

Response: Elia public consultation Task Force Princess Elisabeth Zone

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National Grid Ventures (NGV) welcomes the opportunity to respond to Elia's public consultation on the design of the Princess Elisabeth Zone (PEZ) solution following the workshops held by Elia in 2022 and 2023.

NGV, together with our European partners successfully operates six point-to-point (P2P) interconnectors into GB. We are currently developing several Offshore Hybrid Asset (OHA) projects, which includes the Nautilus project connecting to Belgium (BE) via the Princess Elisabeth Island (PEI). As the leading OHA developer in the UK, NGV has direct experience in offshore coordination and the challenges of integrating offshore transmission with interconnection in project development.

NGV welcomes the opportunity to contribute to this consultation on the design of the PEZ solution. We welcome the comprehensive proposals and examples provided to explain the technical background and reasoning for the solutions, as proposed by Elia in this consultation, as well as the detailed considerations of potential impacts and implementation timelines for the different measures. We appreciate the visibility that Elia is sharing of its ambitions and look forward to further confirmation of the design as decisions are taken.

We support the development of coordinated infrastructure across the EU & the UK for the North Sea. Maximizing the North Sea renewable energy sources (RES) deployment and integration is a common objective, and we look forward to continuing our cooperation with Elia as project work progresses. We encourage Elia to continue exploring technical solutions that would provide maximum capacity for cross-border flows for the benefit of both EU and UK consumers and we look forward to working with Elia on developing such solutions.

General views:

- In our view the consultation document demonstrates that the technical proposals have maturity and are detailed in their consideration. We very much appreciate the information provided regarding implementation timelines for the different options and solutions.
- NGV is also happy to continue to work with Elia on any technical aspects that would provide maximum capacity for cross-border flows and improve the socio-economic welfare for both EU and UK consumers.
- NGV agrees with Elia's assessment that the Offshore Bidding Zone (OBZ) model is better suited to provide efficiency from market and operations perspectives.
- An efficient implicit trading solution between the UK and the EU is needed in order to ensure the optimal use of infrastructure and maximize benefits for society. NGV supports OBZ-implicit as the most effective combined solution.
- We also welcome Elia's proposal for the establishment of appropriate provisions for the offshore wind farms (OWF) in an OBZ context to manage risks through capability-based contracts for differences (CfDs), which could be a good model to address this challenge.
- Closer cooperation in the North Sea level/North Seas Energy Cooperation (NSEC) framework will be crucial to support further the UK-EU collaboration and ensure compatibility between the ongoing development of market arrangements on both sides. The EU and the UK should work together on developing a coordinated long-term approach to offshore development in the North Sea and on a model for future collaboration that ensures an efficient way of allocating offshore hybrid interconnector capacity across borders as well as fair and proportionate sharing of costs and benefits between the relevant stakeholders and taking into account the connecting third countries, such as the UK.
- Close coordination between the system operators on both the BE and the UK side will be critical on operational aspects as well. Appropriate operational and balancing agreements are needed between the UK and BE to ensure clear roles, responsibilities, and commercial terms, close coordination between the system operators and ultimately the overall efficient operation of the hybrid asset infrastructure, both when fully in service and when one or more network elements are on outage.

NGV is committed to continue working with Elia, other European TSOs, authorities, and stakeholders on developing the necessary market, planning and operational agreements and arrangements to ensure compatible solutions and efficient exchanges on the hybrid interconnectors.

In the remainder of this response, we consider each of the topic areas 1 – 4 contained within the consultation and provide NGV's view in more detail.

On Connection Requirements and Dynamic and Harmonic:

- NGV welcomes the opportunity to review the Elia technical proposals. In our view the consultation document demonstrates that the **technical proposals have maturity** and are detailed in their consideration.
- **We support Elia's long-term aspiration to create a multi-terminal, multi-national HVDC energy hub** that facilitates the connection of more renewable energy and supports the energy transition to net zero across Europe.
- It is noted that the **island solution combining both Alternating Current (AC) and Direct Current (DC) technology** has been selected, with the island connected to the onshore network via 6 AC export cables and 1 HVDC system for a total capacity of 3.5 GW.
- It is also noted that **Elia is responsible for the transformation of voltage** from the one applied by the offshore wind turbines (66kV) to the one used to export the energy to the onshore network (220kV for the AC cables and +/- 525 kV for the HVDC cable system).
- The consultation papers confirm the **ambition to operate the Princess Elisabeth Island in "single node"** (Figure 12), meaning that the AC part of the island would be coupled to the DC part of the island. NGV agrees that in doing so, the cross-border capacity to BE would be increased.
- Whilst "single node" is the ambition, it is acknowledged that there are **significant challenges related to the dynamic behaviour of the power electronics** connected in that area (wind turbines, HVDC converters, etc). As a result, we understand that the current proposed design remains an operation in "split nodes" (Figure 13), namely the AC part of the island decoupled from the DC part of the island. In this context, it may be helpful to consider whether the potential for interaction is present at all load levels, or whether there are other operational measures that can be implemented to mitigate the challenges, particularly during low wind power conditions.
- **NGV encourages Elia to continue to explore technical solutions to maximise the potential capacity for cross border flows** especially until the 'single node' operation of the PEZ becomes feasible.
- **NGV is also happy to continue to work with Elia on any technical aspects** that would improve the socio-economic welfare for both EU and UK consumers.

On Market Design aspects:

- **We agree with the Elia assessment that the 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. As Elia also recognises, a challenge with the OBZ concept is however that it would provide less market revenue to OWFs compared to the Home Market (HM) concept and so it could require stronger support mechanisms (e.g. subsidies) to realise investments in socioeconomic efficient hybrid projects.

- **In order to realise offshore hybrid assets, all parties would need to have a viable investment case.** A holistic perspective is 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. In this context, we welcome Elia's proposal for the establishment of appropriate provisions for the OWF in an OBZ context to manage risks through capability based CfDs, which could be a good model to address this challenge.
- **We need an efficient implicit trading solution between the UK and the EU** in order to ensure the optimal use of infrastructure and maximize benefits for society. We agree with Elia that explicit coupling in principle comes with inherent inefficiencies and has major drawbacks when combined with a hybrid grid design.
- **NGV supports OBZ-implicit as the most effective combined solution.** 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 offshore hybrid assets.
- We note that it would be very important to **maintain close dialogue between the UK and the EU and compatibility between the ongoing development of market arrangements on both sides.** We also advise against developing transitional arrangements for HM to OBZ if possible, but if required to do so on the basis of implicit trading and under a time limited period.
- **The EU and the UK should work together on developing a coordinated long-term approach to offshore development in the North Sea and on a model for future collaboration that ensures an efficient way of allocating offshore hybrid interconnector capacity across borders** (e.g., offshore bidding zones appear to support that concept). In principle, all market arrangements should be aligned across both sides of an offshore hybrid asset – this includes the bidding zone and regulatory arrangements.
- In addition, we need cooperation frameworks for the future development of the North Sea based on common principles of how we are going to build the North Sea – including **holistic discussions on ensuring a fair and proportionate sharing of costs and benefits between the relevant stakeholders and taking into account the connecting third countries.**
- We recognise that there is a risk of divergence between the EU side and the UK side – that offshore hybrid assets and connected Offshore Wind Farms in the EU bidding zone become part of the Single Day Ahead Coupling (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 BE/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. We encourage/welcome further efforts to coordinate and cooperate on a common approach and vision for the North Sea with all North Sea countries involved in view of our common ambitions to integrate offshore wind.
- NGV is committed to continue working with Elia/other EU TSOs to develop OBZ model and compatible solutions/arrangements to ensure greater certainty and continuity forward for future offshore hybrid assets (e.g. OBZ + implicit from the start). Close collaboration on electricity trading arrangements, linking carbon markets and continued technical discussion between the UK and the NSEC/EU are prerequisites to be able to fully exploit the potential of renewables and grids in the North Sea and to help the EU and the UK reach their common net-zero ambitions.

On Balancing Design:

NGV welcomes the detailed proposals and considerations provided by Elia of how the balancing of the system could work under potential different market design arrangements/scenarios, and we would like to highlight the following principles:

- Close coordination between the system operators on both the BE and the UK side will be critical, **appropriate operational and balancing agreements are needed between the UK and BE** to ensure clear roles and responsibilities, commercial terms, close coordination between the system operators and ultimately the overall efficient operation of the hybrid asset infrastructure, both when fully in service and when one or more network elements are on outage.
- We encourage Elia to explore **technical solutions that would provide maximum capacity from cross-border flows for the benefit of both EU and UK consumers.** NGV are happy to work further with Elia, ESO/FSO/relevant system operators, authorities, stakeholders on developing the necessary agreements and technical arrangements to ensure efficient exchanges on the hybrid interconnectors.

We thank Elia for the opportunity to respond to this consultation and agree that the response is made available publicly. In case of any questions, please do not hesitate to contact the NGV Business Development Team.



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