

Electricity Interconnection and Storage

Written evidence submission to the National Infrastructure Commission - Low Carbon

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A privately owned investment company, Low Carbon invests in, owns and manages both renewable energy developers and projects across a range of technologies including solar, wind, anaerobic digestion and concentrated solar power. Low Carbon has a strong management team with a proven track record in the development, construction, financing and management of UK solar assets, with more than 270MW funded and in operation today and a pipeline exceeding 2 GW in development. Low Carbon has a dedicated asset management team that currently manages assets on balance sheet and for third parties (unlisted and listed).

Low Carbon is the official renewable energy partner of the Land Rover BAR team, and has ensured that the team's America's Cup headquarters on the Camber in Portsmouth is powered by the very latest, high efficiency solar photovoltaic (PV) technology.

Low Carbon is also a major stakeholder in the TuNur project through its shareholding in Nur Energie Ltd and is beginning investments in energy storage technologies.

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?

Balancing of supply and demand in the electricity market is a complex issue – unlike other commodities, electricity must be balanced on a second-by-second basis, but daily, weekly and seasonal variations mean that the scope of balancing actions required vary throughout the year.

The current regulatory framework in the electricity market is extremely complex, and is a barrier to both entry and innovation. As an example, the Balancing & Settlement Code requires signatories to comply with seven subsidiary documents – including relevant codes of practice, a balancing party will be subject to over 120 separate regulatory documents, totalling approximately 3,000 pages¹. As well as being a barrier to entry and innovation, there is a considerable cost to the consumer, estimated to be over £635 million per year for energy administration².

¹ Howard, R (2015) Governing Power. Policy Exchange

² Ibid.

The current role of National Grid has a number of shortcomings, highlighted by Ofgem³ which are leading to misaligned incentives. A necessary first step to incentivise the System Operator to minimise long-run balancing costs should be to remove the misalignments caused by National Grid's multiple roles. It is our opinion that this is most easily resolved by the creation of an Independent System Operator.

In any change to the way electricity is balanced, consideration must be given to the UK's obligations under the Climate Change Act. In particular, the construction of significant volumes of fossil-fuelled generation capacity is not consistent with the need to reduce the carbon intensity of electricity generation to 90 g/kWh by 2030⁴. The Capacity Market regulations have been prepared without consideration of the UK's emission reduction obligations and this must be addressed.

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

Energy storage is a collection of emerging technologies and business models, many of which are at the stage of initial commercial deployment. A significant barrier to that deployment is perception within government that energy storage is a "research and development" issue – this is the first issue to be addressed.

For significant deployment of energy storage technologies, the regulatory landscape must be clarified. There is currently a difference in approach between Ofgem & HMRC that causes energy storage projects to be exposed to some non-energy cost on charging, but not others (we understand that HMRC has ruled that electricity used for charging is not subject to CCL, but Ofgem has ruled that this electricity is subject to non-energy costs associated with ROC, FiT & CfD schemes). Similarly, it is uncertain how energy storage projects will be considered for business rates.

Government should undertake a review of the regulations related to energy storage at all scales to ensure consistency across the different organisations involved in electricity regulation. This review should also involve the Contract for Difference and Capacity Market regulations to ensure there are no unintended consequences of previous decisions that would impact the deployment of energy storage technologies.

One clear opportunity for energy storage is to defer grid reinforcements, but no regulatory mechanism yet exists to permit grid operators to pay a 3rd party to provide this service. This area represents a significant opportunity and should be investigated.

³ Strbac, G. et al (2013) Integrated Transmission Planning and regulation Project: Review of System Planning and Delivery. A report for Ofgem.

⁴ Committee on Climate Change (2015) The Fifth Carbon Budget

It is likely that the first scale of energy storage technologies to deploy in significant volume will be at distribution and transmission (e.g. to provide Enhanced Frequency Response services to National Grid), but this should not be taken to mean that domestic scale deployment is not valuable. We expect that there is likely to be value in deployment at all scales.

3) What level of electricity interconnection is likely to be in the best interests of consumers?

We have no comment on the level of electricity interconnection.

4) What can the UK learn from international best practice in terms of dealing with changes in energy technology when planning to balance supply and demand?

Consideration should be given to a scheme similar to FERC Order 755 (known as “pay for performance”) in USA, whereby better performance in providing frequency regulation receives greater compensation.