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Dear Sir / Madam

### **Plan for a Smart, Flexible Energy System - A call for evidence**

Thank you for the opportunity to respond to this consultation. We have submitted our response in letter form as the comments we have do not necessarily lend themselves to the majority of the consultation Question structure, although our points are mostly related to the general areas of Enabling Storage and Accessing (Pricing) Flexibility.

NorthConnect KS is a JV company planning to build and operate an interconnector between the east coast of Scotland and the west coast of Norway, connecting the flexibility of renewable hydro and wind power regions.

Firstly, we note that whilst the use of interconnectors in a flexible energy system was cited in both the earlier documents from Ofgem *"Making the electricity system more flexible and delivering the benefits for consumers"* in September 2015, and BEIS *"Towards a Smart Energy System"* in December 2015, interconnection now appears to have been omitted from this Call for Evidence. Hence, below and in relation to several areas of the consultation topics, we have highlighted where we believe there is a beneficial part to play from interconnectors, and even more so when connected to third country systems where large volumes of flexible storage capacity already exists (e.g. Norway / Sweden). In a similar vein, we have highlighted where we believe interconnected capacity (generation and storage), should also be able to access the same current and future market(s) for flexible services as is discussed in the consultation for domestic arrangements.

In section 2.1 of the consultation, we note reference to the barrier identified for domestic storage, in that it is not being properly catered for in connection arrangements. We would support this and point out that this a barrier which also applies to interconnection in the fact that it can be a bi-directional asset providing

generation, demand and flexibility services, but faces similar issues to domestic storage in the connection arrangements.

Whilst the objectives of GB regulatory assessment regimes for interconnectors may be intended to promote flexibility, the regulated connection assessment processes by the SO / TO's / ENTSO-E (and indeed the whole of the network planning) still has a bias towards out-dated assumptions of centralised generation and demand internal to GB only. This leads to flexibility and cross-border opportunities being inherently undervalued in cost-benefit assessments, and to erroneous or “asset-heavy” conclusions regarding cost-efficient connection infrastructure for interconnectors, new storage or, as has already been pointed out in the case of Norway and Sweden, access to large sources of existing flexible storage.

Therefore, if more flexible connection arrangements are being considered for domestic storage, we believe they should also be considered for interconnectors (or interconnected flexibility). Our own modelling has demonstrated that there are significant network benefits in addition to the basic socio-economic case for an interconnector between a region with the highest renewables penetration in GB (Scotland) and the large flexibility reserve which already exists in the Nordic region. Our evidence has already been provided to Ofgem as part of the second window Cap & Floor Initial Project Assessment currently underway for NorthConnect, and demonstrates the opportunity for a significant contribution to a smart, flexible energy system in GB. It is this factor which leads to the conclusion of an interconnector between Scotland and Norway facilitating the development of even greater renewable generation in Scotland than would be economical without it.

From the above, we would also agree with the statement in section 4.1 that network operators could use storage to support their networks. However, we would note that there are different kinds of storage with different timeframes: Short-term (seconds/minutes); Medium-term (hours); and Long-term (days), which should be further considered and evaluated in terms of their flexibility value in different market designs:

- The fast reacting balancing units providing primary regulation will either be related to generating units and grid batteries (seconds) – these could be domestic, or non-GB if interconnectors can access the short-term market;
- The storage capacity in the customer installations (i.e. DSR), could mainly be used in secondary regulation (also short-term) although it could have a large impact on medium-term balancing and flexibility. Domestic pumped hydro storage power plants could also have an impact in this arena, but so could non-GB traditional hydro with interconnector access; and finally
- When it comes to longer-term / high capacity balancing, either backup gas-fired power plants or interconnectors in particular if connected to areas with high flexible storage capacity (Norway and Sweden) can only provide backup capacity in the volumes required here (hours into days and weeks). We would argue that interconnectors to hydro-dominated systems are by far the best solution within this category, and particularly if economics and climate issues are considered.

In summary on this point, the important argument for interconnectors is that they can provide flexibility over the whole range of these timeframes, and are not limited to one or the other. Even in circumstances when the nominal full capacity of an

interconnector is traded through standard markets design, the latest VSC interconnectors can be designed for temporary overload, which enables short-term over-capacity, and therefore can simultaneously provide for the shorter and longer-term flexibility services. However, the lack of a current regulated market framework for this prevents capturing that full flexibility value at present. The forthcoming implementation of new EU Grid Codes and guidelines (HVDC, Network, CACM, FCA and Security of Supply) will, however, pave the way for developments where the value of such services could be highly recognised and valued.

In section 11 regarding enablers for accessing flexibility, we believe that via interconnectors the total flexibility in an interconnected hydro-power based system could be made available by reducing ramping restrictions between countries on the interconnectors. This is provided that continuous ramping will be in place as we believe will be the case in the coming years. This will make it possible for interconnectors to compete in new and growing flexibility markets. In addition, we agree with the summary of emerging requirements in section 43 that improving the integration of flexibility markets across the various grid levels should be prioritised as an emerging system requirement.

Interconnectors will naturally not be able to cater for all GB's flexibility needs for secure system operation all of the time, but their contribution should be deemed to be of great importance, and we would argue they should not be ignored or excluded from the current or future market design for these services, in particular taking into account the development of the European Integrated Electricity Market which we still consider UK would remain a part of in spite of Brexit.

Section 26 enquires about possible changes to the Capacity Market application / verification processes to reduce barriers to flexibility in the near term, and enable newer forms of flexibility in the longer term. We believe that the current discrimination for new Interconnectors in the CM (which could be an excellent means to provide the capacity needed in the UK system) should be also re-considered alongside the arrangements for domestic generation.

Whereas under the current regime, all contracts have a one year duration putting interconnected capacity on an equal footing with other existing generation units, we understand that new capacity for investment in either generation or demand response could be awarded 15 years contracts. We cannot see any reason why BEIS / Ofgem would treat new investments in generation capacity differently from the capacity provided by new interconnectors, as the previous reports from BEIS / Ofgem clearly stated that interconnectors would be an important element of the new smart UK energy system.

If this discrepancy between new investments in capacity is not addressed, it would constitute an (unnecessary) increased risk and uncertainty for investment in new interconnectors, added to the other intra-national regulatory and political barriers faced. In summary on this point, we would maintain that if there is a capacity market in UK, domestic production and interconnectors should participate on comparable terms.

We look forward to your developments of policy and regulation in this arena and hopefully to our further participation in the process.

Yours sincerely,



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