necessitated significant investment in the transmission network in order to accommodate new generation. For example, SHE Transmission's new Caithness-Moray link which provides capacity to connect 1.2GW of wind, wave and tidal generation to the network.

In planning this programme of investment in transmission networks there will be a need to balance national interest with local impact. Expanding our networks to connect new forms of generation will be essential to overcoming energy challenges and meeting the demands of a modern society. Investment in secure, reliable energy networks is undoubtedly in the UK's long term national interest.

At the same time, energy developments are large scale and so it is inevitable that they will have an impact on local communities. The public will need to be engaged in a conversation over the need for investment so that they understand the costs and benefits associated with building vital national infrastructure.

There needs to be a concerted effort on behalf of utility companies and the Scottish Government to communicate the case for such investment more effectively with the public as a whole and with the communities which will be most impacted by development. This dialogue should form part of a more structured approach to national infrastructure planning, supplemented at a local level to ensure real engagement with communities.

Over the longer term, smarter networks and smart meters have the potential to defer or remove the need for traditional reinforcement of the grid and therefore significantly reduce the impact of development work in local communities. The Government will have an important role to play over the next five years to ensure that these network benefits can ultimately be realised; particularly through support for innovation and during the smart meter roll-out."

Interconnectors

Investment in interconnectors will help ensure Great Britain's security of supply. ENA supports the doubling of UK electricity interconnector capacity from a current level of 4GW to over 8GW. Not only will this put us closer to the European benchmark of 10% of capacity from interconnectors, but it could also save UK consumers up to £1 billion a year and facilitate greater renewable integration.

Great Britain has four interconnectors representing 5% of existing generation capacity in 2014. Independent analysis shows a failure to double existing interconnector capacity could be equivalent to forgoing a wholesale electricity price reduction of nearly £3 million every day.²

² National Grid, ["Getting More Connected"](#) (2014)

*** Any other matters concerning security of supply that you would like to bring to the Committee's attention**

Cyber Security

Increasing use of communications technology and data in the development of a smart grid will be vital to managing shifting patterns of supply and demand in the future energy system.

However, it will create new vulnerabilities, with thousands of potential access points providing opportunities for cyber criminals. The grid will become more vulnerable as it grows smarter.

Collaboration and best practice is one of the best ways of defending against attacks, potential or actual.

ENA and its member companies have established a Cyber Security Forum that is working in this area with other industry bodies to identify and mitigate risk.

Through this forum ENA's position is developed and communicated to DECC, Ofgem and other key policy makers in order to both influence the national debate and highlight the strategic importance of the energy networks.