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Cap and floor regime: Initial Project Assessment for the GridLink, NeuConnect and NorthConnect interconnectors

Dear Ikbal,

RWE welcomes the opportunity to respond to the Ofgem consultation on the cap and floor regime: Initial Project Assessment for the GridLink, NeuConnect and NorthConnect interconnectors. We are responding on behalf of RWE companies operating in the UK.

It is our strong view that while interconnection between markets can, under the right circumstances, improve market efficiency, the cap and floor approach risks developing inefficient projects that deliver little if any benefit to the UK and leave significant financial risks with GB consumers. The consultation's own analysis demonstrates that the three new projects destroy value in the UK economy and export benefits to European generators. Continuing to give imports preference in this way is also likely to increase overall carbon emissions and reduce UK security of supply.

Delivering security of supply through interconnectors is dependent on a capacity surplus in continental markets to ensure delivery at times of system need. As illustrated in Annex 2, this should not be expected to be the case in the future since there have been significant falls in capacity margins in Germany and elsewhere in response to increased renewables penetration and nuclear plant closures, while recent concerns about nuclear safety has resulted in temporary capacity restrictions in France.

One of the key drivers for interconnector flows has been the policy differentials that result in higher prices in GB when compared to the wider European markets, particular in relation to the carbon floor price. However, there is increasing alignment on policy objectives in the European Single Market through greater market coupling, convergence of carbon prices and the implementation of European Network Codes. Consequently GB cannot rely on policy differentials determining interconnector flows in the future. In this context we cannot ignore the potential implications of Brexit on the institutional arrangements and interconnector flows.

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In addition, in assessing these projects we do not consider that Ofgem has properly recognised the distinction between transmission and generation in the IPA consultation. A consequence of this difference is that GB interconnectors are exempt from paying GB transmission charges (TNUoS and BSUoS), resulting in market distortions and an unfair competitive advantage for flows over an interconnector, while seeking to compete in the provision of Balancing Services as though such assets were generators or Demand Side Response.

We set out our thoughts on the Ofgem consultation document, National Grid's submission and the Pöyry analysis in turn below. In Annexe 1 to this document, we respond to the specific questions asked in the consultation document. Annex 2 provides some additional analysis in respect of anticipated generation margins in Central Western Europe, illustrating the risks associated with future reliance on interconnection as margins in neighbouring markets shrink.

The Consultation Document has not correctly analysed the impacts on carbon emissions and security of supply

The consultation document does not properly consider the full consequences of the projects, most notably in respect of total carbon emissions and GB security of supply.

In relation to the carbon impact, the document refers to "*Connecting to countries with as much or greater shares of renewable and low carbon energy*"[1] and to markets with high levels of generation from renewables[2]. This is presented as helping to meet decarbonisation targets. This simplistic analysis fails to consider the wider impact on dispatch across the European grid and the fact that the flows will derive from the marginal generating technology in the linked and other connected countries and not the average fuel mix. Even if the linked countries have lower emissions intensity, the increased flows will be served from incremental coal, lignite and gas and not low-marginal cost renewables and nuclear. This is likely to increase – not reduce – carbon emissions, which cannot be in the long term interest of GB consumers.

Ofgem has not fully considered the risk to security of supply from incremental interconnector investment. Ofgem assume that security of supply will be maintained, but do not consider the future reliability of the imports. While Europe has significant overcapacity the closure of German nuclear plant and increased displacement of thermal plant by renewables will lead to tighter capacity margins and reduced reliability[3]. Increased reliance on interconnector "capacity" to meet GB peak demand will therefore present an increased risk to security of supply in the UK. Furthermore as the penetration of renewable generation increases, shortages between linked markets become more correlated as weather patterns tend to affect multiple markets simultaneously. Table 20 in the IPA, the "*summary of hard to monetise assessment*" is therefore based on partial and flawed analysis and consequently reaches conclusions that do not stand up to scrutiny.
Ofgem's assessment of the potential benefits appears entirely based on the estimated consumer welfare, while ignoring the impact on wider GB total welfare. While Ofgem has a statutory duty to protect consumer interests, it cannot be in GB consumers' long-term interests to subsidise inefficient,

[1] Table 19 on page 40
[2] page 41
[3] See for example ENTSOE, Mid-Tem Adequacy Forecast, 2016 edition, The 2025 Base Case envisages "**Installed capacity**: A reduction of installed capacity of thermal power as well as an increase in RES is forecasted between 2020 and 2025 in the scenarios considered" at https://www.entsoe.eu/Documents/SDC%20documents/MAF/MAF_2016_FINAL_REPORT.pdf#search=MAF

insecure and carbon-increasing imports. Moreover, the economic case for the projects relies largely upon policy differences between the connected markets (notably the carbon price floor) which assumes a persistent disconnect and tilted playing field between the UK and connected markets irrespective of future carbon price development and the phase out of coal in the UK. In these circumstances, it becomes increasingly difficult for existing sources of generation and flexibility (including DSR) to compete, resulting in the potential for the marginal plant in the Capacity Market to require higher clearing prices and thereby increasing total costs to consumers. The policy also threatens to crowd out existing providers, increasing the need for higher cost replacements able to benefit from long-term capacity agreements and an increased cost of capital stemming from uncertainty around an uneconomic and unsustainable policy framework.

National Grid's SO Submission to Cap and Floor

As the interconnector owner, operator and developer, National Grid has a fundamental conflict of interest between its role as System Operator and Transmission Owner in providing advice to Ofgem on the value to the system of interconnectors. Ofgem should procure an independent analysis of the case for the interconnectors or, at the very least, an independent review of National Grid's analysis.

There is prima facie evidence that National Grid overstates the benefits of the interconnection. Although parts of National Grid's analysis have been redacted, it is possible to estimate the additional value ascribed to balancing services as the difference between Pöyry's welfare values and those in the Ofgem consultation document. While the value arising from balancing services for all three schemes appears to be positive, they vary significantly and appear relatively small for NeuConnect and GridLink.

Ofgem has not given sufficient weight to the uncertainties and additional costs referenced – but not monetised - in the System Operator document. These costs are likely to be material and should be considered further. In addition, the quantitative analysis that is provided relies on unsafe assumptions which make the results questionable:

- The first service that National Grid assesses is Frequency Response. The evaluation assumes that the connected market is able to provide response energy without cost and that no 'repositioning' payments are necessary on the interconnectors. This begs the questions of whether the service can be provided at all – never mind without cost - but the subject is not analysed further, despite an acknowledged need to investigate "*to ensure that the foreign exporting system can cope with more extensive sudden increases/decrease in demand/generation*"[4];

- National Grid assumes that frequency response from the interconnectors displaces the commercial service in the UK rather than the cheaper mandatory service. This does not align with our understanding of National Grid's contracting strategy, which is to procure an amount of commercial frequency response through monthly tenders and then to use mandatory response to top-up near to real time. This frequency response will therefore displace the mandatory and not the commercial service which means the analysis is fundamentally flawed and will greatly over-state the value; and

- National Grid assume that the price paid for high and low commercial frequency response is the same and given by reference to the current commercial rate. This is not a realistic assumption since high frequency response is readily available from synchronised plant at

[4] SO Submission to Cap and Floor, June 2017, section 5.2.1.4

most times and the technology to deliver high frequency response from renewables is well established, albeit not currently as widely used as it might be.

Pöyry Report: Near-term interconnector cost-benefit analysis: independent report (cap and floor window 2)

A number of findings in the Overview of Results and Final Conclusions section of the Pöyry report[5] highlight some key issues modelled by Pöyry:

> "…**none of the projects provide a benefit to GB overall** in the Base Case. …This is due to the fact that lower gross margins for generators and revenue cannibalisation for other GB interconnectors is greater than the added benefit for GB consumers."
>
> "The **total net impact on both connected countries** in the base case **ranges between zero** (GridLink) and **€0.5bn** (NorthConnect)"
>
> "NeuConnect and GridLink provide the largest benefit and highest upside for GB net welfare, but **all projects are negative in most cases in this metric**."
>
> "In the Base Case and High scenarios, only NeuConnect requires floor payments"

Pöyry's analysis provides clear evidence that interconnectors are not sensible investments and the proposed projects should not receive cap and floor payments. The negative impact on GB generators and other interconnectors should not be disregarded as the long-term impacts of such policy decisions can have fundamental effects on hastening the closure of existing plant and undermining confidence in future investments, which will ultimately lead to much greater costs for GB consumers.

The economics of the schemes, which are predicated on significant price differentials between markets, are driven largely by policy differences that for the time being distort the wholesale prices in the GB market. This would lead to distorted investment signals, driving investment out of GB and into the connected markets. The fact that NeuConnect is modelled as requiring floor payments even in the Base Case highlights an additional distortion that the cap & floor regime introduces and clearly highlights a problem where GB generators in the Capacity Market are attempting to compete with interconnectors that are not only exempt from the GB carbon tax and GB transmission charges, but are subsidised though cap and floor payments that are recovered in part from GB generators.

We consider that the assumptions of capacity market revenues in the analysis are unsafe since the current arrangements of paying the interconnector owner is not one that is intended to be in place in the long run and any such income should therefore not be included in the assessment.

The Consultation Document and its supporting evidence do not justify the cap and floor arrangements for the three new interconnectors. The negative impact on the GB economy that has been identified in the analysis should be sufficient for Ofgem to conclude that these projects should not qualify for the Cap and Floor regime and that a merchant model would be more appropriate.

If you have any comments or wish to discuss the contents of this letter then please do not hesitate to contact me.

Yours sincerely,

[5] Near-term interconnector cost-benefit analysis: independent report (Cap and Floor window 2), Executive Summary v to vii

By email

Raoul Thulin
Annex 1: RWE Response to the Consultation Questions

Chapter Three

Question 1: Do you agree with our minded-to positions on the three projects considered in this consultation?

We do not agree with Ofgem's minded-to positions on the three projects considered in the consultation. Not only has the economic case for these projects simply not been made, the evidence presented shows that total GB welfare is negative in all but a small number of scenarios and that is without full consideration of several other negative effects. Interconnectors displace firm domestic capacity which does not rely on generating margins in connected markets and therefore increase GB dependence on marginal carbon plant. Consequently these interconnectors will not provide additional security of supply and are likely to result in increased carbon emissions.

Question 2: Is there any additional information that you think we should take into account when reaching our decision on the IPA of the projects?

We are concerned that Ofgem do not seem to recognise the distinction between transmission and generation regarding the decision on the IPA of the projects[6]. In particular, we note that Ofgem consider that the provision of balancing services by interconnectors should be taken into account in calculating customer welfare based on the assumption that "*interconnectors can provide ancillary services*" (Consultation Document, Page 34). Ofgem appear to assume that interconnector "ancillary services" can compete directly with provision of balancing services by generation resources.

The draft Electricity Balancing Guidelines (EBGL) due to enter into force later this year assume that "balancing services "are provided by a "balancing service provider". A balancing service provider is defined in the EBGL as "*a market participant with reserve-providing units or reserve providing groups able to provide balancing services to TSOs*". The draft System Operation Guideline defines balancing service provision in relation to power generation units or demand side resources and not from interconnectors. Therefore we do not believe that interconnectors themselves can be credited with benefits from balancing services. Rather they facilitate the exchange of balancing resources across the border as is envisaged in the Electricity Balancing Guidelines (see for example, the exchange of replacement reserves (EBGL Article 19)).

Interconnectors cannot benefit directly from an income stream associated with provision of balancing services. Paragraph 5.14 in the Consultation Document indicates that in "NGETs analysis" "all Window 2 projects potentially generate considerable consumer benefit from the "*provision of Frequency Response services*". This benefit cannot be attributed to interconnectors and must be credited to balancing service providers. The Ofgem decision on the IPA for the Window 2 Projects should clarify the role of balancing services in determining interconnector revenue and whether this relates to incremental revenue from the provision of balancing services from balancing service providers.

[6] Interconnectors are licenced in the GB market as electricity transmission assets in accordance with the Electricity Directive (2009/72/EC). "Transmission" is defined (Electricity Directive, Article 2) as "the transport of electricity on the extra high-voltage and high-voltage interconnected system, with a view to its delivery to final customers or to distributors, but does not include supply". Transmission is also defined separately from "generation" which means "the production of electricity (Article 2).

Chapter Four

Question 3: What are your views on the approach Pöyry has taken to modelling the impact of cross-border interconnector flows?

We welcome the fact the Ofgem has engaged Pöyry to prepare an independent analysis of the cross border flows. The Pöyry approach is reasonable in assessing the impact of the cross border interconnectors flows. In particular we note that Pöyry have prepared a number of "high" and "low" scenarios based on coherent economic assumptions in arriving at their conclusions. However, we believe that further work is required to consider the impact of policy differences between connected markets and the potential impact of these on incentives to construct interconnectors.

We would also highlight that any assumptions regarding future income streams from the capacity market are unsafe since the current arrangements whereby the interconnector owner is the holder of capacity agreements are only intended to be temporary. The arrangements were put in place with an explicit intent to review in order that firm sources of capacity in connected markets would participate directly in the capacity market[7].

Pöyry conclude that all the interconnectors "*have a significant welfare impact on different stakeholder groups*" (Page v) and that "*none of the projects provides a benefit to GB overall in the base case*" due to the fact that "*lower gross margin for generators and revenue cannibalisation for other GB interconnectors is greater than the added benefit for GB consumers*" (Page vi). These are important findings which should be given considerable weight in the appraisal and lead to a conclusion that the new interconnectors should not be granted the cap and floor regime.

Question 4: Do you have any additional evidence in this area that we should take into account?

See Annex 2 below, illustrating shrinking capacity margins across Central Western Europe in the next several years. This illustrates the risk to security of supply from reliance on interconnected capacity.

Chapter Five

Question 5: Do you have any views on the information presented in this chapter?

The potential impact of increased interconnection on the GB transmission system must be considered in detail with respect to the deployment of new large interconnectors. We note that costs may be incurred in managing the system as a result of increased interconnection through for example the fluctuations that occur from the direction of flows, and in particular in relation to the rate of change of frequency. Significant intervention may be required by the System Operator to manage flows to ensure system security.

[7] DECC, Capacity Market supplementary design proposals and Transitional Arrangements and Proposed amendments to the Capacity Market Rules 2014 and explanation of some immediate amendments to the Capacity Market Rules 2014, Government Response, January 2015, p7

There are also wider implications from the transfer of balancing services across interconnectors and the security of the transmission system. Increased competition from services across the interconnector may render existing GB service providers uneconomic and may force closures. This will have consequences for security of supply in the event that interconnectors are unavailable.

Question 6: Are there any additional factors that you think we should have considered?

There is an interaction between the balancing services provided by interconnectors and the equivalent services provided by resources located in GB. Services from new interconnectors may simply displace services currently provided by domestic resources. With increasing penetration of intermittent generation in most European markets it is likely that services across interconnectors become increasingly less reliable and more expensive for the GB market.

It is also important that the GB System Operator does not have any conflicts of interests regarding its relationship with the relevant TSOs in relation to incentives to promote interconnector investment.

Chapter Six

Question 7: Have we appropriately assessed the hard-to-monetise impacts of the interconnectors?

The hard to monetise assessment of interconnectors relies on a qualitative assessment of their relative merits. We note that in almost all cases Ofgem have determined that the new interconnectors will have a positive impact on the GB electricity market in the categories identified. However, we believe that Ofgem should consider the following:

- The impact on security of supply in the event that interconnectors are unavailable. Recent experience has shown that the unavailability of interconnectors can have a significant effect on GB electricity prices (eg IFA 20th November 2016 system price £1,011.32/MWh). This could be even more significant at times of system stress;
- If system stress events are coincident on both sides of an interconnector, exporting flows from GB may exacerbate a system stress event or imports to GB may be curtailed by the exporting System Operator in order to maintain their own levels of capacity and would thus reduce system security further;
- The implications of interconnectors on incentives to invest in flexible generation and demand side resources. The greater deployment of interconnectors may displace activity in the GB electricity market to deliver innovative new solutions and increase reliance on marginal carbon plant (including coal and lignite plant); and
- The wider implications of interconnectors on the GB plant mix require greater scrutiny. Increased investment in interconnector increases the risk of plant closures in GB, the potential unavailability of interconnectors will impact of security of supply and market conditions in other market restrict access to interconnector flows (e.g. coincident periods of low wind or cold spells).

Question 8: Are there any additional impacts of the interconnectors that we should consider qualitatively?

Ofgem has failed to acknowledge that increased reliance on interconnectors relies on full integration with the European Electricity Market. In this context interconnectors should be assessed in the light of

the Electricity Balancing Guidelines and the System Operator Guidelines due to enter into force during 2018.

Chapter Seven

Question 9: Do you have any views on the information presented in this chapter?
Chapter Nine

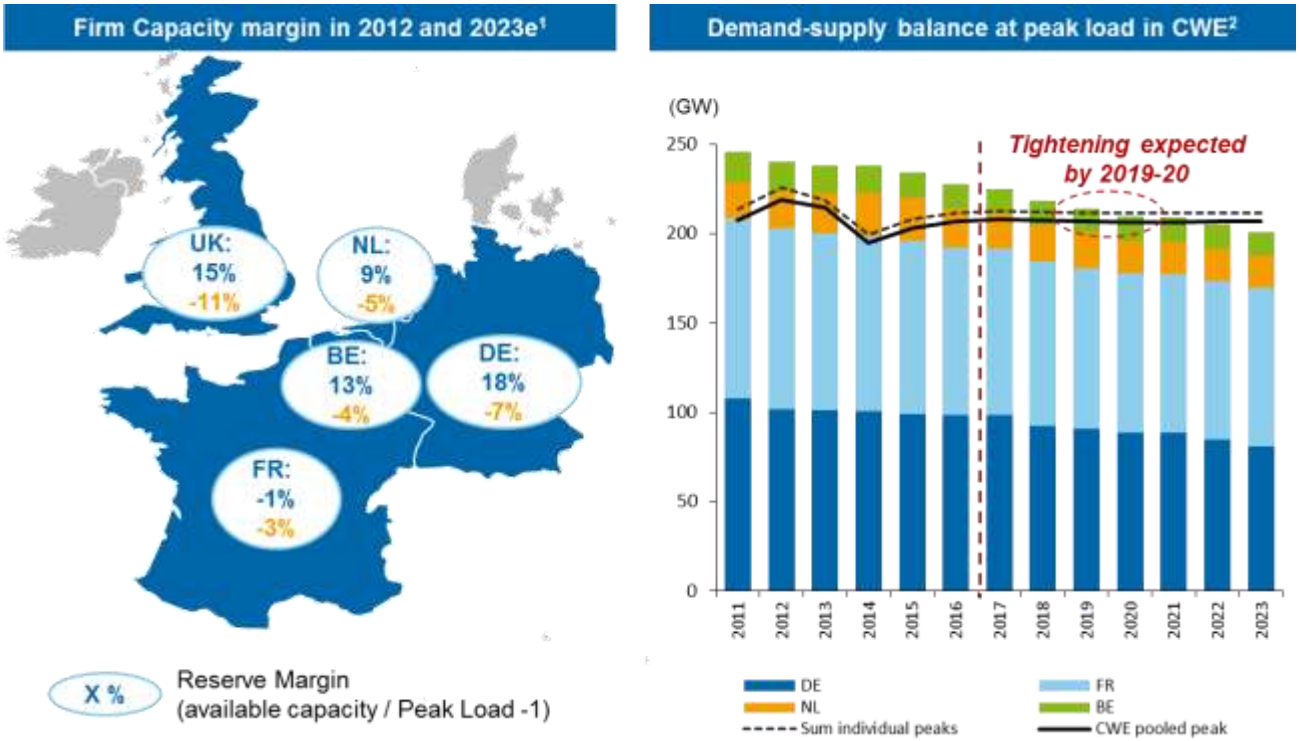
We assume that the GB System Operator has determined the economic and efficient connections arrangements for the new interconnectors. However we remain concerned about the potential for conflicts of interest between the GB System Operator and the GB Transmission Owner in which it has an interest.

Question 10: Do you have any comments on our assessment of the project plans?

We do not have any comments on the assessment of the project plans.

Annex 2: RWE Analysis of generating margins in Central Western Europe

Based on publically available information, the generating margins in neighbouring countries are expected to reduce significantly over the next several years. The figures below show the development of firm capacity margins (excluding wind, solar and interconnectors) from 2012 to 2023, when these capacity margins are anticipated to be negative across the whole region. Therefore, each market becomes dependent on wind and interconnection. However, in the event of coincident system stress events, interconnectors will not be able to provide the security of supply that is anticipated.



Source: EntsoE Mid-Term Adequacy Forecast 2016, BNetzA Kraftwerksliste, 16.11.2016, BNetzA Zu-und Rückbau Liste 16.11.2016, KWSAL 10.11.2016, TenneT Report Monitoring Leveringszekerheid (combined with RES info from CBS); RTE Bilan electrique 2011-2015; RTE Bilan previsionnel (edition 2016)
1 Excludes interconnection, solar and wind.
2 CWE=Central Western Europe