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Cap and floor regime: Initial Project Assessment of the GridLink, NeuConnect and NorthConnect Interconnectors

EDF Energy is one of the UK's largest energy companies with activities throughout the energy chain. Our interests include nuclear, coal and gas-fired electricity generation, renewables, storage, and energy supply to end users. We have over five million electricity and gas customer accounts in the UK, including residential and business users.

We welcome the opportunity to respond to Ofgem's consultation on their Initial Project Assessment of these three new interconnector projects. While in principle more interconnection to markets with lower wholesale prices is likely to bring benefits to GB consumers and, in future, in a more integrated European Market, should provide value in balancing resources across different countries, we believe that the scale of planned interconnection is now at a level where a broader review is essential.

Ofgem's initial approval of these three further interconnector projects could increase the GB electricity interconnector capacity to almost 18GW in 2022; an increase of 14GW compared with existing capacity within five years. The scale of this change to the operation of the GB market and more broadly on GB energy policy is unprecedented. Ofgem have undertaken a range of analysis to assess these proposed developments, including Pöyry's assessment, but we believe that a broader assessment is essential – it is far from clear that the impacts of this scale of interconnection are understood.

The scale now envisaged will impact Government policy to minimise the costs of the transition to low carbon while maintaining security of supply. New interconnection is likely to come to the market in parallel with major changes in Great Britain's generation mix. This may bring lower wholesale prices which would affect the economics of existing and new generation in GB. We expect, and support, the transition away from coal generation over the next few years and expect more interconnection to hasten this process. However, there will also be an impact on other generators, potentially leading to closures of existing capacity and more challenging economics for new build generation. While lower carbon emissions from the GB generation fleet are to be welcomed, they will lead to a lower cost of carbon in wholesale prices, affecting the economics of low carbon generation and leading to increases in CfD difference payments. We would, of course, expect the capacity market to ensure that adequate capacity would be procured. It will be necessary to reduce interconnector de-rating factors to reflect the increasing capacity reliance on common markets, and it is possible that this will lead to higher capacity prices.

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The price difference between GB and neighbouring markets on which the benefits of interconnection are largely based is heavily dependent on policy differences, for example different transmission charging arrangements. Government has recently launched an independent review of how the costs of meeting the UK's carbon reduction targets while ensuring security of supply can be minimised, and has set the ambition for the UK to have the lowest energy costs in Europe. If policies change in either the UK or EU countries, the economic drivers could change very rapidly but the UK will have underinvested in its own capacity, which could create new security of supply or price risks for GB consumers. It is also worth considering that new interconnection is coming forward at the same time as the UK's exit from the EU potentially calls into question the extent of the UK's participation in the Internal Energy Market and the availability of common market rules to enable the operation of cross-border intraday trading and balancing services.

We also note that National Grid in their System Operability Framework document have highlighted system operation issues with higher penetration of interconnector capacity, e.g. reducing inertia, unacceptable Rate of Change of Frequency, ramp rate issues and falling short circuit levels. This is, at the very least, likely to lead to higher consumer costs from operating the system. Faster closure of coal stations will also put additional pressure on National Grid to secure the electricity system following a black start event.

We believe that an assessment of the whole system implications from a market with this scale of interconnection needs to be undertaken urgently given the speed of change envisaged. With this in mind, EDF Energy is undertaking its own assessment of the potential wider implications. We will be pleased to discuss our findings with you and Government in Autumn this year.

Finally in terms of the analysis provided in this consultation, we highlight the following points which we consider important in determining more fully the case for supporting the three projects. We note particularly that two of the projects are strongly dependent on CM revenues to reach the floor meaning there is a real risk that consumers will underwrite these investments over a long period of time:

- National Grid's Network Outputs Assessment (NOA) 2017 (Ofgem licence requirement) sets out a view of the optimised level and timing of interconnection. This highlights that there are likely to be GB consumer losses under certain Future Energy Scenarios (FES), e.g. Gone Green, with increased interconnectors above base line (Cap & Floor window 1). This appears to conflict with Ofgem Cap & Floor window 2 assessments. It is important for Ofgem to set out some assessment of these discrepancies given the scale of investment planned.
- National Grid provided Ofgem an assessment of ancillary services benefits that the three new interconnectors might bring. Within that assessment it is not clear that Ofgem asked National Grid to also quantify the potential additional operability challenges (beyond impact on constraint costs and one-off reinforcement costs) created by the additional interconnectors as mentioned above. In our discussions with National Grid they have confirmed that interconnectors, in general, both create operability challenges and also potentially create solutions. Ofgem appear to have only assessed the benefits.

Our detailed responses are set out in the attachment to this letter. Should you wish to discuss any of the issues raised in our response or have any queries, please contact Mark Cox on 01452 658415, or me.

I confirm that this letter and its attachment may be published on Ofgem's website.

Yours sincerely,

A handwritten signature in black ink that reads "Angela Hepworth".

Angela Hepworth
Corporate Policy and Regulation Director

Attachment

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EDF Energy's response to your questions

Chapter Three

Q1. Do you agree with our minded-to positions on the three projects considered in this consultation?

We set out below various aspects of Ofgem's assessment that we consider require further work to be confident that underwriting these three projects with consumers' money is appropriate. In addition, we are concerned that the full impact of nearly 18GW of electricity interconnection is not fully understood. Given this, there is a risk that GB consumer benefits are being over-stated.

There are several policy instruments designed to achieve specific objectives in the energy sector which are ultimately funded by consumers. It is important that the electricity system as a whole works together to ensure that it decarbonises while maintaining security of supply at reasonable cost to consumers. The scale of interconnection now planned forms a key element of this overall assessment. Given this and scale of investment that Ofgem is committing to on behalf of GB consumers, we expected to see a clear narrative in the consultation explaining the consequences to the broader GB policy objectives.

Q2. Is there any additional information that you think we should take into account when reaching our decision on the IPA of the projects?

Yes. The consultation states that the estimated impact of the projects on the operation of the GB transmission system including onshore reinforcement costs have been considered to inform Ofgem's minded to positions. However, there is no mention of the wider system impacts of connecting more interconnectors as described in the *System Operability Framework 2016 (SOF)*. We understand from the SOF that growth of interconnection presents both improved technical capabilities and increased operational risks, e.g. reducing system inertia leading to unacceptable Rate of Change of Frequency, unacceptable ramp rate issues and potential issues with falling short circuit levels. These concerns have been reinforced recently by National Grid's *System Needs and Product Strategy* document. This shows that by the early 2020s National Grid expect electricity interconnectors will need to be curtailed (instructed to have lower output) for up to 50% of the year.

The System Operator also publishes the *Network Options Assessment*, as part of its new role under the ITPR; this report also needs to be considered by Ofgem before reaching its decision on the IPA. There is a chapter dedicated to interconnection analysis which "aims to facilitate the development of interconnector capacity as part of an efficient, coordinated and economical system of electricity transmission". This report states that GB

consumers stand to gain further from interconnection beyond what is captured in the base case (i.e. existing interconnectors and those under Cap and Floor window 1) but only mentions 500MW of interconnection to any of the nine studied markets under No Progression. Moreover, the report states that "*conversely under Gone Green, significant developments in domestic renewable generation would result in interconnection to other markets being substantially less beneficial to the GB consumer, but would instead benefit the connected market*". It appears the SO's views are different to Ofgem's minded-to position. At the very least we would expect Ofgem to address this discrepancy in their assessment.

Chapter Four

Q3. What are your views on the approach Pöyry has taken to modelling the impact of cross-border interconnector flows?

We are broadly satisfied with Pöyry's modelling approach as described in the Annexes in their report *Near-Term Interconnector Cost-Benefit Analysis: Independent Report (Cap & Floor Window 2)*.

We note that in its capacity mix assumptions Pöyry assumes that in all scenarios, new plant will come on-line as required, to ensure a reasonable level of security of supply. This is a big assumption which could distort the modelling outputs and would benefit from further analysis. We also understand that the BID3 model models existing interconnectors with the interconnector project (target case) and without the interconnector project (counterfactual case). We believe it is also necessary to include the impact of new interconnectors being built or being considered across Europe to ensure a consistent approach with the capacity mix assumptions as for smaller markets these could impact the relative market prices.

Although the consultation states that revenues from the CM are not included in the assessment, we note in Pöyry's main conclusions that "*capacity market revenues represent a significant share of overall revenues for NorthConnect and Gridlink. For both projects, capacity market revenues are required to reach the floor in the Base Case and the Policy normalisation sensitivity.*" Given that there is no guarantee that the two projects will be successful in the auctions each year or perhaps more importantly that the assumed de-rating factors and assumed CM clearing price actually outturn, we agree with Ofgem that revenue payments from the capacity market should be excluded from the assessment. However, if Pöyry is correct in saying that, for both projects, significant capacity market revenues are required to reach the floor in the Base Case and the Policy normalisation sensitivity, we find it hard to understand how these projects will be financed given the expectation that their revenues will be sat at the floor for prolonged periods. It is not clear how Ofgem conclude that this is in consumers interests. We would welcome clarification on this point.

Given that even subtle differences on assumptions and method can lead to different outcomes, we would urge Ofgem to take a prudent and conservative view throughout, on the basis of ensuring that projects demonstrate robustness given consumers' underwriting of the costs of the floor for a very long time.

Q4. Do you have any additional evidence in this area that we should take into account?

Not beyond what we have already discussed.

Chapter Five

Q5. Do you have any views on the information presented in this chapter?

With the increasing issues being raised by National Grid about their ability to operate the system with increasing amounts of interconnection, we were surprised that this chapter did not appear to address these issues as it only summarises the potential benefits from the provision of ancillary services, by the GridLink, NeuConnect and NorthConnect projects, to the SO), the constraint cost implications of each interconnector connecting to the transmission system and the one off reinforcement costs. As per our response to Q2, we believe Ofgem needs to consider the operational risks of having more interconnectors as outlined in the SOF.

Q6. Are there any additional factors that you think we should have considered?

As above.

Chapter Six

Q7. Have we appropriately assessed the hard-to-monetise impacts of the interconnectors?

We are broadly satisfied with the hard-to-monetise impacts of the interconnectors but, again, the assessment one sided. Ofgem should also consider the potential negative impacts of interconnectors.

Q8. Are there any additional impacts of the interconnectors that we should consider qualitatively?

As above.

Chapter Seven

Q9. Do you have any views on the information presented in this chapter?

We do not have any views on the assessment of connection location, capacity, cable routes and technical design of the interconnector projects.

Chapter Nine

Q10. Do you have any comments on our assessment of the project plans?

No.

**EDF Energy
August 2017**