

Hi Andrew,

I have compiled some thoughts on behalf of GL Industrial Services (UK) that you might find informative.

The most significant challenge to the UK energy industry over the next 5 years (and indeed a longer horizon) will be planning for, preparing and implementing a sustainable response to climate change targets. Investments will need to be made in network infrastructure to support the legally binding reductions in CO₂ that must be implemented within the UK. One of the key investments will be in the design, construction, implementation and operation of a modern and responsive energy grid. With significant new sources of energy (in the form of distributed electricity generation and a growth in biogas) the dynamics of the energy network will change dramatically. The dynamics of the electricity network, in particular, will vary as renewable sources with less predictable (and less controllable) generating capacity make up a larger proportion of the supply. One of the key ways that Germanischer Lloyd (GL) expects the network infrastructure to develop in response to these challenges will be greater communications between consumers and network operators in the form of SMART grids and metering systems. These systems will support the dynamic nature of the future energy grid with more frequent demand data that will support balancing the network, and they will provide information to consumers about their energy demand.

GL believes that the key challenges that the energy industry faces are: implementation of SMART technology in a planned and efficient manner; development of the infrastructure to support data communications between consumers and network operators; working with consumers to adapt behaviour in reaction to the twin challenges of supply/demand balance and climate change reductions.

GL believes that the schemes Ofgem has implemented for network operators to incentivise innovation could be extended in both scope and scale of benefits, to direct work against these challenges. The schemes for DNOs, Gas Transmission and Gas Distribution have led to a renewed interest in work that does not just benefit short term cost reductions but addresses medium to long term challenges in the industry. This is very welcome and we believe that it should remain an important incentive within the current and future regulatory regime.

GL also believes that Ofgem has a role to play in directing a coordinated response to the development of a SMART energy network within the UK and beyond. The UK energy industry has become more fragmented over the last 20 years and for the energy networks to develop a consistent and effective mechanism to achieve climate change targets, we believe that Ofgem should foster stronger links between network owners and operators.

GL feels that whilst the networks have a key part to play in delivering the mechanisms for delivery of carbon emission reductions, the key to successful reductions will be changing consumer behaviours. We believe that Ofgem should commission research in this field directly to look at how consumer behaviours and energy demand can and should be influenced. For example, what proportion of consumers now would be willing to cede control of energy use to another party to assist in supply/demand balancing - what affects current behaviours and what would need to be in place to incentivise future behaviours.

The priority of this work should be medium to high such that whilst changes in the energy supply networks are planned, constructed and commissioned, the corresponding signals and behaviours for consumers should be likewise developed.

Another significant issue is gas storage. The UK is desperately short of strategic gas storage, and because of the time it takes to get permission and to build new storage facilities, by the time the problem becomes apparent through supply interruptions, it will take too long to react. Ofgem could perhaps help by smoothing the way to raising capital for new projects and to fast track applications. A review of innovative gas storage solutions minimising environmental impact could be advantageous.

On a similar theme, one of the big issues with renewables is that electricity is generated when the wind blows/sun shines/tides turn, and not necessarily when the demand is greatest. Innovative solutions to store electricity could really be useful here - perhaps using surplus electricity to pump

water uphill and use the energy to generate electricity by hydro-electric generation when its needed. Or use the spare electricity to produce hydrogen from water which can then be used for power (or in fuel cells). There are obvious benefits in terms of climate change from this, because it minimises the electricity generation required from fossil fuel power stations to meet peak demand.

Obviously, there are issues around aging assets as well, both electricity and gas, and maybe there are innovative solutions there as well to replace things at minimum cost, with minimum disruption and minimum environmental impact. Optimisation of the replacement strategy, which could link in to the formula reviews by Ofgem. There are changes in the offering in terms of where gas comes from (LNG and interconnector pipelines instead of the North Sea) and electricity (renewables including offshore wind), so maybe the replacement programme could be tied into the infrastructure development needed to accommodate these in some way.

These are all strategic national issues that should to be relevant to Ofgem.

Please come back to me for any clarifications or if GL can be of any assistance to you.

Best regards,

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