NETWORKS

CONSULTATION - GRID DEVELOPMENT POLICY FOR OFFSHORE WIND

ESB Networks Response

22nd July 2020

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1. Introduction

The energy industry is experiencing significant transformation, driven by climate change and decarbonisation considerations set down in various European and national policies, directives and legislation. In 2019, the Irish government laid out in the Climate Action Plan Ireland's strategy to meet its 2030 climate and energy targets. Building on the sustained commitment made to decarbonising electricity generation in Ireland over the past two decades, the Plan, by 2030, sets a target of 70% renewable electricity, and the decarbonisation of the heat and transport sectors through the electrification of heat and transport. A significant element of this is the requirement to connect 3.5 gigawatts (GW) of offshore renewable energy (ORE) by 2030. More recently, in the 2020 programme for Government, this requirement has been increased to 5GW of offshore renewables capacity by 2030.

ESB Networks strongly supports and is fully committed to the delivery of the Climate Action Plan and Ireland's energy targets. Connecting and hosting renewables on our networks is a key component of ESB Networks' strategy to 2030. We develop and maintain our infrastructure with full appreciation of the customer and system needs that are evident today, and that will emerge as a result of the Climate Action Plan and beyond. ESB Networks recognises the importance of offshore renewables in meeting Government and European climate targets. We are fully supportive of the state targets and are committed to their delivery.

ESB Networks welcomes the opportunity to respond to this important consultation to "Inform a Grid Development Policy for Offshore Wind in Ireland". We have structured our response by firstly giving an overview of the role of ESB Networks. We then provide an overview of our key thoughts on the consultation, and then finally outline further comments on various aspects of the Transmission Grid model.

2. Role of ESB Networks

As Distribution System Operator (DSO), the Distribution Asset Owner (DAO) and the Transmission Asset Owner (TAO), ESB Networks works to meet the needs of all Irish electricity customers, providing universal affordable access to the electricity system, and delivering and managing the performance of a system of almost 155,000 km of overhead networks; 23,000 km of underground cables; 640 high voltage substations; significant amounts of connected generation, including 4.75 GW of renewable generation connected to the Distribution and Transmission systems; 2.3 million demand customers; and now several thousand "active customers" – domestic premises with microgeneration, a rapidly increasing number.

As the TAO, ESB Networks is committed to playing our part in contributing to the achievement of Ireland's Offshore Renewable Energy policy objectives and that the needs of all our customers and industry are met. In partnership with EirGrid, the licensed Transmission System Operator (TSO), ESB Networks designs, develops, constructs and maintains the transmission grid.

ESB Networks has extensive experience in designing, procuring, constructing, commissioning, maintaining and supporting operation of Transmission Assets at scale, including at 110kV, 220kV and 400kV, both on land and with submarine cables. We have over 50 years' experience in subsea cables including the delivery and operation of the Great Island loop, Aran Islands loop and the Shannon subsea crossing. In the last five years ESB Networks has constructed transmission assets to the value of value of €860m. This includes four new 220kV substations andsix new 110kV substations; two new 220kV subsea cables across the Shannon estuary; and 110kV and 220kV overhead lines and cables.

As TAO ESB Networks is responsible for the maintenance and physical development of the network for our consumers. During PR4 (the price review period 2016-2020) we invested €4.6bn, comprised of €2.8bn in new capital expenditure (capex) and the balance in operational expenditure (opex).

3. Key messages

In considering this consultation, ESB Networks have been guided by three core principles, namely:

- Delivery of 5GW of ORE by 2030
- Optimising the use of new and existing infrastructure
- Obtaining best value for the customer

ESB Networks is of the view that enabling the Programme for Government (PfG) target of 5GW means implementing an approach that is flexible, will get offshore renewables permitted, constructed, commissioned and to market by 2030. It also means ensuring that the infrastructure which we believe is of strategic importance to the Irish State and society can be used to optimally extend the Transmission Grid to connect future green energies (likely to be renewables) possibly supporting hydrogen or other Power to X technologies) and demand customers at least-cost, whether they are located onshore or offshore. Optimising infrastructure has clear financial benefits for consumers and environmental benefits for society. This applies to both the Relevant Projects and the Enduring Solution.

ESB Networks believes that long term planning, co-ordination and optimisation of the deep reinforcement of the Network with the offshore connections is crucial to the successful and cost-effective delivery of the offshore RES.

Our input to this consultation relates to the Offshore Transmission Grid, the Transmission Deep Reinforcements and the interactions between the them. We have common principles for both the relevant projects and the enduring solution. We are recommending :

- A modified version of Option 2 for the transmission grid development for the relevant projects. This modification is should not delay or impede the delivery of the relevant projects.
- A modified version of Option 4 for Transmission Grid Development for the enduring solution.

It should be noted that our proposals for both the relevant projects and the enduring solution are enabled by the existing framework and rules for current onshore transmission development, through the contestable build elements and the option of the system operator preferred build which would enable development of hubs and provide potential options for deep reinforcement offshore.

A new report International report published by REN21[1] validated the success of the existing onshore approach, in highlighting that Ireland is already a world leader for renewable generation from wind. Ireland is second only to Denmark in the world for percentage of energy produced from wind. This achievement is an excellent reflection on the capability of all the actors in the electricity sector who jointly have made this possible, and provides a platform that can be built upon in order to deliver Ireland's offshore renewable target.

3.1 Short term recommendation

In the short term, which includes the relevant projects and potentially some fast followers, ESB Networks believe a modification of Option 2 as outlined in the DCCAE consultation is the correct solution.

Option 2 allows the more advanced projects identified as relevant projects to proceed earlier than projects that are at a later stage in their development, with new infrastructure constructed by the developers. It also allows for co-ordination and integration of new transmission infrastructure with necessary deep reinforcements.

[1] Renewables 2020 Global status report

ESB Networks' modified proposal will allow these projects to move forward immediately, ensuring their timely delivery so they are connected to the grid early in advance of other projects that are less developed. All the time allowing for the optimum connection of future ORE as efficiently as possible ensuring the 2030 targets are achieved.

Our proposed modification is that the current onshore contestable model, which is understood by industry and has supported the successful delivery of 4.75GW onshore RES, is applied to the offshore connections. This means that the connection point would be located on the offshore substation and that after construction or following commissioning the new transmission assets would be incorporated into the existing Transmission system, so that these strategic offshore assets can be optimised for the benefit of all our citizens. There should not be any arbitrary or artificial distinction between the onshore and offshore transmission assets. The current existing framework for connecting renewables is extensive, flexible, established, understood and proven.

Locating the connection point offshore involves installing metering on the offshore substation which is readily achievable if provision is made during the design phase.[2] Other equipment relating to the windfarm operation such as DC harmonic filtering and static var compensation (STATCOMs) which is required to compensate for reactive power generated by cables are located onshore in an onshore substation and this does not change with the connection point offshore.[3]

With all new transmission assets (both on land and offshore) becoming part of the transmission grid and as such being planned and developed as a standard part of the Grid there is potential for optimising use of these assets. This could be achieved through for example System Operator Preferred Builds. Some of the benefits are as follows:

- Optimising scarce landing routes and congested cable corridors into the existing Grid.
- Right sizing all new infrastructure may enable ORE fast followers to be connected quickly.
- Allowing maximum use of new assets through for example sharing some infrastructure (i.e. onshore substations or offshore substations being used for connection of a second windfarm or reinforcement)
- Optimising maintenance across all connections for both the offshore and onshore elements thus reducing costs.
- Offering new opportunities for deep reinforcements at sea rather than on shore which could potentially provide time and/or cost benefits

[2] https://www.elexon.co.uk/guidance-note/metering-offshore-wind-farms/

[3] Connection and Transmission Agreement for a connection at: Platform HOLLANDSE KUST NOORD (HKN) (https://offshore-documents.tennet.eu/offshore-grid-hollandse-kust-noord-documentation/)

- Offering new opportunities to interconnect offshore platforms to strengthen connections
- Reducing cost by minimising the infrastructure requirements
- Future proofing by optimising the asset maintenance and performance for the maximum lifetime and thus providing access for future technologies.
- Infrastructure works could be optimally planned and carried out in a coordinated manner for the whole of system as a project as opposed to being carried out in a piecemeal reactive manner which could see reworking of infrastructure required.
- Minimising potential disruption associated with onshore reinforcement in the greater Dublin area.

In the event that some of the Relevant projects are not as advanced as believed, then designing and optimising their connections with sharing of assets could be considered as an option by the TSO when assessing their connection method. In all cases the connection point should be offshore.

This modified option 2 could also act as a “bridge” on the path to the enduring solution which ESB Networks believe should reflect the transmission infrastructure components contained in Option 4 as summarised in the DCCAE consultation.

In the medium term, if further offshore RES is to be connected on the east coast, to achieve the 3.5GW Target or the PfG Target of 5GW, the existence of offshore transmission assets as part of the Transmission system will enable further connections with possible reduced new infrastructure requirements.

Hubs/Transmission asset sharing or clustering of close proximity projects are an ideal solution for adjacent wind farms and allow for different timelines for connection, as economies of scale and central planning reduces inefficiencies between developers in planning and also means that the projects can progress at different times. Given the relatively short distances between the sites, and the major demand centres on the east coast, an incremental AC design towards a meshed system is technically feasible and may allow optimisation of new connections and existing grid in terms of time, cost and performance. If the offshore substations become part of the Irish transmission system, it may be possible to size them to maximise their potential along with scarce landing sites, thus removing the requirement for multiple congested landing areas down the Irish coast. These could then become hubs/power sockets[4] and allow additional ORE to connect at some point in the future driving certainty for future developments which may be necessary to achieve the 5GW target. These solutions can be planned for now and implemented later as the industry develops.

[4] https://www.offshorewind.biz/2016/08/01/kci-designs-offshore-power-socket-for-elia/

For the avoidance of doubt, our proposal will allow the Relevant projects to move forward immediately, ensuring their timely delivery so they are connected to the grid early in advance of other projects that are less developed. All the time allowing for the optimum connection of further ORE efficiently and ensuring that the 2030 targets are achieved.

It is in our view important that the flexibility to achieve this is built into the model chosen by Government. It may not be appropriate for all connections, but the possible use should be there for those connections where it is appropriate for it to be applied. Progress in this area is also dynamic and future requirements and potential should be considered and possibly allowed for in initial designs if it can be achieved cost effectively.

3.2 Medium to Long Term recommendation

ESB Networks believes that the centrally planned and developed offshore transmission infrastructure as described in the transmission elements in option 4 in the DCCAE consultation is correct for the medium and longer term. ESB Network is of the opinion that the connection point should be offshore. We suggest as a modification that a developer or group of developers should be able to build any shallow connection assets through the contestable model if they desire (as per the group processing approach that is available onshore).

ESB Networks has undertaken an internal preliminary assessment comparing hub development for a number of windfarms with the same windfarms being connected radially and is firmly of the view that there are significant savings (of the order of 30%) to be made in terms of cost along with the added benefits of optimising use of transmission infrastructure and thus reducing the requirements for new infrastructure to be built with the associated environmental and societal benefits.

The benefits of a centrally planned Grid model which optimises onshore and offshore infrastructure are well laid out in the Navigant report. In the UK Ofgem announced an offshore transmission review that will explore whether a more coordinated offshore transmission system could reduce both financial and environmental costs.

It is important that the option chosen gives the best overall value to the end customer. This is fundamentally important as the electricity customer is bearing the overall cost.

ESB Networks favour the high-level road map set out in Figure 6 which shows a move to the enduring solution being a centrally planned model and delivering the ORE target by 2030. ESB Networks agree that the move to the enduring solution should be time based and not geographically based – i.e. not one solution for the east coast and one for the rest of the country. The timelines set out in the DCCAE consultation for transitioning to a centrally planned transmission infrastructure (consistent with the transmission infrastructure components of option 4 seem reasonable and achievable. We believe whole transmission system planning and development is critically important and thus every opportunity to start this work as early as possible should be taken and these timelines should be pulled back from those shown in figure 6. At the same time as the onshore reinforcements are being considered, the potential for offshore reinforcement should also be considered and developed.

The impact of increasing the target of connecting 3.5GW offshore RES by 2030 to 5GW is not known as yet, however it is reasonable to assume that this will lead to greater need for reinforcing the existing onshore network. Thus, it is important that both onshore and offshore connection and reinforcement are designed holistically in a co-ordinated whole of system manner. This is the same principle which is applied today onshore.

4. Further observations on the Transmission Grid Model

The comments below are generally applicable to the recommended solutions put forward by ESB Networks for the relevant project and the enduring solution.

4.1 To what extent will the relevant projects contribute to achievement of the ORE 5 Gigawatt Target.

In terms of the legacy / relevant projects, their overall capacity is not clear. Taking the published square kilometre area[5] of 5 selected projects along with prudent rule of $3W/m^2$ quoted in the Navigant report, it would seem that the overall output would be of the order of only 1GW. In the UK at present the yields are averaging $4MW/m^2$ and rising. Based on these calculations (see figure 1) an additional capacity in terms of number of projects and MW will be required from the ORE projects that follow in order to hit the 5GW target, which will add to the corresponding challenge. Should capacity densities be increased beyond Navigant's figures then this could increase the overall levelized cost of electricity (LCOE) of the projects by increasing the lifetime maintenance costs[6] . It could be estimated from this that to deliver the overall target of 5GW more ORE projects will be required by 2030 and will drive a requirement to increase the cable landing points and cable routes

[5] Foreshore licence applications https://www.housing.gov.ie/planning/foreshore/applications/energia-site-investigation-wexford-coast and Market research consultants website https://www.4coffshore.com/

[6] https://vasab.org/wp-content/uploads/2018/06/BalticLINes_CapacityDensityStudy_June2018-1.pdf

to the transmission connection points, it is noted that at present there are limited routes to connection points and to the demand centres in the greater Dublin region.

It is important that if this is the case, it is addressed and solutions put in place . We believe our recommended solutions would provide a quick path to address the issues that are likely to arise in the short term while the move to a fully plan led grid development model is being enacted.

No relevant /Legacy Projects Assessed	**Area (km2)**	**3 MW/km2 (Navigant)**	**4 MW/km2 (Average UK)**	**7 MW/km2**	**10 MW/km2**
5	276	828 MW	1,104 MW	1,932 MW	2,760 MW

Figure 1 :Capacity density based on assumed yields to give an indication of the possible MWs delivered from 5of the current proposed projects when applying Navigant's figures .

4.2 Grid Reinforcement

The other equally important aspect of the required transmission infrastructure is the deep reinforcement required to accommodate 5GW of offshore RES. The currently available hosting capacity as identified by EirGrid is in the region of 1.5GW to 2GW and thus extensive works will need to be carried out to accommodate the additional 3/3.5GW.

Optimising this reinforcement with the radial connections of the legacy and relevant projects may require new methods of grid reinforcement - possibly offshore rather than necessarily reinforcing / uprating of existing lines and cables which currently run through Dublin city and may cause significant disruption during their works. An incremental approach to design out potential congestion issues to deliver the targets can begin now. Significant works within the city carry associated programme risks, cost risks and environmental risks along with social acceptability. Thus, ESB Networks are of the view that the deep reinforcements need to be optimised with the offshore connections and that the potential to implement this is built into the model chosen. Having an offshore connection point is important in this context.

4.3 International Experience

Internationally, from the Navigant report, it can be seen that countries with experience in developing offshore RES are opting for a more plan led grid delivery model for developing the transmission assets to connect offshore RES. Countries which originally established a developer-led offshore grid model are moving to a plan-led grid delivery model for the offshore transmission assets.

In the UK, Ofgem announced a terms of reference for a review of the Offshore Transmission Network (15th July 2020)[7] that will explore whether a more coordinated offshore transmission system could reduce both financial and environmental costs, as individual radial connections may not be sensible and acceptable for consumers, to allow for future transmission capacity to support the projected growth of offshore wind.

In Belgium they have moved away from a developer led build to a TSO build plan led approach as more efficient and more desirable by industry. MOG 1 project in Belgium constructed by Elia was designed as a hub switching platform to optimise the connection of multiple wind farms which would connect periodically. In discussions with Elia , ESB Networks learned that the MOG 2 project will develop on this model but include the transformation to transmission voltage at the request of the Offshore Wind Developers similar to that employed in Holland and Germany.

Offshore projects are increasing in size and driving new technological advances and solutions to move the vast power from these projects to where the demand is greatest. The Brattle Group published a report in May 2020 on “Offshore transmission in New England”[8] examining a developer led offshore development versus a planned transmission approach for the connection of 3.6GW offshore wind. This highlighted potential for substantial savings (~€1bn) with the planned transmission approach along with reduced infrastructure, better utilisation of existing infrastructure and better environmental and fisheries outcomes, significantly less subsea cable and associated seabed disturbance.

In Europe, TSO’s such as Tennet , Elia, 50 Hertz and Energinet have successfully developed and spear headed the approach to offshore wind energy in Europe using a plan led approach where the TSO delivers the offshore transmission assets. These operators across Netherlands, Belgium, Germany and Denmark have successfully integrated 11 Gigawatts of offshore wind in their transmission systems collectively and are targeting 36 Gigawatts to be integrated by 2030. Each country has a unique geography and transmission system architecture and like Ireland had never designed their national grids to accommodate large generation sourced from the coast, however their plan led approach has allowed for this integration and future growth in the industry. This approach

[7] https://www.gov.uk/government/publications/offshore-transmission-network-review/offshore-transmission-network-review-terms-of-reference

[8] The Brattle Group: May 2020: Offshore Transmission in New England prepared for ANBARIC.

allowed for efficient grid expansion and onshore grid reinforcements, standardisation and economies of scale.

It should be noted that together ESB Networks and EirGrid provide the integrated role and service in Ireland that is often provided by one entity in other countries.

4.4 Environment

It is important to respect our natural environment and to minimise new infrastructure build. Transmission Grid design is optimised when it is centrally planned and co-ordinated as this minimises the need for new infrastructure, improves coordinated timing of works, ensures comprehensive consideration of impacts as a whole etc. Grid owners and operators are naturally incentivised to develop and manage the Network in an economically efficient manner for all customers over the longer term. A plan-led offshore grid infrastructure can be developed with future projects in mind, it can require less cable routes and infrastructure in the long term, thereby mitigating the environmental impact.

Every opportunity should be taken to implement with least impact to the environment, potential for future development of sustainable resources (e.g. Hybrid connections for future offshore hydrogen Development, margin for future optimisation and life extension) and least cost through standardisation and sharing assets to reduce overall investment in the electrical network aspect of the aggregated development.

4.5 Social Acceptance

Social acceptance for delivery of transmission infrastructure would likely be increased as part of the national electricity network which is operated on a regulated basis with a mandate to serve the interests of all customers and communities as opposed to individual developer ownership. As a strategic asset, it may be easier to gain social acceptance for the overall concept of using our own natural resources to power our country using clean energy rather than on a project by project basis, especially where they may sterilise key sites and waters potentially stifling future developments and innovations over the next decade

4.6 A new opportunity for Ireland

A major offshore sustainable power generation capability will support Ireland in our efforts to recruit and grow further investment, especially investments that would benefit reputationally from the fact that any energy used is from a sustainably source. There is a significant target of 5GW of offshore wind to be delivered and connected within the next decade. It is a great opportunity for Ireland to develop a new industry. With such a large volume of offshore RES, it is hoped that this would be large enough to enable local industry to build up skills in construction and ongoing maintenance. And perhaps also develop other offshore wind related industries. A new study in Denmark, published on 26 June, says that every 1 GW of offshore wind set up in Denmark secures 14,600 full-time jobs[9]. In Australia, Sydney is now supplied 100% by renewables, so why not Dublin?

Ireland has an opportunity continue to lead in the area of renewables. Support could be provided to our third level sector to develop and innovate and take advantage of the large offshore renewable industry that is expected to develop as a result of government targets in this area.

Under a centrally led planned or delivered model a larger asset base and standardisation will greatly signal a market response for here in Ireland. There will be benefits from development, construction and operation and maintenance phases which will open public procurement routes for potential Irish suppliers.

4.7 Cost recovery for the transmission assets required to connect the ORE

ESB Networks is strongly of the view that optimising the required new infrastructure along with the deep reinforcements in a centrally planned manner will deliver connecting ORE at the lowest cost to the customer.

In terms of the new transmission infrastructure required for the shallow connections, there are two main mechanisms for charging – namely through the PSO or through Use of System charges.

In the event that the developer funds the shallow transmission connection assets, those costs will be bid into the relevant auction and will be supported by the PSO as required over the timeframe of that support e.g. 15 years. Currently the support is designed as a floating feed in tariff, this means the PSO will get refunded by the generator when SMP prices exceed the RESS Auction Subsidy price,

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[9] https://www.offshorewind.biz/2020/06/26/denmark-for-every-1-gw-of-offshore-wind-14600-fte-jobs-secured/

and the PSO pays the generator when the SMP is below the RESS subsidy price. Thus, there is a clear and explainable link between low energy costs and RES support.

In the event that the offshore transmission asset are funded by ESB Networks, traditionally the costs are recovered from the customer through Use of System Charges which are levied on all customers. A method for reducing the cost to the customer would be to depreciate the cost of the shallow connection assets over a period greater than 15 years (as per the RESS support). A period of 20 years as is used in other European countries may be more optimum and reflects the longer life of the asset. It is reasonable to assume that the asset life will be shorter at sea than on land and thus an “offshore” asset base with a shorter depreciation rate than on land should be considered. This should apply to any deep reinforcements which are constructed offshore also.

Any onshore deep reinforcements required to the Transmission system will be financed in the usual manner through Use of system charges.

4.8 Auction Design

All the offshore RES will go through an auction process. Good auction design is essential to create competitive pressure and ensure best value for the customer. It is important each auction process is held with a level playing field. By this we mean the connection process (and associated costing process) for offshore RES for each participant in an individual auction should apply consistently so all developers operate under the same process and rules.

4.9 Addressing the issue of developer compensation for delayed delivery of Grid Connections

While the issues asked in the question are important in terms of achieving the 5GW ORE, this should not be a determinant of the outcome chosen. This is because there are a number of ways that could be utilised to incentivise parties involved and that incentive design could be addressed later in the process. It is possible to incentivise each party appropriately under each model. Ultimately incentives are a cost and each and every party will seek to back them off (ensure balanced risk reward) to another party and they will either impact the cost of equipment, the LCOE (Subsidy or Bid price) or regulatory outcomes. Within this each party should be incentivised to perform optimally.

It should be noted that many of the factors such as land access, way leaving, road opening licence etc that are the most significant in terms of risk to delivery and can be impacted by third parties. If this is planned in advance, it could potentially be planned over a longer period of time and therefore taken off the critical path.

The offshore connection works are likely to be inherently quicker than the deep reinforcement works which are necessary onshore in order to give a firm connection to the wind farm and this needs to be considered in the design of any scheme. If the necessary transmission infrastructure is centrally planned, all deep and shallow works are co-ordinated, and connections will be optimised. It is important that this is carried out in a whole of system manner looking at the overall magnitude of new RES.

4.10 Outage Risks

There has to be a balance in risks accepted by each party. In the event that the developer designs and constructs the shallow connection, and then transfers to TAO/TSO management appropriate steps can be taken to ensure a quality build. . Where the developer builds the transmission assets it is in their interests to ensure a quality build and based on experience the quality is enhanced by close liaison between the developer and the TAO/TSO. This has also been a traditional approach for demand customers who require security of supply and should be considered for the offshore RES. This will remove much of the outage risk.

The design of the connection is important when considering outage risk. In other countries[10] two cables ashore are required for windfarms greater than 120MW. In other jurisdictions, Grid Companies (Elia) have developed an offshore switching station as this reduces the risk of an outage to the windfarm by providing an alternative path to the Grid

Developers carry insurance against such a loss of generation should one occur. Similarly, the system operator firstly employs good practice installation, warranty on manufacturing and then insurance for unforeseen events. ESB Networks proposal that all Transmission connections are optimised and managed as a part of the transmission system also lends itself to risk mitigation for outages as offshore platforms could be interconnected to give greater reliability and security.

ESB Networks believe that this is a complex issue and should be consulted on separately so that the rules can be developed for the Irish context adapting good practice from Europe.

[10] UK SQSS requires 2 cables for connections greater than 120MW

4.11 Transitioning from relevant projects to the enduring solution

Considering ESB Networks' proposed option 2 modification for the relevant projects, it may be able possible to develop aspects of the centrally planned transmission system in advance of the move to the plan led Grid Delivery model 4. This could potentially accommodate a number of fast followers who appear to be naturally clustered and thus may allow more ORE to be connected quicker while allowing a simpler managed transition to the transmission infrastructure model components which are described in option 4 (plan led Grid Delivery Model). There is a real concern that a fully developer led model specifically on Irelands east coast may only allow some of the potential MW yield from the east coast waters to be realised. The initial developer led projects may inhibit future projects from connecting simply due to system and geographical congestion, limiting the ability to move to a plan led approach beyond the initial wave of projects

5. Conclusion

Ireland is at an important stage in the development of the Offshore renewables industry. ESB Networks welcomes the opportunity to comment on this consultation to "Inform a Grid Development Policy for Offshore Wind in Ireland". We support this consultation and we appreciate the hugely important role that offshore wind plays in delivering Ireland's 2030 decarbonisation targets, for the benefit of Irish society and the economy. ESB Networks believes that Ireland's ORE targets can only be achieved through a holistic approach to grid planning and build, both onshore and offshore, and that this is best achieved through effective and efficient solutions – both interim and enduring – which will enable offshore wind projects to be approved, constructed, commissioned and brought to market by 2030. We believe that stakeholder engagement should continue with all parties on an ongoing basis.

ESB Networks has a strong track record in connecting renewables, as evidenced by a recent report[11] showing that Ireland is already a world leader for renewable generation from wind. Ireland is second only to Denmark when taking the percentage of electricity generation in 2019 that wind energy accounted for. This achievement is a good reflection on all the actors in the electricity sector who jointly have made this possible and provides a platform that can be built upon in order to deliver Ireland's offshore renewable targets.

ESB Networks' focus in this consultation was principally related to offshore and onshore transmission network assets and our comments throughout the paper relate to these. ESB Networks have been guided by three core principles in our response to this consultation, namely:

- Delivery of 5GW of ORE by 2030
- Optimising the utilisation of new and existing infrastructure now and into the future
- Obtaining best value for the customer

ESB Networks believes that there are common principles for both the relevant projects and the enduring solution, and that our proposals for both of these are enabled by the existing framework and rules for current onshore development. ESB Networks recommends:

(i) A modified option 2 for the relevant projects, where the shallow connection is contestably built by the developer and then transferred to TAO/TSO with the connection point to the grid located offshore, i.e.

[11] Renewables 2020 Global status report

- Similar to the current approach for onshore wind, the shallow transmission infrastructure should be built under the contestable model with the connection point offshore. The new infrastructure then becomes part of the Transmission system and as such is operated and maintained by the TAO and TSO.
- All opportunities to optimise the radial connections for the relevant projects should be taken.. The current process for system operator preferred build should be utilised where appropriate.
- The System Operators should be empowered to carry out anticipatory reinforcement of the onshore and offshore systems.
- This approach should not delay the expected delivery of the relevant projects.

(ii) This can then be incorporated into the enduring solution for transmission, which we believe should be based on option 4 – a fully plan-led delivery model insofar as it relates to the transmission elements of the plan led delivery . We believe that this is really the only way to fully optimise a system that meets Ireland's RES targets.

- The transmission system to connect ORE should be centrally planned and developed.
- The connection point for ORE should be offshore. Developers (or groups of developers) should be able to build the shallow connections under the contestable model.

Both the modified options 2 and 4 are consistent with and enabled by the current onshore delivery model.

We have outlined in this response the basis for our conclusions and we are happy to expand on any element of same as required. ESB Networks remains available to discuss the comments provided in this consultation response and looks forward to engaging with the DDCAE and other industry stakeholders to ensure that offshore wind development targets and the objectives of the Climate Action Plan can be fully realised.