ESB GT's response to Ofgem Consultation: Market arrangements for Multi-purpose Interconnectors

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1. INTRODUCTION

This submission presents ESB Generation and Trading's ("ESB GT") response to the Scottish Parliament's Net-Zero, Energy and Transport Committee Consultation: **Scotland's electricity infrastructure: inhibitor or enabler of our energy ambitions?**

ESB GT welcomes this opportunity to discuss this important topic. ESB's portfolio in Great Britain includes a combined-cycle gas turbine plant in the northwest, offshore wind farm interests in Scotland, and a growing onshore wind presence. A central feature of ESB's business is to deliver benefits to consumers by investing in the most efficient renewable assets, particularly offshore and onshore wind at locations where the wind resource is highest. Naturally, it is important for the rules to facilitate investments at locations where the energy yield is economically viable for these renewable assets.

By way of an introduction, ESB is Ireland's foremost energy company, with around 7,000 employees. Established in 1927 by the Irish Government, and remaining 95% state owned, ESB created the first fully integrated electricity system in the world. ESB owns the transmission and distribution systems in Ireland and Northern Ireland. ESB have been present in Great Britain since market liberalisation and for 25 years has powered homes and businesses across the country, investing around £2 billion. ESB was one of the first IPPs in the UK with our investment in Corby Power Station (350 MW) in the early 1990's.

ESB is supporting Britain's transition to a low carbon future by investing in flexible and renewable generation assets, including combined-cycle gas turbine, wind, and biomass technologies. ESB opened Carrington Power Station (880 MW) in 2016, one of the most flexible and efficient plants in the market on the site of an old coal plant near Manchester. This was the first large-scale gas-fired station to come on stream in Great Britain since 2013. Carrington is owned by ESB's 100% subsidiary Carrington Power Limited. ESB also owns 125 MW of onshore wind generation capacity (with over 1,400 MW in the development pipeline across the UK), a 7 MW battery storage project in Lincolnshire, and recently invested in the 353 MW Galloper offshore wind project.

2. KEY POINTS

i) **Multi-purpose hybrid interconnectors, if properly developed** could help avoid the under-utilisation of interconnector capacity, achieve some economies of scale, and possibly reduce the overall environmental impact of offshore wind and interconnectors.

ii) **An Offshore Bidding Zone (OBZ) has greater potential for realising market efficiency and consumer benefits** than a Home Market solution, subject to interdependencies with future cross-border trading arrangements i.e. an implicit capacity allocation will be needed to realise the benefits of OBZ, as well as sufficient support schemes in place to compensate for differences in expected revenues.

iii) **We believe that the introduction of an OBZ would better facilitate the integration of renewables than a HM approach due to more effective competition –** however, while the development of an OBZ may have advantages, there are some concerns as to offshore wind revenues, how quickly the regime could be readied for MPIs, and if there are any new procedures that require development. There is also an issue of how different renewables support schemes, in different jurisdictions, will be dealt with effectively. Overall, we believe that the introduction of an OBZ would better facilitate the integration of renewables than a HM approach.

iv) **Transition from explicit-HM to implicit OBZ configuration -** any change from the HM to the OBZ model would fundamentally change the risk-reward balance for both the MPI operator and the OWF connected to such an MPI asset. Therefore, as much notice as possible should be given of any change in trading arrangements across the MPI. There should also be an option to re-open the CfDs in light of such a change, with additional support given to OWFs, and also the MPI operator (where required), to allow for any potential loss of revenue. Ideally, there should be standardisation of market models wherever possible, with clear and consistent policy, regulation and market signals.

v) **OWFs should be compensated for any loss of revenue in a OBZ due to a lower market price being earned than under a HM –** this loss in revenue is incurred in an importing scenario when cross-border flow over an MPI is in the direction towards GB from connected jurisdiction and the OWF receives the lower price of the two bidding zones i.e. the EU market price. We believe that the most appropriate means of compensation should be from the congestion rent earned by the IC TSOs.

vi) **The operability of MPIs will give rise to issues due to curtailment and related compensation payments - h**ow these are dealt with, will depend on the relationship between the system operator, the MPI operator and the OWF i.e. whether there should be a direct relationship between the system operator and the OWF or indirectly via the MPI. We do not have a view on how these arrangements will work at this time but would be happy to work with Ofgem and other industry participants to develop a solution.

3. DETAILED RESPONSES

Q1. Do you agree with the ranking of options (OBZ-implicit, HM-implicit, HM-explicit, OBZ-explicit) presented in the table?

Yes. We believe that Implicit capacity allocation, where interconnector capacity and electrical power are allocated in the same process, gives a more efficient outcome that Explicit capacity allocation, where electrical power and capacity are allocated separately. In terms of the relative merits of a Home Market (HM) versus an Offshore Bidding Zone (OBZ) solution, we agree that the OBZ approach provides a better solution as overall benefits are optimised and the flow on the MPI is from the lower priced towards the higher priced zone. However, the combination of an explicit capacity allocation and an OBZ would most likely lead to a sub-optimal solution as, without a central algorithm to optimise trading, it is unlikely that the relevant market parties could, individually, maximise the use of MPIs in the same way.

Q2. Do you believe that some of the permutations not workable and should be ruled out? Why?

Yes. We believe that the OBZ-explicit option is potentially unworkable and could increase trading costs and risks and therefore should be ruled out.

Q3. Which of the four options is preferred, and why?

We believe that the OBZ-implicit model is the best option as it will optimise overall benefits and ensure that the electrical flow on the MPI is from the lower priced towards the higher priced zone.

Q4. Under implicit trading (loose volume coupling), which bidding zone configuration (HM or OBZ) best supports: a) market efficiency? b) consumer benefits? c) integration of renewables?

We believe that the OBZ configuration best supports market efficiency[1]. This is because an OWF connected to the MPI will have to compete with bids and offers from other market players in onshore bidding zones for access to the cable to all connecting markets, instead of having priority access to cable capacity. Using a central algorithm will also optimise bids and offers and

[1] We note that the European Commission's guidance also indicates that the OBZ approach is the EC's preferred solution.

dispatch and lead to the best capacity allocation and optimised cross-border flows. It will ensure that the electrical flow on the MPI is from the lower priced towards the higher priced zone.

Because the costs of capacity allocation and electrical flows are optimised under an OBZ model, this will reduce the costs to market participants and hence to the consumer. Under a HM model, forecasting errors may lead to an underutilisation of capacity or require costly remedial actions by the system operator, with costs ultimately falling on consumers.

In terms of the integration of renewables, the advantages of the OBZ have been considered by the European Commission and ENTSO-E[2], particularly in addressing compatibility with EU electricity trading rules and the 70% capacity requirement[3], as capacity sent to either connected market would be considered as cross-zonal capacity. While the development of an OBZ may have advantages, there are some concerns as to offshore wind revenues, how quickly the regime could be readied for MPIs, and if there are any new procedures that require development. There is also an issue of how different renewables support schemes, in different jurisdictions, will be dealt with effectively. On the whole, we believe that the introduction of an OBZ would better facilitate the integration of renewables than a HM approach due to more effective competition.

Q5. Under explicit trading, which bidding zone configuration (HM or OBZ) best supports: a) market efficiency? b) consumer benefits? c) integration of renewables?

We note that the Multi-region Loose Volume Coupling (MRLVC) CBA *notes that both implicit and explicit trading would be possible under both HM and OBZ. However, despite being technically possible, the MRLVC CBA deems explicit trading arrangements under both HM and OBZ solutions to be less efficient than implicit*. We believe that the operational complexities and inefficiencies of explicit trading can be exacerbated under the OBZ. We believe that these negatives outweigh the deficiencies of the HM model i.e. the increased flows against price direction and underutilisation of capacity arising from trading over an MPI on an explicit basis. Therefore, on balance, we believe that under explicit trading, the HM model is better than the OBZ for supporting market efficiency, consumer benefits and the integration of renewables, although obviously this is not our preferred option.

[2] ENTSO-E, Third ENTSO-E position paper on Offshore Development on interoperability (January 2021).

[3] The Clean Energy Package offers requires Transmission System Operators to ensure that at least 70% of transmission capacity is offered for cross-zonal trade, while respecting operational security limits.

Q6. Do you think that a transition from HM to OBZ is possible and/or desirable?

Both the HM and OBZ can co-exist and should not be seen as mutually exclusive. However, it should be recognised that compatibility is essential. In the UK, DESNZ has confirmed its commitment to the Trade and Co-operation Agreement which governs cross-border electricity trading between the EU and UK. The EU Commission, DESNZ, relevant regulatory bodies and industry participants should co-operate closely to explore mutually beneficial solutions in this area. We believe that it is possible to transition from a HM to an OBZ and this may be necessary to develop a pan-European solution., and therefore this is a desirable solution.

Q7. What conditions must be met so that a transition from explicit-HM to implicit OBZ configuration would be viable for developers?

Existing ‘point to point’ interconnectors run directly from one location in one country to another, while individual wind farms must connect one-by-one to the shore. A MPI will allow clusters of wind farms to connect directly with the interconnector itself, acting as a green energy hub. We acknowledge that there is a potential issue with amending CfD contracts for those projects receiving CfD support (probably most of the OWFs), and also uncertainty for developers on their revenues and long-term outlooks. We accept that a change from the HM to the OBZ model would fundamentally change the risk-reward balance for both the MPI operator and the OWF connected to such an MPI asset. Therefore, as much notice as possible should be given of any change in trading arrangements across the MPI. There should also be an option to re-open the CfDs in light of such a change, with additional support given to OWFs and also the MPI operator (where required) to allow for any potential loss of revenue. Ideally, there should be standardisation of market models wherever possible, with clear and consistent policy, regulation and market signals.

Q8. How does this relate to other areas such as regime design or charging arrangements?

There are significant environmental benefits to a reduction in the amount of cable manufactured and laid along the seabed. With the proliferation of offshore wind farms, it is desirable to try to limit the damage to coastal ecosystems and biodiversity. Therefore, a co-ordinated approach, combining and rationalising transmission assets and connections, will be important to minimise the impact of such large-scale development.

As it is likely that MPIs will be a precursor to a super-grid, it would be sensible to develop policy and regulatory frameworks for them in a coherent and holistic manner and to avoid any piecemeal development, thereby allowing a consistent approach to meshed offshore grids whenever they materialise.

Q9. How do you envisage long-term, day-ahead and intraday trading arrangements working for MPIs under both HM-explicit and OBZ-implicit scenarios? Can explicit capacity allocation work with OBZ configuration, if yes how?

Multiple coupled auctions provide substantial opportunities to trade across the interconnectors and maximise the welfare benefits of interconnection. Under an OBZ-implicit scenario, ex-ante markets will dictate the flows on the interconnections via implicit auctions such that continuous trading between bidding zones will be facilitated. The results from the auctions at each stage will feed into the scheduling process in intraday timescales, which will optimise the scheduling of interconnector flows with redispatch from the ex-ante positions. The balancing market will therefore be agnostic as to which auction has delivered the volume.

As stated in the consultation document, the capacity calculation process for a HM-explicit scenario will need to account for a reserved capacity for an OWF based on D-2 wind forecasts. Then, the remaining capacity, accounting for any restrictions for system security, will be allocated for cross-border trade via explicit auction held by the MPI operator. We agree that there is uncertainty as to whether the OWF might need to bid into capacity auctions at the day-ahead stage, or whether it would only need to bid only into the intraday market to refine their positions. Given this uncertainty, we believe that this is another reason why the OBZ-implicit scenario should be preferred to HM-explicit scenario.

We are unsure as to how explicit capacity allocation work with an OBZ configuration. With explicit capacity allocation, the transmission capacity on an interconnector is auctioned to the market separately and independently from the trade of electrical energy. There is no central market coupling algorithm thus traders execute trades ‘manually’ based on own forecasting and market participants need to choose specific interconnector and flow direction and acquire electricity separately. Therefore, the benefits of the OBZ arrangements, which allow for central optimisation of bids and offers, will be lost. We believe that the combination of explicit capacity allocation and OBZ configuration will lead to a sub-optimal and overly complex solution.

Q10. What are your views on using either PTRs or FTRs in the long-term timeframe? Will OWFs have an active role in long-term capacity allocation?

Both PTRs and FTRs offer potential solutions for long-term capacity allocation. ESB is aware of the delays regarding the introduction of the planned MRLVC programme and that this delay is causing issues for current interconnector development.

In the case where MRLVC is not in place, PTRs seem to offer the better option as they provide physical access. However, we also note that FTRs seem to be the preferred option in the EU currently and that it is envisaged that FTRs will be in place for the Celtic interconnector between France and Ireland. To be able to make a reasoned case for either PTRs or FTRs, we would like to see a review of the full lifecycle investment costs associated with their implementation. From a market participant standpoint, we consider that the introduction of both PTRs and FTRs on different interconnectors would result in a highly complex market that would introduce additional trading costs that will ultimately be borne by the end customer.

In terms of whether OWFs will have an active role in long-term capacity allocation, it will be desirable for OWFs to secure long-term capacity rights to back up any long-term energy contracts that they may have.

Q11. Which timeframe is the most vital/relevant for MPIs and why?

All three timescales: longer term, day ahead and intraday will all be important for MPIs. Long-term capacity allocation, by auctioning either PTRs or FTRs, is an important hedging tool for market participants. We believe that reserving capacity at the day ahead stage will be key for both the MPI operator and OWFs connected to the MPI and will support trading decisions when market conditions, including wind forecasts and system security requirements, are better understood. The intraday market can then be used to fine-tune any capacity and energy requirements. We believe that it is right that priority is given to the development of the day ahead cross-border market arrangements.

Q12. Are there any improvements to commonly understood trading models (explicit trading or implicit price or volume coupling) that can be made to better facilitate efficient market arrangements for MPIs?

We are not currently aware of any improvements to the commonly understood trading models that can be made to better facilitate efficient market arrangements for MPIs.

Q13. Do you agree that OWFs should be compensated for a loss of revenue in OBZ compared to HM? Where should this come from? Should it come from the congestion revenue from the MPI cable derived from cross-border trade?

Yes, we believe that OWFs should be compensated for any loss of revenue in a OBZ due to a lower market price being earned than under a HM i.e. in an importing scenario when cross-border flow over an MPI is in the direction towards GB from connected jurisdiction and power from the OWF is aligned with that flow and as the lower price of the two bidding zones will be the EU market price. We believe that the most appropriate means of compensation should be from the congestion rent earned by the IC TSOs. Under implicit trading arrangements, in day-ahead and intraday trading timeframes, the amount earned by IC TSOs is equal to the price difference between the two markets (i.e. the price spread) multiplied by allocated capacity. Under explicit trading arrangements, however, IC TSOs revenues come from auctioning the capacity on the interconnector itself. There will also be additional revenues from auctioning PTRs or FTRs in long-term auctions.

Q14. How could the existing CfD scheme be changed to support OWFs connected to MPIs, especially considering OBZ market model? How would you envisage this scheme to work?

Firstly, we believe that OWFs connected to a MPI should be eligible for CfD contracts. The structure of these CfDs needs careful consideration as OWFs connected to a MPI in a OBZ likely to earn lower revenues because their wholesale revenue will converge to the lower price of the two onshore bidding zones. This will mean that the CfD top-up will not be sufficient to attain the OWF strike price in some scenarios. To address this, two-way CfDs could be introduced with a strike price based on a forecast of the lower EU prices – this should help to recover any lost revenues from a strike price based on the Home Market prices. A possible alternative is a Cap and Floor mechanism that would allow the OWF to earn revenues within a prescribed range. Obviously, the setting of the Cap and Floor would be important in ensuring appropriate revenue recovery.

Q15. Are there any other alternative approaches that we have not considered that would better incentivise an OWF to connect to an MPI?

We believe that the current incentives for OWFs to connect to an MPI are already quite strong. Currently, OWFs are located relatively close to the coast. However, it is likely that newer offshore wind farms could well be located farther away from the coast. The long and expensive connection would remain unused if there is no wind. Combining such an offshore wind connection with an interconnector should have considerable benefits. As the offshore wind park is also connected to another market, the cables can be fully used to exchange electricity between the two markets.

Hence the overall cost of connecting OWFs will be reduced, an important cost factor in offshore wind energy.

Q16. How do charging arrangements relate to the considerations on support schemes for MPIs, especially under the OBZ scenario?

No comments.

Q17. Does the chapter on operability capture the key topics that should be included when considering the impact of market arrangement models on system operability? Are there other important implications that need to be considered?

Yes, the chapter on operability captures the key topics for considering the impact of market arrangement models on system operability. The full impact on system operability will depend on which market arrangements are progressed. The interaction between the system operator, the MPI operator and the OWF will be important when considering the impact on imbalance settlements, balancing activities and the provision of ancillary services, especially in the areas where the MPIs connect into the GB transmission system. ESB is happy to participate in helping to develop the new arrangements to incorporate fully the MPIs into the GB system.

Q18. Do you have any views on how curtailment and compensation might work under both HM and OBZ configurations?

The operability of MPIs will give rise to issues due to curtailment and related compensation payments. How these are dealt with, will depend on the relationship between the system operator, the MPI operator and the OWF i.e. whether there should be a direct relationship between the system operator and the OWF or indirectly via the MPI. We do not have a view on how these arrangements will work at this time but would be happy to work with Ofgem and other industry participants to develop a solution.

Q19. Do you have any comments on how balancing might work under both HM and OBZ models?

We can see the advantages of a direct relationship between the system operator and the OWF. This keep the operational arrangements independent, retaining separate commercial and operational relationships, OWFs would continue to be separate units under the balancing mechanism, be separately metered and provide balancing services direct to system operator. In this scenario, the system operator would utilise the services it has with the generator to amend output. The DC network control systems of the interconnector component would be configured to adapt to such instructions. This would, potentially, be a cleaner approach than the MPI operator acting as an intermediary between the system operator and the OWF.

Q20. What are your views on contractual agreements that will need to be established between the system operator, MPI operator and an OWF? Do they differ depending on HM or OBZ configuration?

The contractual arrangements between the system operator, MPI operator and an OWF will depend on the relationship that is adopted between the parties. Different contractual arrangements will be required if there is a direct relationship between the system operator and the OWF, compared to the situation where the MPI acts as an intermediary. A direct relationship with the OWF would allow the system operator to contract with the OWF for the provision of system services. If the relationship is with the MPI, then the system operator will presumably have to contract with the MPI operator for the provision of these services.

As noted in the consultation document, the contractual arrangements will be different under the HM model. This is because OWFs would need priority access meaning that forecast output will need to be considered within the capacity calculation process and need to be accounted for by system operator.