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Dear Geoff

Project TransmiT: Impact Assessment of industry's proposals (CMP213) to change the electricity transmission charging methodology (Ref:137/13)

ABB welcomes the publication of the Impact Assessment of the industry's proposals to change the transmission charging methodology.

About ABB

ABB is a global leader in power and automation technology, providing products and systems across the energy, transport and manufacturing sectors. Much of our business focuses on the development of a secure and affordable low carbon energy system; and improving economic competitiveness.

We have pioneered several key developments in both HVAC and HVDC systems over many years, and have developed extensive in-house capabilities to offer a complete design, build and service offering to the market using the latest power technology and delivery processes. In the UK and Ireland, ABB now employs around 3,000 people and have established local resources to support delivery of large scale grid projects (major grid connections, interconnectors, offshore transmission infrastructure and major reinforcement projects) in the UK and Ireland.

HVDC technology is being used to build a number of high capacity links to enable efficient transfer of power over long distances. ABB pioneered the first commercial HVDC link over 50 years ago and since then we have developed and refined the technology to support the growth of modern grid systems. We recently commissioned the East-West interconnector, which uses voltage source HVDC to enable 500MW of power transfer between the UK and Ireland. As a recognised world leader in HVDC equipment and systems, ABB has a detail understanding of the integration of HVDC circuits within traditional HVAC power systems.

ABB also has investment interests in emerging wave and tidal technologies which will be directly impacted by the transmission charging proposals.

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Consultation Response

ABB recognises that Ofgem's "minded to" decision is a key milestone for Project Transmit, being the conclusion of extensive analysis and many years of debate. Developing a transmission charging framework that adequately reflects the costs that different types of generators impose has been a challenging issue. We consider that Ofgem's "minded to" position to adopt diversity option 1 appears to strike a pragmatic balance given the range of views across the industry.

However, ABB is deeply concerned that Ofgem's "minded to" position on treatment of HVDC transmission links, which sees no socialisation of the associated converter costs, fails to reflect the technical characteristic of embedded voltage source (VSC) HVDC systems. It appears that Ofgem has given little regard to the wider system operation and stabilities benefits provided by VSC HVDC converters to the Main Interconnected Transmission System. In contrast, it appears that Ofgem has focused on the benefits of VSC HVDC converters in facilitating the connection of generation sources in remote locations to justify fully targeting HVDC costs back to local users.

Characteristics of HVDC systems

HVDC cables and equipment allow large amounts of power to be transmitted over long distances without significant losses. HVDC is used across the energy sector to:

- Interconnect power grids in different regions or countries;
- Bring remote onshore and offshore wind power to load centres;
- Supply power to offshore oil and gas platforms to improve process efficiency; and
- Reinforce existing AC grids.

In many instances, VSC HVDC systems are the preferred technology choice for connecting remote systems and offshore wind farms over long distances. This is due to the technical capabilities of VSC converters to enhance grid stability, improve operating margins and reduce AC system losses.

Specifically, VSC HVDC converters are able to control active and reactive power independently, improving operating margins on the local grid assets. VSC converters are also capable of actively managing output voltage and minimise losses on parallel AC systems at each end of the link. Moreover, they will also actively dampen power oscillations in the system, which provides wider system stability benefits when local AC systems are near to peak load.

The grid stability benefits offered by VSC HVDC converters is crucial in allowing weak AC grids or asynchronous generation (eg remote AC networks and offshore wind) to connect to secure AC systems. Nevertheless, VSC converters can be operated independently and as such any VSC HVDC system will also be capable of offering support to the wider system. These wider capabilities are often recognised by Transmission Operators when procuring HVDC links, where we see a focus in tenders on using HVDC converters to improve the operational efficiency of the wider system (potentially lower system operation costs and reduced future investment requirements).

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The principles of cost reflective charging would suggest that given the potential system benefits that some element of converter costs should be socialised. We were therefore surprised by Ofgem's "minded to" position. Moreover, we note that the inconsistency of treatment between HVAC and HVDC equipment will potentially distort engineering decisions, particularly for offshore wind connections designed and built by generators. Moreover, it could perversely impose costs on wider system users to integrate new remote loads or new generation sources.

Closing remarks

ABB is keen to work with Ofgem to assist in further developing these proposals to ensure that we have a robust regulatory framework that will deliver secure and sustainable energy supplies. We broadly support the proposed position and welcome the proposal to implement changes to the transmission charging methodology from April 2014. Nevertheless, we are keen to ensure that any decision in relation to HVDC systems is based on a full consideration of the evidence.

We recognise that technical details of HVDC systems are difficult to express in a short consultation response. ABB would therefore welcome the opportunity to discuss with you the technical characteristics of VSC technology in more detail, including providing access to our leading experts.

Yours sincerely

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