nationalgridESO

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**National Grid Electricity System Operator (ESO) response to changes intended to bring about greater coordination in the development of offshore energy networks**

Dear Neil, Patricia and Mary

We welcome the opportunity to respond to Ofgem's consultation on changes intended to bring about greater coordination in the development of offshore energy networks.

The ESO is a proud project partner of the Offshore Transmission Network Review (OTNR). In the first phase of the ONTR we demonstrated there is benefit in delivering an integrated network as quickly as possible to deliver better outcomes for consumers and coastal communities[1].

Since January 2021, we have been supporting the progression of activities in the OTNR to deliver an integrated offshore network, with workstreams in place to deliver that over the short (Early Opportunities), medium (Pathway to 2030) and long-term (Enduring Regime) as well as a workstream on multi-purpose interconnectors (MPI), which cuts across all three. We are now leading various deliverables for these different workstreams and in different timeframes to achieve an integrated offshore network in the short term and up to 2030, as well as supporting the development of an enduring regime.

As part of the OTNR, new roles, both interim and future, are being explored for the ESO. While this consultation focuses on interim roles for the ESO only, and we expect any changes to permanent roles will be part of the future Enduring Regime consultation, we note that our own roles are also currently being explored across multiple reviews by Ofgem and BEIS. These include the Electricity Transmission Network Planning Review, Proposals for a Future System Operator Role, and Competition in onshore networks. We encourage Ofgem and BEIS to think holistically across these reviews to ensure consistent and strategic outcomes are delivered.

We are supportive and excited about Ofgem's consultation proposals on the next phase of the OTNR workstreams. We agree with the aims and believe they can facilitate greater coordination in how offshore wind is connected in the short and medium term to help achieve Government net zero ambitions.

Our detailed responses to the consultation questions are included in the appendix below. We have commented on those questions where we believe there is a direct impact on the ESO or where we have potentially useful views to share.  Where we have not commented in detail our view is that there are other industry participants who are more directly affected and better placed to respond in those areas.

Should you require further information or clarity on any of the points outlined then please contact Alice Etheridge in the first instance at [redacted]

Our response is not confidential.

Yours sincerely,

M. R. Wright

**Matthew Wright**
Head of Strategy and Regulation

[1] https://www.nationalgrideso.com/future-energy/projects/offshore-coordination-project

# National Grid ESO response to consultation questions

## Early Opportunities

**Q1: Are there any concepts we have not identified developers (as defined in this chapter) may wish to progress?**

We agree with the Early Opportunities concepts identified by Ofgem in the consultation and believe they are a good representation of the blend of benefits and coordination options available.

**Q2: Should anticipatory investment risk be shared with consumers? If it should, what level of risk is it appropriate for consumers to bear?**

We agree with the policy assessment criteria of allocating risk to those best placed to manage it, while increasing the likelihood of effective coordination in order to benefit consumers. In line with this, and based on Ofgem's application of this criteria, it seems sensible to share Anticipatory Investment (AI) risk between consumers and developers. We agree that any final proposal on AI should ensure that consumers' interests are protected from the risk of inefficient AI, and that the projects intending to make use of Ofgem's proposed treatment of AI are realising the benefits of coordination. Ofgem's general proposed treatment of AI should be subject to appropriate cost-benefit analysis and impact assessments as required.

**Q3: For concepts that intended to provide a wider system benefit, e.g. by mitigating an onshore constraint, how should the need for investment be demonstrated by the developer?**

For developers to demonstrate the need for investments which provide a wider system benefit, it requires cooperation and engagement with the ESO to undertake a cost benefit analysis. Due to the data we already hold for the whole system, we would be best placed to undertake this analysis with the support from developers and other parties in providing the required inputs and data needed to carry out the assessment.

**Q4: What options are available to developers in demonstrating a reasonable expectation they intend to connect to the system?**

For developers to demonstrate they intend to connect to the system with a coordinated design, it requires developers to hold a Connection Agreement with the ESO reflecting these arrangements. This can be achieved via a Connection Application or a Modification Application.

With a signed Connection Agreement, the User Commitment arrangements under CUSC - noting there may need to be amendments in respect of some of the potential coordinated concepts - allow the developers to demonstrate their expectation to connect to the system in a coordinated design as their project progresses.

**Q5: To what extent do you agree with our proposals to remove barriers to the Early Opportunity concepts? Please explain your answer.**

We believe it is of paramount importance to remove existing barriers to the Early Opportunity concepts to facilitate the delivery of coordinated projects in the short term. We have been engaging with developers and have identified barriers such as AI, that Ofgem has outlined in this consultation.

We will continue to work with Ofgem and other key stakeholders to determine the most appropriate route to removing some of these barriers, such as code modifications or derogations.

Other barriers include any implications for the Contract for Difference and Capacity Market frameworks. We are engaging with the Low Carbon Contracts Company to clarify and understand whether the frameworks can accommodate the different concepts that we are currently assessing the impact of.

**Q6: Do you believe a Significant Code Review is required to give effect to a potential decision to 'share' AI risk between consumers and developers?**

We do not believe a Significant Code Review (SCR) is required to facilitate the potential changes needed to 'share' AI risk between consumers and developers under the Early Opportunities workstream. This is based on our view at present that any changes are relatively discrete. However, this view is subject to the outcome of the consultation and any further assessment.

We consider that, in the absence of a SCR, it would be beneficial to the industry for Ofgem to provide detail on their expectations and scope of code changes to enable AI to avoid risk of scope creep through the development of any proposals.

On a related matter, we consider that the Pathway to 2030 (PT2030) workstream will require a SCR to deliver the necessary changes, but particularly those that relate to network charging and the associated methodology. It is important that change is coordinated with other ongoing network charging reforms (e.g. the Targeted Charging Review and Access Review) and the potential for wider reforms to network charges – particularly Transmission Network Use of System charges. Clear strategic direction will be needed to mitigate the risk that changes are done piecemeal and with a significantly larger scope than necessary, extending timeframes and creating investor uncertainty.

It is also worth noting that further consideration is likely to be required in relation to AI and highly AI in the context of PT2030 and the Holistic Network Design. We are happy to further explore this with Ofgem during the development of the Holistic Network Design over the coming months. The Enduring Regime will also need to consider AI and highly AI in future.

**Q7: Do you agree with Ofgem's proposed approach to deliver the objectives of Early Opportunities workstream?**

We agree with Ofgem's proposed approach to deliver the objectives of the Early Opportunity workstream and are working hard as a project partner of OTNR to help deliver better outcomes for consumers and coastal communities in the near term.

## Pathway to 2030

**Q8: We consider that a holistic design will result in a more coordinated, economic and efficient network. Do you agree? Please give reasons for your answer.**

We agree with this statement and, indeed, published a comprehensive report on this, which can be found here:

https://www.nationalgrideso.com/future-energy/projects/offshore-coordination-project.

**Q9: Do you agree with the planned work for a detailed network design offshore?**

Following completion of the Holistic Network Design (HND), we support the offshore elements for the Detailed Network Design (DND) being moved to the relevant party or parties, once the HND has been approved via the appropriate governance route(s). Further consideration is required in relation to the transition from HND to DND across each of the potential offshore delivery models. Some of these considerations are highlighted in our response to Question 12.

**Q10: Who do you believe is best placed to undertake the detailed design for assets that are in offshore waters?**

We have interpreted this question to be asking about DND for assets that are in offshore waters which are to become Offshore Transmission System, rather than assets that are in offshore waters which are to become Onshore Transmission System. We understand that DND for the Onshore Transmission System (even if in offshore waters) is to be undertaken by onshore TOs, subject to any onshore competition process which may be applicable at that time.

With the above in mind, in respect of PT2030, we believe three options (i.e. TOs, OFTOs and Developers) could be plausible options in relation to undertaking DND for assets that are in offshore waters, albeit each option has slightly different considerations.

For example, at present developers have considerable experience of DND for assets that are in offshore waters due to the current build arrangements, noting different developers may have different levels of experience and expertise. Whereas OFTOs have less direct experience, at least within GB to date. Whilst TOs have a comparable level of experience to OFTOs in respect of assets that are to become Offshore Transmission, they do have some experience of DND for Onshore Transmission assets that are offshore e.g. Western Link, Caithness-Moray, etc. Therefore, whilst all three options are viable options, there could be different levels of DND experience and expertise across each of the three options.

However, the question of who is best placed to undertake DND for assets that are in offshore waters and are to become Offshore Transmission needs to be considered in the context of the wider offshore delivery model options. We have further elaborated on offshore DND in our response to Question 12.

It is worth noting (in relation to Paragraph 3.29) that we expect the role of onshore TOs in relation to the onshore/offshore interface to be broadly similar in respect of DND. However, there may be additional complexities in respect of the transmission interface point if a more coordinated offshore transmission system is connecting at that transmission interface point when compared to a standard radial offshore transmission system. Any future work on code and standard impacts as a result of the HND will need to further consider the onshore/offshore interface.

It is also worth noting (also in relation to Paragraph 3.29) that if ‘TOs will be responsible for the DND Onshore in their respective licence areas’ and (as per Paragraph 3.25) the ‘delineation between onshore and offshore assets will be established following completion of the HND', if Onshore Transmission System assets are placed offshore, a change to TO licences to amend their geographic areas for Electricity Transmission could be required.

**Q11: Do you agree that the existing developer led model should be retained and applied where the HND indicates a radial solution should be used? Please explain your answer.**

We agree that, in the context of the PT2030 workstream, the existing developer led model should be retained and applied where the HND indicates a radial solution. We agree that the existing developer-led model is well known and works well for radial infrastructure and we currently see no reason why any radial elements of the HND (if there are any) cannot progress under existing generator build (or OFTO-build) arrangements from the HND stage onwards.

**Q12: Please provide your views on each of the delivery options we have described in this document. In providing your views, please comment on the issues we have raised. Please also give your views on the implementation issues we have raised.**

Prior to providing views on each of the potential offshore delivery models, we would first like to set out some principles against which we considered each of the six potential offshore delivery models. These four principles (and a short explanation of each) are as follows.

- *Competition Everywhere:* competition should be an element of the preferred model to drive innovation and cost efficiencies to benefit consumers.
- *Process Simplicity:* the preferred model should be straightforward and minimise hand-offs and transitions throughout the process to reduce complexity.
- *Developer Confidence:* any preferred model should give developers sufficient confidence in the delivery and security of their connection to the National Electricity Transmission System.

- *Coordinated Offshore Transmission Owners:* existing obligations of OFTOs (in respect of licences, codes and standards) may not be sufficient for a coordinated Offshore Transmission System and, as such, additional obligations may be required, e.g. in relation to network planning or customer connections, etc.

Based on the above, our views are as follows.

- Option 3 and Option 4 could introduce unnecessary complexity into the process as they have different parties undertaking DND and consenting, or different parties undertaking DND/consenting and construction. We feel that it will be a less complex, more efficient and more effective process if the same party undertakes DND, consenting and construction. For example, if one party were to undertake consenting and another construction, the link between commitments in the consenting process and the delivery of those commitments could be weakened. Similarly, with the separation of DND and consenting, the balance between design iterations, the consenting envelope and stakeholder/community engagement is at risk of not being efficiently managed. Therefore, Option 3 and Option 4 would not be our preference.
- Option 1 does not include competition, other than native competition, and therefore it would not be our preference.
- Option 5 looks like an attractive option as it introduces competition, reduces process complexity and, if an early competition were well designed and timed, it could provide developer confidence. As is acknowledged within the consultation, an early competition process (and associated regulatory arrangements e.g. in relation to risk allocation and risk premium, etc) could potentially introduce process complexity but again this could be addressed by ensuring timely and robust design of an offshore early competition model. However, whilst this is an attractive option, there could be issues in relation to the design and execution of an early competition shortly after the HND stage, whilst still ensuring the delivery of 40 GW of offshore wind by 2030.
- Option 2 and Option 6 both include competition, which is beneficial, and both reduce process complexity, given that the same party is responsible for DND, consenting and construction. However, each has its own challenges. Option 2 may have less competitive pressure than Option 6 (at least under existing network charging arrangements) as whilst both options have downward regulatory pressures e.g. through the setting of allowances or the disallowance of costs which are not economic and efficient, the costs of offshore infrastructure are directed back at offshore generators (under Option 6) while this is not the case for the onshore TOs (under Option 2). However, Option 6 could reduce developer confidence, depending on how it is implemented, as one developer could be reliant on another developer for their connection, rather than relying on a licensed TO for their connection as per Option 2.

Overall, we believe that Ofgem should give priority to further exploring and developing Option 5, Option 2 and Option 6 in the context of PT2030. Regarding Option 6, we would like further information on how this could work in order to form more defined views on it. For example, would there be a ‘lead developer’ responsible for delivery of the coordinated Offshore Transmission System, or would there be an expectation that developers relying on the infrastructure all create a Joint Venture which in turn becomes responsible for that infrastructure?

It is important to note that the transition between HND and DND (and consenting) will be of utmost importance and may heavily influence the preferred option in the context of PT2030. For example, how does the transition from HND to TOs, OFTOs or Developers work (depending on the offshore delivery model chosen)? Further, what happens between completion of the HND and the formal appointment of that party - is there an expectation that the formal appointment will occur immediately after the publication and approval of the HND?

Also, any model including an ‘OFTO’ should be a ‘Coordinated OFTO’ and further analysis will be required to explore exactly what this means in practice, including in relation to licences, codes and standards.

It is worth highlighting that the terminology and timing in relation to the early forms of offshore competition being considered is not entirely consistent with the early forms of onshore competition being considered by the ESO through the Early Competition Plan, which is also currently being consulted upon by Ofgem. We suggest that a common description of forms of early competition is utilised across onshore and offshore, and between PT2030 and the Enduring Regime. This will ensure that where stakeholders are considering the benefits and drawbacks of any model that involves early competition, the form of early competition is clear and consistent, e.g. between ‘early competition’ and ‘very early competition’, as well as what is competed within each form of early competition.

It is also worth highlighting that it could be beneficial for Ofgem to clarify that the DND and pre-construction stages are not necessarily sequential within the proposed models, as those two process stages can occur in parallel in most,if not all, of the proposed models. It could also be useful to clarify that competition will be developed and undertaken by Ofgem in each of the five proposed models where competition is included for PT2030.

Finally, please note that the above is reflective of our current views in the context of PT2030. We expect there may be different drivers and interactions when considering options for the Enduring Regime and, as such, the above might not be reflective of our views in that context.

**Q13: Please describe any feasible delivery options that we have not set out in this document.**

It is important to consider whether a single offshore delivery model is required for all non-radial offshore transmission identified by the HND or whether it might be possible to utilise a different offshore delivery model in some circumstances. For example, in the event there is an opportunity to develop and undertake an early competition for some of the non-radial offshore transmission without introducing undue delay or risk into the delivery of 40 GW by 2030. If this is possible, it could perhaps facilitate some of the options that might potentially be discounted due to transition challenges between HND and DND.

## Multi-Purpose Interconnectors

**Q14: Do you think we are focusing on the right models at this stage, or are there other models we should be considering? Is it also necessary to consider the evolution of such MPIs from pre-existing assets? Ultimately, should Ofgem accommodate multiple MPI models (e.g. IC-led and OFTO-led) or just one? What factors influence your answer?**

For the Early Opportunities workstream, we agree these are the right models to focus on at this stage, following our engagement with developers. At this stage of the project, we believe the principles of the MPI models need be clarified first, such as achieving a common understanding on the roles and responsibilities between parties, prior to any consideration of the evolution of MPIs. It is important in either model that the rights and obligations of the offshore wind farm (or any other connected or connecting party) remain comparable to a direct connection to the Transmission System, or that any differences can be sufficiently justified.

We agree that Ofgem should accommodate multiple MPI models (e.g. IC-led and OFTO-led) following our current engagement with developers.

**Q15: Do you agree with our position with regard to ownership structures of MPIs under the current framework?**

Under the scope of Early Opportunities, we do not have a position on the ownership structures at present. However, confirmation is required on the ownership structure of MPIs to ensure we can assess the implications it may have, such as to existing frameworks and ensuring we have the right tools to manage system security, etc.

**Q16: What are the commercial, operational, and regulatory factors that would drive a developer’s preference for either the OFTO-led or IC-led MPI model? And do you envisage a different usage of the component assets of an MPI depending on the MPI model?**

From our engagement with developers and our current thinking, factors that may drive a developer’s preference include AI risk, for example who bears the risk in liability and costs if a project that is part of an

MPI is delayed. Other considerations include the increase in interfaces of an MPI and therefore it is key to have a common understanding of the roles and responsibilities, and the rights and obligations that each model of MPIs has. This will determine and ensure that we are able to manage any new arrangements an MPI may create and we have the right tools to maintain system security, etc.

How the assets are utilised depends on the classification in the ownership of the assets in line with its existing licences.

**Q17: How would the line to shore (L1) be used in practice and what would you consider to be the primary and secondary activities from a practical perspective? Please provide views for both the IC-led and OFTO-led models, highlighting any differences between L1 usages across the two models.**

We would treat assets based on how they are classified. For example, if components are classified as interconnectors or offshore transmission respectively, the applicable frameworks would need to apply in relation to each of those classifications. Roles and responsibilities between all parties associated with an MPI would need to be agreed and understood to determine the detailed impact and differences between the models.

Clarification is required from Ofgem on whether the line to shore (L1) can solely be defined as offshore transmission for the OFTO-led model, or whether it has a secondary activity as transmission more generally, including in relation to why this position within the consultation might be different to onshore transmission. This should be considered as well as considering whether the secondary activity could be interconnection.

**Q18: Are there any barriers within the current frameworks, such as definitions within the CUSC, SQSS or other industry codes, that might prevent the line to shore (L1) being classified as either an OFTO or an interconnector while undertaking other secondary activities?**

As an OTNR project partner, we are currently assessing the impact on the current frameworks to identify any changes that may be required for each concept being considered in the Early Opportunities workstream. We will engage with Ofgem on our continued progress of this activity.

**Q19: What are your views on the feasibility of adopting a regime that requires developers to submit evidence to support their licence application (for assets that form part of an MPI) and commit to regular performance reports? Would this be practicable, proportionate, and effective? Are there other options that work well for industry that we could explore further?**

As there is no impact on the ESO, we have not responded to this question.

**Q20: What are your views on the practicality of transposing obligations from one licence into another, which obligations would be the most important to incorporate into a remaining licence?**

If Ofgem can identify the necessary obligations that are required to be transposed from one licence into another, this may allow Ofgem to incorporate a set of, for example, special licence conditions. This would address any important obligations that are missing from the secondary function. As is acknowledged by the question, an exercise would be required to identify what would need to be included. This exercise would need to consider impacts beyond the licences to ensure that those licence obligations correctly flow into processes, codes and standards. For example, would an interconnector licensee in the IC-Led model require an obligation to connect generation and, if so, how would that obligation then be transposed into the relevant frameworks?

**Q21: Do you think the exemption provision with the Act offers any solutions to licencing MPIs within the current framework, even if only a temporary solution until a potential enduring solution is implemented?**

Potentially, although this requires further legal consideration to assess if this is a viable route. In order to apply the exemption, Ofgem would still need to identify what the activity is in order to craft the exemption from it, so the above issue of differentiating the activities between licence types remains. In considering any exemption, Ofgem would still need to address whether (and if so how) the things otherwise required through licence would be fulfilled. It might also be difficult to justify an exemption if an alternative means of working within the licensing regime was available i.e. as considered in question 20.

**Q22: Are there any aspects of the priority dispatch and curtailment arrangements, the TCA, or the cross-border trading arrangements that are adopted in UK that might influence the choice of MPI models?**

The EU is currently considering two high level models for MPIs: the Home Market approach and the Offshore Bidding Zone approach and we consider each in our detailed response to BEIS Question 1 of this consultation below. However, it is worth noting here that both of the two MPI models being considered in this consultation (OFTO-led and IC-led) are variations of the EU Home Market approach.

Firstly, in consideration of any priority dispatch and curtailment arrangements that may impact the choice of MPI models:

- Under the OFTO-led model, the offshore windfarm (OSW) has the same firm access to the GB bidding zone as an onshore generator and would be curtailed by direct Balancing Mechanism actions. Any party, including the OSW, wanting to access cross border markets via the interconnector component, must enter the capacity auctions. The interconnector capacity allocation process would have to take into account the forecast unused capacity on the OFTO assets, thereby prioritising the OSW home market access over cross border flows.
- Under the IC-led model, the OSW must secure the required capacity from the interconnector auctions to access both GB and remote markets. The OSW would not be directly curtailed but market actions/trading tools would be applied via the interconnector. OSW and third-party users would compete for the limited capacity, likely to aim to maximise cross border flows.
- The Clean Energy Package (Article 13) obligates TSOs to limit redispatch of generation from renewables to 5% unless electricity from power-generating facilities using renewable energy sources or high-efficiency cogeneration represents more than 50% of the annual gross final consumption of electricity. This will need to be monitored on an ongoing basis to ensure the Clean Energy Package thresholds are met.
- In relation to curtailment arrangements, we currently use a combination of cross border trading and Intraday Trading Limits to manage existing interconnector capacity to ensure safe system operation. This will be replaced by Net Transfer Capacity (NTC) limits, which will form part of the capacity calculation technical procedure work from the Trade and Cooperation Agreement (TCA). The TCA is clear that, subject to system security, interconnector capacity must be maximised and should only be curtailed in emergency situations. As yet, the definition of an emergency situation has not been agreed, which will be needed for the new technical procedures.

The choice of MPI models will also need to be cognisant of TCA and Cross Border trading arrangements:

- The TCA requires cross border Capacity Calculation methodologies to be developed in all timescales. Such processes will have to adhere to a number of principles such as the requirement to “maximum level of capacity of electricity interconnectors is made available” and “most efficient use of IC” and the final GB/EU agreed determination of such concepts may impact the MPI models.
- The TCA also requires non-discrimination between UK-EU and EU-EU capacity calculation processes, however the Clean Energy Package assumes a minimum capacity of 70% for internal EU borders whereas the TCA assumes that all of UK-GB cross border capacity should be available. It is not clear how this apparent conflict of principles will be solved in future.
- In order to efficiently allocate capacity between OSW and cross border trade, accurate wind forecasting and pan EU-market modelling is required.

**BEIS Question 1: What do you consider to be the key challenges to the establishment and operation of MPIs in the UK presented by current and proposed regulatory requirements applicable in EU Member States or other countries which MPI projects may connect with, or by the TCA? (e.g. regarding the efficient operation of MPIs under both the Home Market and Offshore Bidding Zone approaches). Are there further domestic challenges to these possible market design options?**

As discussed previously, the EU is looking at two broad models for MPIs: the Home Market approach and the Offshore Bidding Zone approach and both will present different challenges to a GB MPI design.

- Home Market. Under this model, parties have to forecast the cross-border capacity that will be required for the OSWs. Under-forecasting will lead to underutilisation and over-forecasting will require costly remedial actions to be taken. The Home Market model could also be considered preferential treatment for OSW as the full cost and system dynamics are not reflected on the OSW, as compared to the onshore equivalent.
- Offshore Bidding Zone. This potentially ensures that onshore and offshore users' utilisation of the MPI is optimised and on equitable terms. Any offshore network constraints will also be inherently considered. That said, the requirement for OSWs to purchase interconnector capacity will lower revenue streams for OSW, which risks discouraging investment offshore. One potential solution to this that the EU is considering is to divert a proportion of the congestion rent revenue back to the OSWs. Lastly, this model is likely to be more scalable for the complex interconnected offshore regime anticipated in future.
- During the imminent development of capacity allocation and capacity calculation under the TCA, it would be beneficial to understand which MPI model is likely to be applied in GB (and vice versa).
- At present, the Clean Energy Package 70% rule applies to MPIs in the EU. However, this may no longer be tenable going forward, especially when volumes of offshore investment increases. ENTSO-E has issued a position paper on this ([2]page 14 of ENTSO-E Position on Offshore Development: Market and Regulatory Issues (azureedge.net)). We expect that the imminent Fit for 55 legislative package will address this topic but this should be kept under review in future.

[2] www.azureedge.net (page 14 of ENTSO-E Position on Offshore Development: Market and Regulatory Issues ).