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8th January 2016

Dear Sir/ Madam,

National Infrastructure Commission call for evidence: Published 13 November 2015

Thank you for the opportunity to contribute to your studies of the three national strategies set out in the consultation paper. Electricity North West owns, operates and maintains the North West's electricity distribution network, connecting 2.4 million properties, and more than 5 million people in the region to the National Grid. Our network covers a diverse range of terrain, from isolated farms in rural areas such as Cumbria, to areas of heavy industry and urban populations including Manchester. Our response is therefore focused on your third challenge, "Improving how electricity demand and supply are balanced" and the specific issues which may impact on electricity distribution networks. Our responses to the questions published on this challenge are given below.

1. What changes may need to be made to the electricity market to ensure that supply and demand are balanced, whilst minimising cost to consumers, over the long-term?

- **What role can changes to the market framework play to incentivise this outcome:**
 - **Is there a need for an independent system operator (SO)? How could the incentives faced by the SO be set to minimise long-run balancing costs?**

The Transmission System Operator (TSO) role has been established for some time and is clearly distinct from the role of transmission owners. In addition to the three major transmission owners of NGET, SSE and SP, there are now multiple owners of offshore transmission assets and, in addition, Ofgem is looking to increase competition in the ownership of onshore transmission assets. In this context it does not seem appropriate that the role of the TSO should be in the same ownership structure as the dominant transmission asset owner. We would therefore support the role of TSO being independent.

We do not suggest that NGET, in performing this role currently, is in any way acting improperly, however this will remove any perceptions of bias in favour of incumbent infrastructure providers. The TSO can then be incentivised to minimise long-run balancing costs without any incentive to consider associated potential financial impacts on other businesses within the same ownership group. This becomes particularly important as new technologies emerge which could act as game-changers in the way that networks are operated and balanced. For example, we are currently working with NGET to deploy Customer Load Active System Services (CLASS), a

technology developed in one of our Low Carbon Network Fund Projects. This project has proven the ability for DNOs to provide balancing services to NGET by using innovative voltage control on DNO networks. This has the potential to significantly reduce the cost of providing balancing services with huge benefits to energy consumers across Great Britain. The project has recently been extended to model the wider market impacts of such a deployment. Other such developments are likely to emerge and an independent TSO will have the right incentives to stimulate, facilitate and embrace such developments.

In terms of distribution networks, the role of the Distribution System Operator (DSO) is not yet clear or defined, particularly in GB, as DNOs currently have no system balancing duties. This may need to change as more distributed sources of generation and storage are deployed on distribution networks. The DSO role should be developed within the existing DNOs, at least until the DSO duties and obligations achieve a more mature state, as is with the case of transmission.

- **Is there a need to further reform the “balancing market” and which market participants are responsible for imbalances?**

The “balancing market” should not embed current ways of doing things. Our CLASS project, outlined above, has the potential to be a disruptive technology, changing how services such as frequency response are provided. The balancing market should not inhibit such deployment in favour of existing technologies and incumbent providers. New markets must be allowed to evolve as alternative technologies become established, and the lack of an existing ‘market’ must not inhibit deployment of such technologies where it can be demonstrated that the approach is likely to bring long term benefits to customers.

- **To what extent can demand-side management measures and embedded generation be used to increase the flexibility of the electricity system?**

We believe that demand-side management and embedded generation have significant potential to increase the flexibility of the electricity system as demonstrated by the CLASS project referred to above. It is important that technologies connected to distribution networks are managed at a distribution level to ensure that the effects across the whole electricity system are considered and thereby maximise benefits to consumers. For example NGET’s recent request for Enhanced Frequency Response services, which was primarily aimed at storage providers, could potentially increase reinforcement costs on distribution networks. A better model could be for NGET to only procure services from network users connected directly to its network. Embedded services could be procured through DNOs and aggregated from DNO connectees to ensure that more localised infrastructure issues are also considered and all the potential costs to customers are considered in solution evaluation and decision-making.

2. What are the barriers to the deployment of energy storage capacity?

- **Are there specific market failures/barriers that prevent investment in energy storage that are not faced by other ‘balancing’ technologies? How might these be overcome?**

As mentioned above, it is important for a whole system approach to be adopted to ensure that the benefits of storage are maximised through the system giving storage providers access to value across the whole energy supply chain. As discussed above, NGET’s requirement for balancing services currently requires unconstrained connections. For service providers connected to distribution networks this may result in high connection costs and hence make deployment uneconomic. A more flexible approach, with DNOs co-ordinating an aggregated response on behalf of a number of users of their networks, may make better use of the available infrastructure and allow more of this technology to be

deployed. Consideration also needs to be given to allow DNOs to utilise storage to manage constraints on their networks where this will not affect the wider energy balancing mechanisms. Storage providers should also be able to contract with multiple parties including energy retailers and a mechanism to ensure all contracting parties have visibility of the other commitments needs to be considered. These issues were considered carefully in the work of the 6th workstream of the Smart Grid Forum and we commend the final report of this workstream. In this report a wide range of stakeholders from across the electricity industry have identified the key actions required to facilitate the efficient deployment of storage technologies and the removal of barriers to the efficient development of the electricity system.

It will also become increasingly important, where DNOs offer managed connections to facilitate lower connection costs, that they have the ability to modify these over time. This may become necessary to facilitate further new connections or to reduce operating costs. Whilst this could impact some providers and slightly increase their risk, it is important that DNOs have flexibility in how they deliver their statutory obligations to provide an efficient network.

- **What is the most appropriate scale for future energy storage technologies in the UK? (i.e. transmission network scale, the distributed network or the domestic scale.)**

It is too early to say at this stage. As a DNO our approach is to facilitate the development of technology and not to favour or inhibit particular approaches. It is likely that different sizes of storage devices will be able to provide different solutions to meet a range of emerging needs. We do advocate cost reflective charging, as it is not our role to provide subsidies to particular technologies. Such charging will highlight challenges and facilitate the deployment of efficient, value-adding solutions including storage where it is competitive.

I hope these comments are useful and please do not hesitate to contact me if you require further information.

Yours faithfully,

P R Bircham
2016.01.08
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Paul Bircham
Networks Strategy & Technical Services Director

