Market Arrangements for Multi-Purpose Interconnectors (MPIs) Consultation

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Dear Bartosz, Kevin,

National Grid Ventures (NGV) welcomes the opportunity to respond to Ofgem and Department for Energy Security and Net Zero (DESNZ)'s consultation on 'Market Arrangements for Multi-Purpose Interconnectors' (MPIs) alongside Ofgem's consultation on the 'Regulatory Framework for Offshore Hybrid Assets'.

NGV, together with our European partners successfully operates five point-to-point (P2P) interconnectors into GB, with a sixth in the final stages of construction. We are developing a number of Offshore Hybrid Asset (OHA) projects – this includes the Nautilus project connecting to Belgium and the Lion Link (formerly Euro Link) connecting to the Netherlands. Both projects passed the initial eligibility requirements and Ofgem on 15 December 2022 confirmed that both Nautilus and Lion link have been selected for the OHA Pilot.

NGV welcomes the comprehensive analysis of OHA market arrangements undertaken by Ofgem and DESNZ. NGV is of the view that to enable GB offshore coordination, policy uncertainties must be resolved for both market arrangements and offshore wind farm (OWF) support schemes. NGV therefore encourages Ofgem and DESNZ to develop these arrangements at pace.

NGV is of the view that implicit trading is needed for OHA given the need to integrate cross border flows and offshore generation flows. Furthermore NGV encourages DESNZ and Ofgem to commit to implementing Offshore Bidding Zones via implicit trading, as this is the most efficient form of trading for OHA, that will maximise the benefits to UK and EU consumers. The alternative Home Market

model, whereby offshore generation flows to its home jurisdiction regardless of system needs, will lead to inefficient outcomes and is contrary to the UK-EU cooperation needed to develop OHA.

NGV recognises the importance of ensuring a level playing field between OWF radially connected and OWF connected via an MPI. As such, NGV supports an amended CfD regime that ensures OWF receive a CfD referenced to the GB wholesale price.

NGV also welcomes the proposed principles for MPI operability and supports the option of separate contractual relationships between the ESO and the respective MPIs and OWFs. NGV is available to develop this option together with relevant stakeholders.

In the remainder of this response we consider the consultation's assessment of OHA market arrangements and respond to the consultation questions.

Ch.3 Market Arrangements – bidding zone configuration and trading arrangements

NGV supports OBZ-implicit as the most effective combined solution, and HM-explicit should be removed from further consideration. While there will be implementation challenges, OBZ with implicit is the most efficient and best supports key policy goals and facilitates the most comprehensive end to end commercial-regulatory framework for OHAs and MPI-connected GB OWFs. We note that GB arrangements must be compatible with the ongoing development of market arrangements in the EU, that OBZ-implicit also be implemented in the connecting country for EWIs as well. We also advise against developing transitional arrangements for HM to OBZ, but if required to do so on the basis of implicit trading and under time limited period.

1. **Do you agree with the ranking of options (1. OBZ-implicit, 2. HM-implicit, 3. HM-explicit, 4.OBZ-explicit) presented in the table?**
2. **Do you believe that some of the permutations are not workable and should be ruled out? Why?**
3. **Which of the four options is your preferred one, and why?**
4. **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?**
5. **Under explicit trading, which bidding zone configuration (HM or OBZ) best supports:**
    a. **market efficiency?**
    b. **consumer benefits?**
    c. **integration of renewables?**
6. **Do you think that a transition from HM to OBZ is possible and/or desirable?**
7. **What conditions must be met so that a transition from explicit-HM to implicit-OBZ configuration would be viable for developers?**
8. **How does this relate to other areas such as regulatory regime design or charging arrangements?**
9. **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?**
10. **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?**
11. **Which timeframe is the most vital/relevant for MPIs and why?**
12. **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?**

NGV agrees with the combined assessment of bidding zone and trading arrangements, they must be considered jointly. We are broadly aligned with the consultation but would rank OBZ-explicit higher and HM-explicit the lowest.

While we acknowledge the likely implementation challenges for OBZ-explicit, any ranking of options needs to fully assess economic impacts – OBZ will generally deliver more efficient allocation of cross-

border capacity, offshore wind generation flowing to where it is most needed. By design, in HM the OWF capacity will always flow to the home market irrespective of price signals.

As set out in the consultation this could lead to increased constraint management, and we would add to that. HM significantly decreases the congestion income generated for an OHA (as compared to P2P or OBZ). Even in HM-implicit there will be an inefficiency compared to OBZ – allocation between the OWF and OHA will need to be done using deterministic forecasts, which we expect would be similar to the Coordinated Capacity Calculation Methodologies organised under CACM/the Trade and Cooperation Agreement. This will be a forecast which without details of all parties commercial positions will be less efficient that the means of allocation via an algorithm under an implicit OBZ.

While we can't fully agree to the ranking of options as set out in the consultation and per question 3, we do agree that OBZ-implicit is the most optimal solution**.** This will allow for maximising the economic and efficient trading and capacity allocation across all assets and is the direction of travel in the EU.

In our assessment then, and in response to questions 4 and 5, OBZ will more effectively deliver for policy goals under both implicit and explicit trading**.** In both instances it better facilitates capacity allocation and so market efficiency and consumer benefits. OBZ will optimise the amount of capacity made available to wind and to cross-border flows. This would allow the real time output of the MPI-connected offshore windfarm to be optimised, as it would not be subject to a day ahead capacity calculation methodology. By optimising the MPI for cross border capacity also, it would also maximise the amount of onshore renewable capacity that can flow from country to country rather than being constrained off in an oversupplied local market.

Offshore bidding zone capacity allocation via explicit allocation could still function, but is likely to be far less efficient. For this to work, the Offshore windfarm would have to forecast which market it wishes to flow to and bid for explicit MPI capacity accordingly. Cross-border market participants would also do the same. Because no single party (wind farm operator or market participant) has perfect foresight of market prices, or in more complex MPI configurations which line congestion will occur on, so explicit allocation is likely to be less optimal than full price coupling.

The general agreement on EU side is that OBZ model is better suited to provide efficiency from market and operations perspectives as the OBZ concept provides a market solution that better reflects physical congestions and physical flows. The benefits of OBZ concept include inter alia, that it generally leads to more efficient price formation, better reflects physical congestions and flows, and improves competition for capacity across both on/offshore. Challenge with the OBZ concept is however that it would provide less market revenue to OWFs compared to the HM concept and so it could require stronger support mechanisms (e.g. subsidies) to realise investments in socioeconomic efficient hybrid projects. A holistic perspective would be needed which takes into account these considerations, and how key objectives of efficiency of markets and system operations are simultaneously realised with net zero objectives.

The EU and the UK should work together on developing a coordinated approach to offshore development and on a model that ensures an efficient way of allocating multi-purpose interconnector capacity across borders (e.g., offshore bidding zones appear to support that concept). All market arrangements should be aligned across both sides of an OHA – this includes the bidding zone and regulatory arrangements.

There is a risk of divergence between EU TSOs and regulators and the UK – that OHAs and connected OWFs in the EU bidding zone be part of SDAC while the UK side is organised under TCA arrangements. It would not be efficient or desirable to have two different market arrangements on the same end-to-end project. To avoid this we urge closer cooperation between UK policy and regulatory authorities with their EU counterparts to ensure offshore market arrangement compatibility.

Closer cooperation in the North Sea level/NSEC framework will be crucial to support further UK -EU collaboration. This will also facilitate the development of compatible market design frameworks and market arrangements to avoid negative impacts on cross-border trading and future projects in the North Sea and benefit all citizens.

NGV is committed to continue working with EU TSOs to develop OBZ model and compatible solutions/arrangements so that once GB MPI is developed, greater certainty and continuity is ensured (e.g. OBZ + implicit from the start)

In answer to question 2, the only option which should be ruled out at this stage is HM-explicit. It is the least economic and would significantly constrain congestion income and fully realising OHA consumer benefits. On the GB-NO border NGV and Statnett are also already operating an implicit solution at day ahead, the status quo is not limited to explicit trading. We therefore see no justification in continuing to pursue this option.

As per question 8, charging and connection arrangements are significantly impacted as well by market arrangements. The nature of the connection service an MPI can provide to GB OWFs and the resulting charging arrangements will differ whether under OBZ or HM. This is reflected in the consultation and the link to broader support scheme for OWF under OBZ is addressed in Ch.4, charging in the Ofgem consultation. The main distinction is the degree to which OBZ leads to more market-driven access arrangements. HM involves priority access and higher charges for the OWF, requiring discrimination between types of users of the OHA capacity – building from the interconnector licence standard conditions this would require amendments and exemptions. For OBZ, this would not be required as the OWF would bid in for the use of capacity like any other user but be able to do so at zero marginal cost and with minimal network charges or licence amendments. Explicit trading as set out earlier would add a further layer of complexity, particularly regarding connection arrangements and capacity allocation.

Transitional arrangements should not be necessary. HM is inherently less efficient, undermines the SEW and benefits to GB consumers from OHAs. HM also significantly constrains CI and the commercial benefits to developers – a HM would be un-investible. We therefore recommend planning for OBZ from the start. If Ofgem and DESNZ do further assess transition, the degree of change must be minimised (as above, HM-explicit must be entirely ruled out) and the period under HM-implicit time-limited to ensure an orderly transition from interim to enduring arrangements, all other regulatory and policy changes reflecting this.

We also note, in the probable scenario that all initial GB OHA projects will be without GB OWF connection (we propose the term European Wind Interconnectors be used for these assets instead of Non-Standard Interconnectors) the possibility of a transition is reduced. The likely delay in development of the first GB MPIs will allow EU TSOs and institutions to further develop OBZ arrangements, with GB stakeholders able to help shape this process.

Questions 9, 10 and 11 in the consultation seek views on the holistic package of trading arrangements from Long-Term timescales through to Day Ahead timescales. Both energy and cross-border capacity are traded across these timeframes, either though common (implicit) or separate (explicit) trading arrangements. Together the different timeframes for trading provide the opportunity to hedge future physical positions across borders, take a financial position regarding the future value of energy or cross-border capacity and/or rebalance physical positions across borders, both of which could – depending on market design – be important aspects of delivering the most efficient outcome. The addition of an OWF into the traditional market participants utilising cross-border assets clearly needs to be evaluated.

For Long-Term Access Right Allocation, much depends on whether Home Market or Offshore Bidding Zone is adopted whereas the distinction is less important for intraday allocation. Our initial thoughts on each of these areas are as follows:

Long Term trading in PTRs / FTRs – Home Market

Under the Home Market model the assumption is that the OWF is allocated firm capacity under a priority access arrangement at the Day Ahead stage. There seems little incentive for the OWF to trade in Long-Term access products as it knows it will be allocated firm access to the bulk of its capacity needs at the day ahead stage. There may be a residual incentive to trade in the Long-Term markets if the OWF believes it is being under-allocated capacity at the Day Ahead Stage, however the cost-benefit trade-off of such Long-Term trading may not be clear cut.

Regarding the use of Long-Term cross-border capacity rights by traders in general for cross-border capacity not connected to the output of the OWF, a lot will depend on the nature of the rights and risks that parties bear. On a point-to-point interconnector the only degree of uncertainty around offering a Long-Term capacity right is the technical reliability of the interconnector and whether Long-Term rights will be curtailed due to a technical failure of the interconnector (with reference to compensation regime in place). Under current arrangements the risk of curtailment lies, generally, with the purchaser of the long-term access right.

The main difference for the allocation of Long Term Access Rights on an MPI is the additional uncertainty about whether cross-border capacity will be allocated to the OWF. This risk could be borne by either the purchaser of the Long-Term Access Right or retained by the MPI operator. Should it be borne by the purchaser then the price paid for the Long Term right will need to factor in the risk that on days where the Long-Term Access Rights are curtailed because the OWF has been allocated capacity. Should the risk be borne by the MPI operator then the MPI operator will need to carefully consider how much Long-Term capacity (if any) it releases and over what timeframes. For example it may be very difficult to release a traditional annual right offering cross-border capacity for 24/7 365 days of the year. However a week ahead or 2+ day ahead product where there is greater certainty regarding the likely output of the OWF may be more viable.

Long Term trading in PTRs / FTRs - Offshore Bidding Zone plus implicit allocation

The trade in Long-Term access rights when coupled with implicit allocation is generally preferred as a hedging mechanism to reduce exposure to volatility in the day ahead market spread. Theoretically this could be of interest to both the OWF operator and more general traders of cross-border capacity.

Because the OWF operator is partially exposed to the day ahead market spread, it receives the lower of the two onshore prices. Thus for imports into GB where it is exposed to the lower non-GB price, if it could procure capacity in the Long-Term markets at a low to zero price (when the two markets at either end of the MPI are close in price), then it could sell that capacity back at the day ahead stage and hedge the difference in price it receives for its energy between the GB and non-GB market to the price it fixed in the Long-Term market. Clearly this is not a simple task given price and volume uncertainty but it does offer a route to reduce the perceived loss associated with receiving the lower of the two onshore prices under an OBZ + implicit market framework.

More generally, traders in cross-border capacity would likely be interested in trading LT products in the same way as they would on a point-to point interconnector.

Long Term trading in PTRs / FTRs - Offshore Bidding Zone plus explicit allocation

Under an OBZ + explicit market framework an OWF would have to actively procure Access Rights to the MPI. In that world the Long-Term market for access rights would be increasingly important for the OWF to a point where it faces exactly the same incentives as any other physical cross-border capacity trader.

Intraday Products under any Access Right Allocation Framework

Intraday products will remain important both for the OWF and the cross-border traders more generally. OWF operators would be able to use the intraday market to seek access to additional Access Rights should there output exceed their day ahead capacity allocation via the Home Market. Should the OWF Day Ahead Capacity Right be based upon Use It Or Lose It (UIOLI) then the intraday market can be used to re-allocate any non-nominated capacity allocated to the OWF at the Day Ahead stage.

It seems likely that cross-border traders will use the intraday market on an MPI similarly to the manner in which it is used for a point-to-point interconnector with explicit intraday trading arrangements.

Question 12 of the consultation seeks views on 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. This is a complex question to address for each market framework option due to the complexities of the new arrangements and the need to ensure that all parties are exposed to the correct levels of risks and rewards. It may be better to establish the preferred high-level model first then to develop the detail of how it will specifically operate. This will need to be via appropriate detailed industry engagement and consultation, possibly in a similar manner to that which has seen the development of Access Rules for point-to-point interconnectors.

We also note however that all the above analysis also applies in the connecting European countries, would urge the same applies for the EU TSOs and assets on EWIs.

Ch.4 Support schemes of OWFs under OBZ market model

NGV welcomes the comprehensive assessment of support schemes for OWFs under OBZ. We are aligned to the Ofgem preference stated in the linked consultation and at other fora, but would argue more strongly – the most effective solution for GB MPI-connected OWFs is to amend the CfD. The alternative solutions are either more complex or would unravel generation-transmission cross-subsidy prohibitions and lead to market distortions.

13. **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?**
14. **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?**
15. **Are there any other alternative approaches that we have not considered that would better incentivise an OWF to connect to an MPI?**
16. **How do charging arrangements relate to the considerations on support schemes for MPIs, especially under the OBZ scenario?**

NGV's assessment of HM vs OBZ market arrangements has also concluded that OWFs gain less revenue through OBZ, and that in order to maintain their business case OWFs should be compensated.

Ofgem has set the right framing in the other consultation – OHAs should be considered through a holistic shore to shore analysis, this includes considering OHA commercial-regulatory framework alongside that of the offshore generators they connect. If required, MPI-connected OWF can be compensated primarily through one of two routes, either via direct support scheme to the OWF or through network charges.

While NGV agrees with the principle that OWF developers in offshore bidding zones should be appropriately compensated for curtailment by the SO and the price difference between HM and OBZ, such compensation for the OWF should not be taken from the congestion income as it would divert funding away from future investments in OHAs/MPIs.

Compensation for OWF volume risks related to curtailment should come from the system operator that instructs such curtailment actions, and it should be funded through network charges and not through shuffling away congestion income. Using congestion income for compensating OWF would pose a significant challenge for the commercial model for funding cross-border infrastructure by reducing the amount of funding that can be allocated for infrastructure investments. It would also disincentivise the development of offshore hybrid infrastructure in the long run due to reduced congestion rent that would be available for complex offshore projects compared to point-to-point interconnectors (P2P).

Compensation for OWF price risks resulting from the implementation of OBZ should be addressed directly through OWF support schemes. In the case of the UK, this should be done through amending the CfD regime, we set this out in more detail later in the response.

Moreover, using congestion income to compensate OWF poses a number of issues and risks with respect to discrimination, legal issues, amongst others, and would not be an effective mechanism to

solve the underlying issues/causes of curtailment or price risks for the OWF (i.e. grid congestions). Key risks include:

- Discrimination between OWF and onshore generation: subsidizing implicitly one technology/market participant/user in particular versus others, and at the overall expense of tariff payers; it would be inconsistent with key principles for tariff-setting (Art. 18(1) of Regulation 2019/943), cross-subsidisation (Art. 59 of Directive 2019/944); rules against non-discrimination and unequal access (priority dispatch) and NRA independence (Art. 57 of Directive 2019/944);
- It would lead to market and incentives distortions;
- Disincentivising investments in OHAs – taking CI away from the OHA creates discrimination between the OHA developer and the P2P and leads to reduced incentives to develop complex hybrid offshore infrastructure;
- Overcompensating OWF – using CI for OWF curtailment compensation does not provide transparent investment signals for offshore hybrid projects as it does not expose them to competitive tendering procedures;
- Introducing a financial risk for TSOs – limiting the available CI resources to increase capacity/develop complex offshore infrastructure and/or solve congestions would be counter-productive in the long run.

It is important that a regulatory regime is developed that encourages the deployment of renewable generation. However, efficient dispatch should be market-based.

Allowing for the sharing of CI with MPI-connected OWFs would distort the market signal and so trading over and use of cross-border capacity**.** Well-designed CfDs/or targeted support schemes/ would be more appropriate to address volume risks for OWFs to provide better revenue certainty without distorting market signals and incentives. In the case of the UK there is also an existing support mechanism already in place for OWFs which is well-established and understood – the CFD. Amending the UK CfD regime for MPI-connected OWFs will allow policymakers to much more directly compensate for OBZ lost revenue and align to cross-border trading arrangements while minimising overall UK policy complexity and avoiding market distortions. We cannot advise alternative arrangements which would better incentivise GB OWFs to connect to an MPI. An MPI-connected OFW should be eligible to apply for CfD schemes as an essential first step to set the commercial-regulatory model and to enable such projects to take off. This will be crucial for the success of offshore coordination and the viability of future developments in the North Sea.

We set out the main initial amendments needed to enable eligibility for MPI-connected OWFs in our response to the DESNZ CfD Round 6 'Consultation on policy considerations for the future rounds of the Contracts for Difference scheme' – amending regulations 23 and 25 of the CfD (Allocation) Regulations 2014. The amendments are to allow connection by MPI licensees, in line with the creation of the new asset class.

In our assessment, charging will be largely determined by market arrangements and the connection arrangements that are required. A HM bidding zone arrangement necessitates priority access and reduces the CI generated on the MPI – charges will need to be higher to reflect the reserved use of capacity by the OWF and cost recovery for connection services. OBZ reflects a more market-driven approach to capacity allocation and so lighter connection services for the MPI-connected OWF, enabling lower charges. The OWF bidding process into the CfD will reflect this, lower charges lowering the cost to generate for the OWF and so the scale of support needed under OBZ.

Ch.5 Operability and other issues

NGV welcomes the Ofgem and DESNZ initial views for operability. NGV believes the most effective solution for contractual arrangements is for the System Operator (SO) to have independent contractual relationships with both the MPI operator and the OWF, as per our proposal to create a Bilateral Interconnector Generator Agreement (BIGA) between the ESO and OWF and an MPI Connection Agreement between the MPI and OWF. NGV recommends OHA operability being built upon existing arrangements on interconnectors, whilst considering any additional GB operability constraints on either the European Wind Interconnector (EWI[1]) or MPI assets.

Our views on balancing under both HM and OBZ models differs, due to different considerations required, in both models, for capacity calculation to take place. Our views on curtailment and compensation mechanisms under HM and OBZ configurations are dependant on the contractual arrangements in place, whereby we believe it is more efficient for amendments to either OWF output or OHA transfers and associated compensation to be permitted with the MPI operator and OWF independently, following our recommendation for independent contractual relationships with the SO.

17. **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?**
18. **Do you have any views on how curtailment and compensation might work under both HM and OBZ configurations?**
19. **Do you have any comments on how balancing might work under both HM and OBZ models?**
20. **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?**

Operability – Contractual and Operational Arrangements

NGV believes that separate commercial and operational relationships between the ESO and OWF and the ESO and OHA operator should be retained as far as technically possible, and in line with existing arrangements for (respectively) existing onshore and (OFTO-connected) offshore generators, and interconnectors. Our views do not differ depending on HM or OBZ configuration.

The SO having separate contractual arrangements means that an OWF in GB waters connected to the MPI would, regardless of whether it has its capacity on the MPI allocated via Home Market or Offshore Bidding Zone, remain a Balancing Market Unit, and would submit all operational data required under the Grid Code (PNs, dynamic data, bid-offer prices, etc.). The OWF would therefore be separately metered and would be able to provide a range of balancing services direct to the SO. If the SO wished to amend the output of the MPI connected generator, it would do so directly via these services it has with the generator. The DC network control systems would be configured to reflect any such instructions given to the GB MPI connected generator at the GB onshore DC convertor station.

[1] Please note that NGV has proposed the use of the term EWI as alternative to Ofgem's proposed term Non-Standard Interconnector (NSI) for category 1 OHAs. We set this out in greater detail in our response to Ofgem's consultation on the OHA Regulatory Framework.

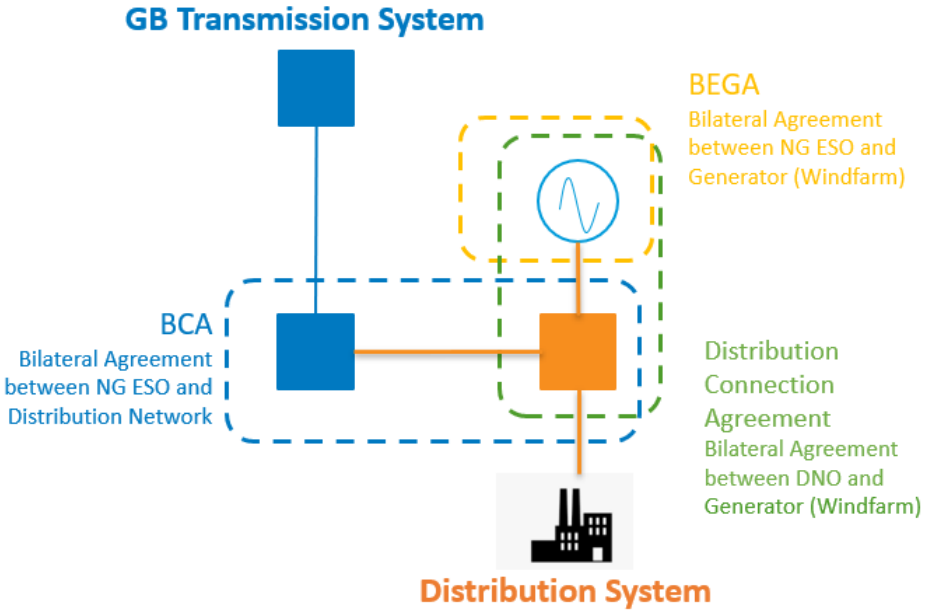
If the SO wished to amend cross-border flows present on the MPI then it would do so via services provided by the MPI operator, in a manner likely very consistent with existing point to point interconnectors. However, we do not think it would be efficient to have the ability for the ESO to restrict capacity of the MPI in such a way that it restricted both cross-border flows and the output of the MPI connected generator. We also note that separate contractual arrangements is better aligned to the principle of separation between generation and transmission – the commercial arrangements between the OWF and SO being separate and not visible to the MPI operator.

Should the SO be able to restrict the OWF indirectly via restrictions on the MPI asset, then there would need to be arrangements developed to ensure that the offshore generator is appropriately compensated for such restrictions on its output by the SO.

However, at best this would simply duplicate the existing Balancing Market / ancillary services arrangements already well established for compensation for SO instructed variations to a GB generators output. If it cannot be exactly duplicated, then it could raise level playing field issues for MPI connected GB generators compared to OFTO-connected GB generators.

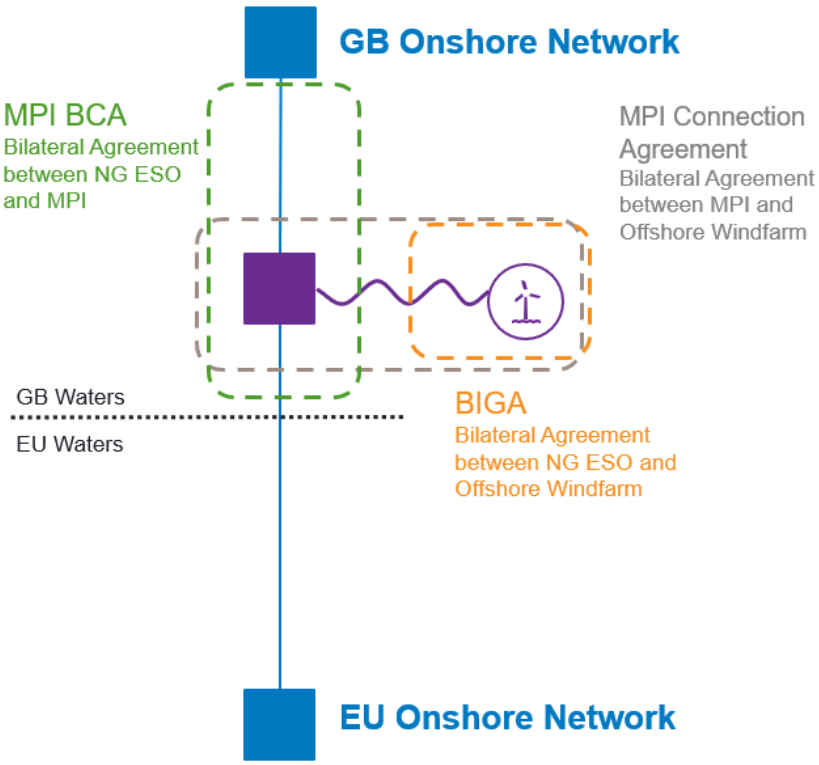
NGV believes that the framework for licensed distribution connected generators delivered via that CUSC Bilateral Embedded Generator Agreement (BEGA), could present a viable baseline for the development of GB OWFs connected via an MPI. The existing BEGA structure is depicted in Figure 1 below:

Figure 1: Existing DNO and ESO BEGA Structure



NGV propose a new MPI framework is required, albeit a close evolution of the BEGA, setting out the relationship between the OWF and the NGESO, called the Bilateral Interconnector Generator Agreement (BIGA) – see Figure 2 below:

Figure 2: NGV proposal for MPI, ESO and GB OWF BIGA structure



There would be three agreements within BIGA:

1. MPI BCA, a Bilateral Agreement between NG ESO and MPI which sets out the connection and operational relationship between NG ESO and the MPI Owner mirroring the arrangements NG ESO would have with a DNO under the same form of agreement. (We note that this builds on the existing contractual arrangements already in place for interconnectors with the ESO, and will allow the same flexibility for contractual relationship with the connecting EU TSO as well)
2. BIGA, a Bilateral Agreement between NG ESO and OWF covering the operational relationship for the OWF in the balancing mechanism and charging relationship for use of the onshore transmission system
3. MPI Connection Agreement, a Bilateral Agreement between MPI and Offshore Windfarm setting out the charging and (limited) operational relationship between the MPI and OWF.

NGV suggests the SO considers and develops appropriate GB operability arrangements for OHAs, in conjunction with considering the EU TSO operability arrangements. This should be undertaken with close consultation and involvement of EU TSOs, MPI developers and OWF developers who may be connected to an MPI.

We recommend first setting out the operability arrangements (both code requirements and balancing services) applicable to both interconnectors and OFTO-connected offshore windfarms. These arrangements should then be reviewed, noting that OHAs are first of a kind asset, whereby there is both cross-border trade and the transmission of power from an offshore windfarm. The review should therefore consider whether this means operability tools need to evolve from those that apply uniquely to interconnectors or OFTO-connected windfarms. We also suggest, whilst

reviewing these arrangements, an assessment should be made as to whether the technologies deployed in OHAs give cause to relax or strengthen existing operability arrangements or indeed to create new arrangements.

We also suggest the SO considers the operational differences of an EWI and MPI, as both types of assets hold different operability concerns. At the June workstream 4 MFDG meeting, the SO advised, from their perspective, that an EWI operability is identical to point to point interconnectors. We would broadly agree that there is only a single GB party involved for an EWI and so the interfaces for the operability arrangements could indeed be similar to the current arrangements for point-to-point interconnectors that only include the interfaces between the GB SO, EU TSO and Interconnector operator. However capacity calculation, allocation and nomination as well as the second by second operation on a EWI may well differ to that which is currently in place for point-to-point interconnectors given the presence of an EU windfarm and so a detailed review of the arrangements does need to be carried out.

Operability – Capacity Calculation

NGV's views on how capacity calculation might work are largely aligned with those of Ofgem / DfE as set out in paragraph 5.4 of the consultation. They would differ between the HM and OBZ models.

Home Market Model

Under a HM model the line between a GB OWF and the EU onshore network / EU offshore windfarm (as appropriate) will be the only line over which cross-border capacity allocation occurs. In this scenario, a capacity calculation will need to take place to determine, based upon the forecast output of the MPI connected windfarm, the volume of cross-border capacity already allocated, any onshore network restrictions, and the ability to manage flows in subsequent cross-border capacity allocations, the amount of cross-border capacity in each direction that can be further allocated. This capacity calculation may be undertaken by either the ESO or by the ESO in coordination with the overseas TSO and / or the MPI operator.

Offshore Bidding Zone Model

Under an offshore bidding zone model, all capacity across all lines of the MPI is simultaneously allocated under the implicit algorithm. Therefore, capacity calculation will need to take place to determine, based only upon the volume of cross-border capacity already allocated, any onshore network restrictions, and the ability to manage flows in subsequent cross-border capacity allocations,, the amount of cross-border capacity, in each direction, that can be allocated. That is to say the output of any OWFs (GB or EU) connected to the MPI / EWI will not need to be separately accounted for as they do not have priority access under the OBZ model. Again, this capacity calculation may be undertaken by either the ESO or by the ESO in coordination with the overseas TSO and / or the MPI operator.