

# Hitachi ABB Power Grids response to Consultation on changes intended to bring about greater coordination in the development of offshore energy networks

## Introducing Hitachi ABB Power Grids

*Hitachi ABB Power Grids is an exciting global joint venture founded on two iconic companies with a ground-breaking heritage of innovation in pioneering technologies. As a global technology leader, we serve the energy, industrial, mobility, IT and smart cities sectors. We are a major investor in the UK, with a turnover of £500 million.*

*Our aim is to bring affordable, clean energy and sustainable living to the world to make it fit for future generations. With a proven track record, global footprint and unparalleled installed base, Hitachi ABB Power Grids balances social, environmental, and economic values. It is committed to powering good for a sustainable energy future, with pioneering and digital technologies, as the partner of choice for enabling a stronger, smarter and greener grid.*

*Hitachi ABB Power Grids has significant experience installing and maintaining HVDC interconnectors. We were, for example, chosen in 2020 to supply Europe's first multi-terminal HVDC interconnection, linking Shetland to the UK transmission system for the first time, as well as IFA2 between GB and France.*

## Our response

Please note, we have focused our response on the areas that are most relevant to the role that we can play in meeting the targets.

## Introductory comments

Delivering the offshore wind target of 40GW by 2030 as set out in the Prime Minister's Ten Point Plan and contributing towards the delivery of the overarching target of reaching net-zero by 2050 must be the key, overarching priorities for Ofgem. The recently published Intergovernmental Panel on Climate Change (IPCC) report has shown that the pace of decarbonising must be accelerated. Our responses to the questions below address how this can be done efficiently.

All drivers behind the mechanisms that are put in place must be focused on deliverability, and any processes put in place in the UK market must allow for all stakeholders to be as efficient as they can be in the use of scarce key resources.

## Early Opportunities questions

### **Question 1: Are there any concepts we have not identified developers (as defined in this chapter) may wish to progress?**

We have not identified any other concepts; however, we would like to provide the following comments on the concepts defined in this chapter.

Across all the concepts identified in this chapter, we note that there is a consistent assumption of the delineation between an offshore and an onshore system. For example, if Figure 4 is representative of an HVDC system being delivered today, both boxes at the end of the blue link should be either blue or black. Based on the codes and standards that are in existence today, both of those boxes would need to be provided by a single vendor.

If there is to be the separate definition of onshore system and offshore system, it needs to be refined based on technology and the available standards against which to design such a system. Currently, all those elements are treated as a single system provided by a single vendor. To enable anything different

will require new codes and standards to be developed for defining and regulating interfaces, roles and responsibilities during design, construction and operation of the assets.

We would also like to highlight that given the pressing need to deliver targets to schedule, we believe that there isn't the time to sufficiently develop and implement the relevant new codes and standards. As such, we would recommend using the system that is already established.

**Question 2: Should anticipatory investment risk be shared with consumers? If it should, what level of risk is it appropriate for consumers to bear?**

We would again like to stress our view that the delivery of the targets must be the key priority. If this requires anticipatory investment risk to be shared with consumers and society more generally, we accept this. We would urge Ofgem to make it clear that any anticipatory investment risk will be shared with consumers to provide greater assurances to developers that they are not unreasonably exposed.

If developers of offshore wind facilities are concerned that they will not be able to cover costs further down the line, they may ultimately decide against the investment. They must be reassured that the risk will be balanced and shared with consumers. Without this, we are concerned that projects will not be adequately funded.

We would not like to comment on the precise level of risk it is appropriate for consumers to bear. However, we would like to suggest that for the early opportunities, the level of risk that consumers should take on should be agreed on a case-by-case basis, based on the proposals. This is because all the projects are slightly different and are at different stages of development, meaning that the level of risk will vary.

We would also like to stress our view that a long, drawn-out process for agreeing the risk share will risk delaying the projects, which could ultimately impact on the deliverability of the targets.

**Question 3: 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?**

*We are not responding to this question.*

**Question 4: What options are available to developers in demonstrating a reasonable expectation they intend to connect to the system?**

*We are not responding to this question.*

**Question 5: To what extent do you agree with our proposals to remove barriers to the Early Opportunity concepts? Please explain your answer.**

We support the proposals to remove barriers to the Early Opportunity concepts.

We welcome the review of means to facilitate and incentivise anticipatory investment for the pathfinder projects. However, we would stress that any system must facilitate the developers to make timely investment decisions.

**Question 6: 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 are not responding to this question.*

**Question 7: Do you agree with Ofgem's proposed approach to deliver the objectives of Early Opportunities workstream?**

In principle, yes, we agree with the proposed approach.

We appreciate Ofgem's effort in facilitating all the different concepts identified for early pathfinder opportunities. We would again stress that whatever frameworks are put in place must provide the

framework for the project promoters to take timely financial investment decisions to support early delivery of the projects.

### **Pathway to 2030 questions**

**Question 8: 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 that in order to maximise the potential for benefits to accrue from coordination, an overall holistic design approach will be necessary, taking into account both offshore and onshore system requirements and both long term and short term constraint factors. It is unlikely that individual areas of coordination could maximise the potential benefits without such a wider holistic plan.

We believe that a holistic network design is key to getting the benefits of coordination, but that it needs to facilitate an efficient process for how the system is delivered against that network model. The opportunity is there for the competitive process to be more efficient, but it needs to be executed in a time sensitive manner.

Any overall holistic network design will need to reflect the technologies available within the respective development timescales. This includes the necessary codes and standards that should be applied and those not currently existing that will require definition and further development in order to realise the interoperability that will be needed to create the necessary flexibility within in the network.

**Question 9: Do you agree with the planned work for a detailed network design offshore?**

For any offshore transmission system, consideration needs to be given to the overall end to end system design to ensure compliance with the applicable codes and standards. For radial HVAC connection systems, this routinely involves one party carrying out the design for both offshore and onshore assets and optimising based on the specifics of the project, particularly in relation to reactive power design and redundancy. If design responsibility is split separately between onshore and offshore HVAC assets, it will be necessary to ensure strong coordination between the two designs with detailed understanding of the electrical system interface.

For an HVDC connection system, industry recognised codes and standards to facilitate a split between the detailed design of the onshore and offshore systems are not yet available. Therefore for any radial or more widely connected HVDC system, a single electrical design covering both offshore and onshore elements will be required, until the relevant codes and standards are available..

Reference should be made to the recently published joint report by T&D Europe, ENTSO-E and WindEurope on the development of multi-vendor HVDC systems and other power electronics interfaced devices which looks into technology options to deliver multi-terminal, multi-purpose HVDC systems integrating multiple converter stations from a variety of technology providers<sup>1</sup>.

The impact of this initiative and its implications should be carefully considered as part of wider UK plans. It is important that the key stakeholders within the wider OTNR process reflect on these issues and form a plan for how they could be addressed in a UK context and what benefits can be taken from ongoing work and/or parallel activity in Europe. The DND offshore is a very significant piece of work, and at a time where there are challenges to the delivery of projects, replicating work which has already been undertaken elsewhere risks inefficiency, increased consumer costs and delays to project delivery.

Systems will only be optimised if parties agree to take on the responsibility to ensure that the network design standards work with both the onshore system and offshore system. We do not have any comments as to who should lead on the development of those standards, but we would advise against the development of multiple standards in order to ensure a coordinated, efficient design.

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<sup>1</sup> <https://www.tdeurope.eu/latest-news/58:t-d-europe,-entso-e-and-windeurope-publish-a-joint-report-on-the-development-of-multi-vendor-hvdc-systems-and-other-power-electronics-interfaced-devices.html>

It is important that those parties tasked with carrying out both the HND and DND works are fully engaged within this European initiative and can actively participate and input to the workstreams proposed, allowing future UK transmission network development to benefit directly from and contribute to the codes and standards to be developed.

**Question 10: Who do you believe is best placed to undertake the detailed design for assets that are in offshore waters?**

As referenced in Question 9, we do not have a recommendation as to who should undertake the detailed design for assets that are in offshore waters. The key aspect is to ensure that the end to end system will operate securely and correctly and in compliance with all of the necessary system performance requirements set by the ESO. Whichever parties are involved in the detail of design should not be at odds with what the timescale objectives are, should ensure design assurance on that system, and should be technology agnostic, so as to not be in favour of a particular technical solution over another.

It is important to note that if the party that undertakes the detailed design is not the same party who construct the system, then it needs to be considered how the design can be transferred over and in a timely fashion, and how to avoid the party undertaking the construction from repeating their own detailed design.

**Question 11: 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**

Yes, whilst radial connections could in principle be delivered by a range of different parties, the existing developer led model has generally proved to be effective in delivering robust and optimised offshore transmission connections in the shortest practicable timeframes.

**Question 12: 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.**

Hitachi ABB Power Grids supports and believes in the benefits of healthy competition. However, competitive processes need to reflect the market environment in which they are run. It is therefore very important that whatever model or models are ultimately selected by Ofgem, they ensure that the UK offshore transmission market remains an attractive place to do business for all of the market stakeholders.

The current level of global market interest and demand for both offshore and onshore transmission systems is significant. It is likely that if even a modest proportion of the proposed global pipeline is realised within currently anticipated timescales, there will be capacity challenges within the supply chain for the necessary technology elements required to meet the UK deployment targets for 2030 and beyond. Early engagement will be key to solving these challenges, including collaboration on planning, design and regulation.

It is therefore imperative that any competitive models selected take into account the need for efficiency and effectiveness for all stakeholders, including technology providers. Any model chosen needs to be delivered in a timely manner and has to be properly efficient and effective for all stakeholders involved if targets are to be met. The provision of offers from multiple technology providers to multiple delivery providers for each individual project is likely to create significant additional workload for all parties involved, without providing any substantive additional competitive benefit at the technology level. This increases overall costs within the supply chain that ultimately increases the cost to consumers and overload can effectively reduce competition.

In order to retain a level of early competition between prospective delivery providers (incumbent TSO's, OFTO's or new entrants) and also creating a framework for offshore network build-out on the scale, and within the timescales required, a portfolio approach could be considered where competition could be held between delivery providers on a regional or zonal basis, at the outset of an identified programme of projects within the 2030 network HND.

Such an approach with a single, or small number of confirmed zonal/regional delivery providers for both onshore and offshore works would allow:

- The development/deployment/evolution of technical standards and specifications to drive greater modularisation and standardisation in systems and equipment, in coordination with the final development of the DND. This would in turn lead to greater cost efficiency, risk reduction and overall portfolio lead-time reduction.
- Early engagement with technology providers and creation of frameworks for collaborative design development and risk reduction focussed on the key OTNR goals as well timely capacity reservation.
- The opportunity for delivery models focussed on core competences to maximise industry capability to deliver within the required timescales and to the correct quality and technical standards, in the most economically efficient manner.
- Delivery providers to engage with new technology innovations and new project developers / wind farm developers and, where appropriate, introducing them in a controlled and compliant manner.
- Alignment and engagement with the wider ongoing HVDC interoperability development initiative across Europe to facilitate HVDC multi-vendor inter-operability and wider meshed network operation in the future.
- The possibility for delivery providers to scale-up local skills and capability in all of the necessary aspects in order to competently and consistently deliver across multiple projects, delivering optimised value to consumers and the regional and wider UK economy whilst maximising local benefit and managing local impacts from construction over an extended period.
- Allow delivery providers to engage across a programme of projects with funding providers in order to maximise the range of funding vehicles and mechanisms available.

This type of arrangement would facilitate competition at both client and tier 1 supplier level whilst also creating an environment that creates the best opportunity for the 2030 targets to be met in a timely and cost effective manner.

As referenced in Question 10, bringing in competition during the preconstruction and construction phases threatens to duplicate effort, risking projects not being delivered in a timely manner. Detailed design needs to be properly assured, and responsibility needs to be aligned across parties. Regardless of how that design is carried out, it needs to be adequate for the purposes of construction in order to avoid duplication. Any inefficiency in the supply chain process will ultimately increase costs for consumers and risks reducing efficient competition as technology providers may not have the capacity to consistently provide the most competitive solutions.

**Question 13: Please describe any feasible delivery options that we have not set out in this document.**

Please refer to question 12 reflecting the need for careful definition of the competition scope rather than alternative models.

**MPI questions**

**Question 14: 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 (eg IC-led and OFTO-led) or just one? What factors influence your answer?**

*We are not responding to this question.*

**Question 15: Do you agree with this position with regard to ownership structures of MPIs under the current framework?**

*We are not responding to this question.*

**Question 16: What are the commercial, operational and regulatory factors that would drive a developers 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?**

*We are not responding to this question.*

**Question 17: 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 are not responding to this question.*

**Question 18: 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?**

*We are not responding to this question.*

**Question 19: 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?**

*We are not responding to this question.*

**Question 20: 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?**

*We are not responding to this question.*

**Question 21: 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?**

*We are not responding to this question.*

**Question 22: 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?**

*We are not responding to this question.*

**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? (eg 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?**

We want to see an effective market that operates seamlessly with the EU. One of the key challenges currently faced is the lack of clarity around the TCA March 2022 date for electricity market reforms to be agreed. Whatever the outcomes are, the TCA needs to promote seamless operation of interconnector/MPI connected operations and ensure a consistency of technical standards that will allow interoperation between UK and European networks.