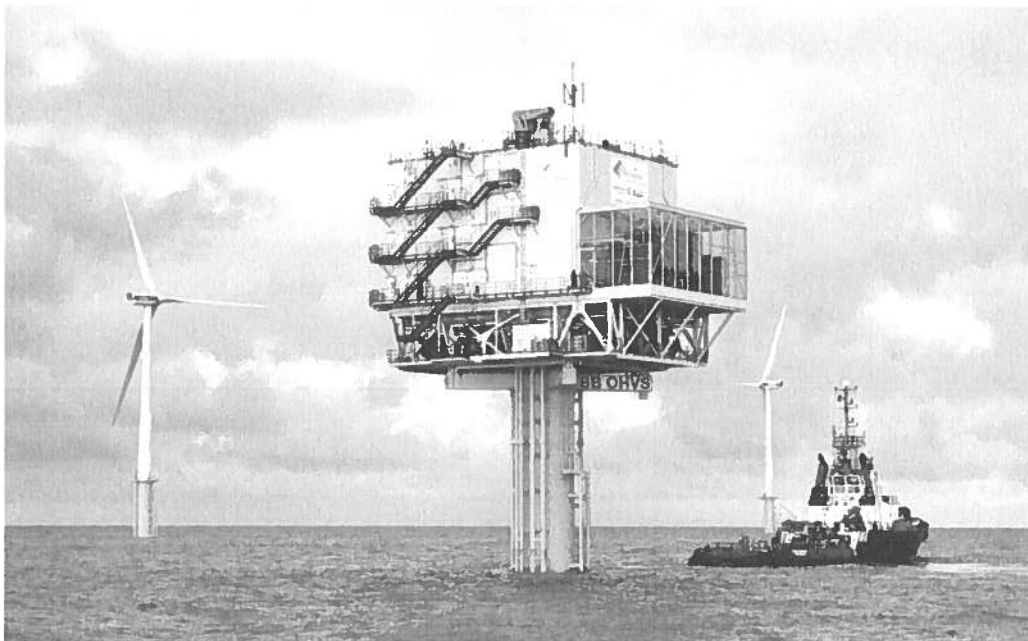


Confidential: Response to Electricity Interconnection Policy Consultation

Mainstream Renewable Power

29th August 2022





Electricity Interconnection Policy Technical Consultation
International and Offshore Energy Division
Department of the Environment, Climate and Communications
29-31 Adelaide Road
Dublin 2
D02 X285

By email: SMBX.OffshoreWind@decc.gov.ie

Dear Sir/Madam,

RE: ELECTRICITY INTERCONNECTION POLICY CONSULTATION RESPONSE-COMMERCIAL IN CONFIDENCE

Mainstream Renewable Power (“**Mainstream**”) is an Irish independent renewable energy developer and considered a world leader in the development of offshore wind. Mainstream has developed over 5GW of offshore wind capacity, including 25% of the UK’s offshore wind plant. Mainstream is developing one of Asia’s largest offshore wind farms in Vietnam, and working on offshore wind energy opportunities across Europe, Asia Pacific and on both coasts of the United States of America, United Kingdom, and Ireland.

Mainstream is actively developing three offshore wind projects to support the Government’s ambition to deliver the newly increased target of 7GW of Offshore Wind by 2030 and recognising that a second phase of projects will be necessary to achieve this target.

1. Mainstream North East Wind¹
2. Mainstream South East Wind²
3. Mainstream South West Wind³

Mainstream welcomes the opportunity to participate in the consultation on Electricity Interconnection Policy published on 10 June 2022 (the “**Consultation**”). Please refer to Attachment 1 for Mainstream’s responses to the Consultation questions.

If you have any queries about Mainstream’s submission, please do not hesitate to contact Senior Offshore Development Manager Ireland [REDACTED]

Yours sincerely,

[REDACTED]

[REDACTED]

Senior Offshore Development Manager

¹ Mainstream North East Offshore Wind

² Mainstream South East Offshore Wind

³ Mainstream South West Offshore Wind

ATTACHMENT 1

Feedback on the proposed consultation for Electricity Interconnection Policy

Executive Summary

Based on Mainstream's significant renewable energy development experience, we are of the view that the current legal, policy and regulatory framework for electricity interconnection in Ireland is not fit for purpose. In particular, taking into consideration the new technologies and configurations/models that offshore wind are considering for network connection, both within Ireland and to other jurisdictions. There are distinctions between the various models which need to be captured in the framework e.g., between interconnectors and multipurpose interconnectors ("MPI"), and the manner in which different types of interconnectors are classified will be important for licencing, funding and incentivisation. There is a need for a Holistic Network Design ("HND") that also considers interconnection in its various forms in order to properly plan offshore transmission for the long-term as an integrated and future-proofed part of Ireland's transmission network.

A long-term plan or roadmap for interconnection will result in a more coordinated, economic and efficient network. We believe a HND plan needs to evaluate the risk of regret (not only in the event of an offshore wind development not building out, but also in the event of offshore wind developments growing in size as technology advances or in the event of grid constraints changing due to onshore factors). A Least Worst Regrets Analysis is a process used in many large infrastructure decision-making areas and this would be beneficial to help support the policy process for interconnection.

The HND should include onshore transmission. When seeking connection to the grid for offshore projects, in our experience it is common for onshore enabling works to be the critical path for the whole wind farm project. Such onshore works are often the result of complex factors, not simply offshore connections.

Clear legal definitions of what constitutes an MPI is required as it is difficult to assess how the cap and floor regime would be applicable to it when crossing jurisdictions. The applicability of the cap and floor regime may vary based on the specific configuration and model of each MPI proposed.

It would be useful to provide clarity on how an MPI may deal with access and charging. For example, if a generator was connected to an MPI, how would charging be different to a connection to a dedicated offshore transmission asset and how would access be affected by this model?

We recognise this area is very complicated and we would suggest focussed stakeholder workshops with industry given the level of detailed discussion required to understand many of the nuances that will influence changes in the policy, legislative and regulatory regimes. Key points for framing interconnector considerations are:

- Domestic: Market solution impact on ORESS support
- Domestic/EU: Priority dispatch
- UK: Compatibility with OFGEM (consideration of Trade and Co-operation Agreement, Brexit)
- EU: Derogations, Third Party access and Unbundling Requirements.

Hybrid interconnection options for consideration in framing policy

We believe that there are two main hybrid models for initial consideration:

- Hybrid interconnector (offshore wind led model) where the offshore infrastructure from the first jurisdiction out to the generator is owned/operated by an Offshore Transmission System Owner/Operator and the connection from the generator to the second jurisdiction is owned/operated by an interconnector licensee. The complete offshore transmission assets may be developed by single or multiple parties.
- Hybrid interconnector (Interconnector led model) where the transmission infrastructure between Ireland and another jurisdiction is owned/operated by an interconnector licensee and includes an offshore wind farm connection. The transmission assets may be developed by the generator or by an interconnector developer.

Other variations to these models will exist, especially when considering connection to multiple offshore generators or multiple shore landing points. Hybrid interconnectors can develop from offshore transmission generation connections or from interconnectors and this will depend on the primary use of the overall system.

A clear statement on anticipatory investment risk and the mechanisms for sharing risk, including whether or not that will be shared with consumers, will be useful. The counterfactual of ‘no investment’ needs honest evaluation and the various levels of demand as foreseen or implicit by government policy on decarbonisation should be outlined. Where government intends supporting anticipatory investment risk, the identity of whether this will lie with users or exchequer should be clarified.

Consultation responses

1. Introduction and Background

The premise that is stated on page 5 should be revised, given the Shaping Our Electricity Future (“SOEF”) work was based on one scenario only re grid capacity, and we believe that floating should also not be ruled out arbitrarily. We would like to see this language (as follows) amended, so that the policy considers all of the Irish coastline and is not limited by technology choice. Additionally, we understand that work is underway to identify further grid capacity to facilitate the Government’s increased target of 7GW of offshore wind by 2030: *“It is anticipated that the overwhelming majority of ORE to be delivered by 2030 will be located off Ireland’s East and South coasts. This is due to the suitability of these waters for fixed bottom turbines and available grid capacity”*.

2. Ireland’s increased energy ambition

Questions:

To what extent would a commitment by Government on delivery of further interconnection capacity, beyond the proposed Celtic and Greenlink interconnectors, impact achievement of Ireland’s 2030 and post 2030 energy objectives?

We believe that further interconnection is crucial to the delivery of Ireland's long term energy objectives, including the Government's stated ambition to see Ireland positioned as a lead exporter of electricity. Shortfall in system adequacy in the short-medium term is unlikely to be met by additional interconnection due to development and delivery timescales. However, in order to meet the 2030 targets and beyond for renewable energy generation there will be a need to increase the diversity of dispatchable storage and interconnector options to manage system adequacy as installed capacity of renewable generation exceeds local network demand. Development of additional interconnectors should be complimentary to and coordinated with the energy objectives for increased renewable generation. Appropriately located and sized interconnection represents a critical opportunity to connect renewable generation with the demand centres by potentially avoiding internal network upgrades and providing alternative routes to market for renewable energy projects.

In the context of Ireland's increased climate and energy ambition, should Government establish future minimum interconnection targets, with capacity to be delivered by a specific point in time? If so, what should these targets be?

It has been proven that targets are helpful to industry and they catalyse action and investment. If targets are to be set then they should be based on techno-economic studies of the whole energy system with regard being had to any associated targets set for generation, load growth or decarbonisation. There should be a clear needs case for individual interconnection projects based on benefits such as market dynamics, security of supply, diversity of supply and alleviating network constraints rather than solely based on minimum targets. Interconnection is only of benefit if it is integrated into a transmission network that allows the interconnector to be used in an efficient and unconstrained manner so development of the transmission system must go hand-in-hand with the development and build-out of interconnectors. Delivery capacity and timescales should be cognisant of the medium to long term energy objectives and focus on enabling increased levels of renewable grid penetration.

It is crucial to the success of interconnectors that they are supported in both jurisdictions and for this reason collaboration between Governments in setting suitable targets would be required.

Regarding the location of future interconnection, should priority be given to developing further interconnection with Great Britain or the EU IEM, or both?

We believe the priority should be given to both Great Britain and the EU IEM for different reasons.

As the GB system is a relatively close and small system (compared with the interconnected European grid) with a similar energy mix to Ireland, only developing interconnection to the GB system does not bring the diversity and security that would be overall beneficial to Ireland. Notwithstanding this, interconnection to the GB system does bring other benefits based on its relative location and increased system strength compared with Ireland. In addition, the enabling of multi-purpose interconnection is explicitly included in ongoing GB policy review (Offshore Transmission Network Review) and as such has the potential to provide additional benefits to interconnection by minimising infrastructure for offshore renewables located between the two jurisdictions whilst also creating an opportunity for cross border trade.

Conversely, interconnection to the EU IEM has the potential to offer greater benefits regarding supply diversity and security due to the variation in energy supply mix between Ireland renewable energy development plans and EU installed capacity.

Finally, the location of interconnection should consider the ability and opportunity to enable renewable generation to connect outside of the wider Dublin area demand centre by potentially avoiding internal network upgrades.

What are the primary benefits associated with increased interconnector capacity? For instance, would the primary benefit relate to enhanced security of electricity supply or de-risking future renewables development?

The primary benefit is related to combined system strength through diversity and security in energy supply from external markets. By having multiple reliable, controllable routes to market through connections between systems, it allows new, larger generators and loads to be integrated more easily into the network.

Whilst security of supply can be increased through this approach, the current base technology (monopole HVDC) can be binary regarding availability in fault scenarios and is limited by the lowest infeed loss capability of the two jurisdictions. The Largest Single Infeed limit will currently restrict the size of planned interconnectors and this limit should be reviewed in line with development of increased renewable project capacities.

3. National Legislation

Questions:

Is the existing legislative framework contained in the 1999 Act appropriate to secure future development of interconnector capacity?

It is evident from the myriad of papers, policies, regulations and legislation both at national and European level, which acknowledge the positive externalities of interconnectors and electricity interconnection, that it is expected that interconnectors will play a significant role in the ever-evolving energy market. Increased interconnection is seen as a key step towards achieving a single integrated energy market and will complement Ireland's volume of intermittent renewables generation, reduce curtailment and, of upmost importance, enhance security of supply which is under constant threat at this time.

Whilst a number of interconnectors have been, and are being developed, under the 1999 Act, there have been significant developments in the market over the last number of years, e.g., Brexit, the TEN-E Regulation was recently revised, the emergence of hybrid interconnectors, the funding structures of interconnectors, and all such developments must be adequately addressed in the 1999 Act and the applicable regulatory regime.

Given the scale of interconnection projects and the investment required, both in time and capital, a clear, certain and transparent legislative and regulatory framework must be in place, addressing and providing flexibility for all potential structures.

What amendments, if any, do you consider necessary to the 1999 Act?

As mentioned above, there have been a number of developments which impact on interconnectors and their role in the market and consequently some amendments will be required to the 1999 Act to address these developments. Some examples of amendments to be considered are set out below. In addition, we note that in April this year the UK Department of Business Energy and Industry Strategy in its paper "*Offshore Transmission Network Review: Multi-Purpose Interconnectors*" determined that aspects of the existing UK licensing and legal framework were unlikely to be suitable for an enduring solution for multi-purpose interconnectors or hybrid interconnectors and the UK Government responded confirming that it's relevant Departments are considering how to introduce a new licensable activity into their Electricity Act 1989 for the operation of hybrid interconnectors. In considering amendments to the 1999 Act, close cooperation with the UK Government would increase efficiency and clarity.

- Although a broader question, the 1999 Act sets out the right/entitlement of ESB to own interconnectors and such interconnectors will be automatically deemed to be in the public interest. This right and the regulatory treatment afforded to such interconnectors should be reassessed in light of any potential conflicts/distortion of competition/unjust treatment which may arise between interconnectors developed by ESB and independent developers. In addition, this right should be reviewed in light of EirGrid being recently designated as the owner of the offshore electricity transmission system.
- 'Interconnector' is defined in the 1999 Act as "equipment used to link electricity system". This definition should be reviewed in light of the potential structures/forms of hybrid interconnectors and interconnectors linking offshore generation assets and/or countries. A distinction may need to be made between interconnectors solely connecting countries and hybrid interconnectors connecting offshore generation assets and/or countries.
- Any such distinction between interconnectors and hybrid interconnectors would also need to address the rights relating to access to interconnectors (Section 34A), prioritising use/access by the offshore generation assets and set out the applicable charging and regulatory treatment of such interconnectors.
- It should be set out in the 1999 Act that only projects that are "sufficiently mature" can apply to the CRU for a determination under Section 2A, and detail what exactly is meant by "sufficiently mature".
- Functions of the CRU - The CRU has the ultimate regulatory power under the 1999 Act with regard to electricity interconnection. It is responsible for granting authorisations for the construction of interconnectors and for licensing interconnectors. In discharging these responsibilities, it decides on appropriate regulatory support to underpin interconnection investment. Section 9 sets out the functions of the CRU and such functions may need to be revised to take account of interconnection with other third countries, such as the UK, and not just countries within the EU. In addition, these functions will need to extend the role of the CRU to hybrid interconnectors and the evolving form of interconnectors. Principles such as market dispatch, third party access etc will need to be considered to reflect these structures, i.e., an offshore wind farm using the interconnector to export its power.

- Authorisation to Construct – Section 16 - The test to be carried out in assessing the eligibility of an applicant for an authorisation to construct should be transparent, certain and non-discriminatory. The parameters of such assessment should be set out in the 1999 Act. In addition, the terms and conditions that may be applied to such authorisation to construct should be clearly defined to provide some certainty to developers of these potential confines.
- Electricity Interconnection Targets –The reference in Section 16A to take into account electricity interconnection targets set out in Regulation 2018/1999 limits such interconnection to within the internal energy market. Consequently, interconnection to the UK will not be counted as part of Ireland’s 15% target. Thus, to meet the 15% target by 2030, Ireland would require two interconnectors the size of the Celtic Interconnector to be connected to the EU.
- Whilst the EU minimum targets for interconnection are important, it must be borne in mind that Ireland is likely to have a greater vulnerability to energy and security of supply issues due to its future dependency on wind, its island status, and the lack of alternative energy sources such as nuclear or gas. Accordingly, the State should legislate for significantly higher levels of interconnection within the EU.
- The use of the CRU of its right under Section 16A should be assessed in light of the likely future development of interconnectors and only employed where insufficient interest exists from independent developers. Prior to exercising its right under 16A(c), the CRU should exhaust (a) and (b). A request under (c) will simply result in unnecessary delays when in fact the provision of such essential infrastructure should be encouraged and assisted.
- It is provided in the 1999 Act that all interconnectors constructed pursuant to Section 16A will be deemed to be in the public interest. The drafting should be amended to make it clear that such interconnectors remain subject to the CRU’s assessment to determine their regulatory treatment, i.e. fully regulated, partly regulated, merchant.
- Penalties - The penalties for constructing an interconnector without obtaining the appropriate authorisation as set out in Section 16(4) are not sufficiently severe to act as any form of deterrent.
- Judicial Challenge - The provisions in the 1999 Act allowing two months for issuing judicial review proceedings should be revised to provide for a reduced period of one month. The need to progress offshore generation and interconnection requires such projects to be treated with the utmost urgency as mandated by the latest EU Regulations. Such reviews should also be prioritised in the same way as certain planning decisions are currently treated.
- Where interconnectors are not determined to be part of the transmission system, e.g., a merchant project, the extent to which all other obligations must be adhered to must be clearly set out, for example licences, access etc.

4. Brexit and future EU-UK Interconnection

Questions:

To what extent will the development of future interconnection between Ireland and Great Britain be impacted by the removal of Great Britain from European Market Coupling?

With the withdrawal of Great Britain from the EU on 1 January 2021, the SEM region no longer has a Day-ahead market with Great Britain and the broader EU markets. The intraday trading facilities between SEM and Great Britain are still in effect.

There is a full roadmap of what is required to re-establish this and to establish a full suite of trading arrangements with the EU in the 'Shaping our Electricity Future Roadmap'. Clear roles and responsibilities need to be defined amongst the Departments and Agencies.

Trade and Cooperation Agreement & further Regulation

The removal of Great Britain from the European energy market has serious implications for future interconnection between Ireland and Great Britain and may cause inefficiencies and friction unless significant and urgent steps are taken to put in place comprehensive memoranda and arrangements that will enable Britain's electricity and interconnection systems to resemble and interface with those established in the EU. To that end, cross-border electricity trading between Great Britain and the EU is now subject to the provisions of the Trade and Cooperation Agreement (the "TCA")⁴ and new detailed arrangements are being developed together as required by the TCA, including a multiparty agreement relating to compensation for the costs of hosting cross-border flows of electricity between transmission system operators participating in the inter transmission system operator compensation mechanism established by Regulation 838 /2010.

The arrangements to be put in place must take into account and address a raft of other European regulations and structures which are integral to the EU's internal electricity market. For example, Regulation 2015/1222 which establishes the single day-ahead and intraday coupling of the EU's electricity markets, also provides for common requirements for the designation of nominated electricity market operators (NEMOs) in market coupling. Great Britain no longer participates in the single allocation platform for forward interconnection capacity, the European balancing platforms and the single day-ahead and intraday and UK based NEMOs are third country operators and no longer entitled to carry out market coupling services in the EU.

Projects of Mutual Interest

Achieving designation as a Project of Mutual Interest ("PMI"), being the alternative for third countries to the intra-EU concept of a Project of Common Interest ("PCI"), is fundamentally important for proposed interconnectors between Ireland and the UK, which are now provided for under the recently adopted Trans-European Networks for Energy Regulation 2022/869 (the "Ten – E Regulation"). One would expect the UK, a third country, would meet the criteria set out in Article 4(2) of the TEN-E Regulation although it is not without risk and consequently, some certainty that both countries will work together to ensure that such criteria will be met should be secured. For example, criteria 2(e)(i) and criteria 2(f) of Article 4 may cause difficulty. Criteria 2(e)(i) requires a third country wishing to benefit from being a PMI to have a high level of convergence and legal enforcement mechanisms to support the policy objectives of the Union including a well-functioning internal energy market. It is not clear that Great Britain have enforcement

⁴ EU – UK Trade and Cooperation Agreement

mechanisms that might support the well-functioning of the EU internal energy market. Secondly, Great Britain would also have to support the priority status of the project as set out in the Ten-E Regulation regarding timelines and accelerated implementation as applied to PCIs. Thus, whilst many barriers can be removed there would need to be considerable political will by the British government to facilitate meeting such criteria.

Fortunately, any projects that had attained the status of PCI prior to Brexit maintain that status provided they meet the selection criteria referred to previously.

We have set out below examples of other matters to be taken into account when considering the impact of Brexit on interconnection between Ireland and Great Britain:

- Article 3(6) of Ten-E Regulation differentiates between PCIs and PMIs by stating that PMIs unlike PCIs do not benefit by being part of a regional investment plan under Article 34 of Reg 2019/943 or the national 10-year network development plan under Article 51 of Directive 2019/944 or other national infrastructure plans, as appropriate, and it states that the PCI shall be conferred the highest possible priority within each of those plans.
- PMIs will need to be addressed in Irish legislation and there may be a need to adopt domestic legislation to ensure PMIs are treated in Ireland with the same priority status as PCIs, including providing for clear, efficient and streamlined permitting procedures, available funding opportunities and adopting regulatory mechanisms to facilitate their implementation.
- Whilst PMIs are considered eligible for funding under the Connection Europe Facility Regulation (the “**CEF Regulation**”)⁵, it may be more difficult to satisfy all of the relevant criteria when interconnecting with projects from third countries and proving that the project contributes to the Union’s overall energy and climate policy objectives.
- There may also be practical difficulties insofar as that the Ten-E Regulation establishes energy infrastructure priority corridors and regional lists of projects with regional groups under Article 3. These structures are put in place to support for instance north-south electricity interconnection and north seas offshore grids, including in the Celtic Sea and the English Channel. These priority corridors are of significant importance, however the Ten-E Regulation provides that the decision-making power within the regional groups is restricted to Member States and the EU Commission. This provision effectively leaves no role for third countries, such as Great Britain, to participate.

Resourcing will be required to meet the timelines and a robust process is required to be put in place for transparency on how PMI projects are dealt with. We would suggest stakeholder dialogue with industry in a ‘without prejudice’ forum would be beneficial to address the issues raised. We note that similar forums/workshops have been put in place in other areas, such as for Demand Customer/Large Energy Users, where members of the various Government bodies and entities attend together with Large Energy Users to discuss changes required and the optimal solutions for all. These forums should be interactive, where all attendees input into the agenda and discuss solutions, rather than a unilateral presentation.

A Sector deal type arrangement similar to the process employed in the UK to advance offshore wind would be beneficial to helping Irish policy in this, and other areas. The UK Government also committed itself to work with the EU under the EU UK TCA to establish a specific forum for technical discussions between the

⁵ Regulation 2021/1153

European Commission, Ministries and public authorities of the Member States, TSOs and the offshore energy industry in relation to offshore grid development and large renewable energy potential of the North Seas region. This UK consultation process and its interim conclusions only re-emphasise the great urgency of commencing immediate and deep dialogue between the relevant Irish Government entities, the CRU, the offshore industry, the UK relevant regulatory bodies and ministries and the EU Commission.

To what extent will clarity over the future energy relationship between the EU and UK be necessary in order to provide for future interconnection between Ireland and Great Britain?

As discussed above, immediate certainty and clarity of the treatment of interconnectors linking Ireland and Great Britain, not alone in respect of regulation but also funding, is critical to enable developers to invest and to secure funding for the development of such interconnectors. Any uncertainty or potential risks will hinder their development, increase costs, and delay development.

Depending upon the agreed outcome of interconnectors between Great Britain and Ireland, a decision may need to be made as to whether or not the impact of Brexit and the decoupling of the markets may result in such interconnectors requiring additional support, for example an additional market inefficiency fee which is an additional transmission cost resulting from friction induced by decoupling.

To encourage the development of further interconnection with Great Britain, all preferential treatment afforded to PCIs will need to be mirrored for PMIs, such as streamlined permitting procedures including grid connection assessment applications under Section 34 of the 1999 Act, funding opportunities, and sliding scale mechanisms for connection charges and various other regulatory mechanisms put in place to facilitate their implementation.

5. The Role of the CRU

Questions:

Are the technical criteria employed by the CRU in assessing interconnector development applications appropriate?

Yes, we believe the technical criteria is suitable.

What of the above three regulatory models offers the most viable route for development of future interconnection between Ireland and neighbouring countries?

The most viable model in our opinion is the cap and floor model, or similar approach, as this provides a combination of stability and opportunity whilst sharing risk between developers and consumers. It has been shown that private developers, incentivised in the right way, can bring innovation and cost reduction to projects.

Building a new interconnector can be costly for Irish consumers, depending on the way it is regulated and funded. It is clear to us that the most appropriate regulatory model for the delivery of future interconnection is the partly regulated or cap and floor model. To date this is the model chosen for the Greenlink Interconnector and for most of Ofgem interconnectors to the continent. Whilst we appreciate the role of the CRU in determining the appropriate regulatory treatment of a proposed interconnector on

a case-by-case basis and the assessment criteria employed, given the fact that the fully regulated model passes 100% of the colossal investment costs and the risk to the consumer, we believe that on balance the cap and floor model incentivises development by limiting developer's exposure to electricity market price risk whilst also reducing the risk to consumer. This regime gives developers an incentive to identify efficient investment opportunities which are in consumers' interest. It also provides a level of certainty to developers without providing full consumer underwriting. The cap and floor model gives protection to the investors and developers which will cover a worst-case scenario which is important in an uncertain world and will also provide an attractive but adequate rate of return with the cap. In addition, the potential for developers to request variations to the cap and floor model where the developer can demonstrate that these are in the interests of consumers as permitted by Ofgem increases the flexibility for developers and ensures that projects can go ahead and not be delayed and therefore should be permitted. For example, Greenlink requested such variation from Ofgem in order to broaden the sources of finance available to it (e.g. , a non-recourse project finance solution).

Ireland is behind on its interconnection target, which is partly exacerbated by Brexit and the exclusion of Great Britain interconnection from the new 15% target. In addition, Ireland is more isolated than the average EU system and therefore from a security of supply perspective, merits an even higher interconnection target. This missed target of the State only highlights the need to incentivise independent developers to deliver interconnection by offering the cap and floor approach. Clear and transparent rules around costs must be in place in order to accelerate investment in interconnectors in Ireland.

We believe that the regulatory treatment of interconnectors will become of even greater significance with more complex interconnection, such as hybrid interconnectors. The complexities are going to be very considerable whether joining with a Brexit Great Britain or to Europe and the application under the CBA of benefits will not be straightforward. Thus, for reasons of creating greater competition and freedom for the private sector to propose innovative solutions in a complex world, we believe the fully regulated approach will slow down development and discourage innovation. In addition, there is a possibility the developers will be left with currency risk and rate of interest risk as well of course with the greatest part of the construction risk.

We also do not favour the pure merchant option, which is exceptional in Europe, as the interconnector is fully reliant on its congestion revenues and bears all the risks of not being able to recover its investment. It is useful to be reminded that when the assessment of the regulatory treatment of the East-West Interconnector was carried out, the view at that stage was that the financing and risk would be too great for the private sector to bear in delivering the asset. Whilst familiarity with interconnectors, both by the developer and the financing community may have increased, the complexity and the risks have not decreased. Once again, the complexities because of the consequences of Brexit are multiplied and at least will remain so until full cooperation is achieved with Great Britain. Attempting to finance an interconnector on a merchant basis would likely prove extremely challenging. In the case of merchant projects, it is unclear whether the tests to be applied by the CRU in determining applications for Authorisations to Construct and licences will be any different or weigh public interest etc., any differently.

In summary, the cap and floor model ensures a sharing of risk between developers and Irish consumers or consumers of third countries or EU member states with whom we connect. It also provides the kind of flexibility that would be needed in the more complex world of hybrid interconnection. It provides developers with a stable financing framework while reducing the need for financial support, and at the same time encouraging interested investors with appropriate incentives and financial mechanisms.

The question remains as to whether or not the regulatory mechanism should be applicable to all interconnectors rather than the CRU making such determination on a case-by-case basis. Providing for one single regulatory model would ensure that all future interconnectors are competing on a level playing field.

6. Hybrid Interconnection

Questions:

To what extent can dual purpose hybrid interconnectors contribute to Ireland's post 2030 climate and energy objectives?

Dual purpose interconnectors have the ability to unlock offshore wind capacity and optimise offshore network development. Current radial connections for offshore wind farms are sized for full power output but operate at best around 50% capacity factor, leaving the remainder of capacity available for cross border trade in a dual-purpose configuration. Hybrid interconnection is a key enabler in the development of pan-European offshore networks allowing transfer of power from renewable rich areas such as Ireland to markets in continental Europe. As such, an assessment for hybrid interconnection could be included in the technical assessment criteria of each project.

However, recent experience in Ireland of low interconnector support (with the GB system experiencing similar capacity challenges) means that care must be taken in assumptions of how interconnectors can support energy and decarbonisation objectives. Especially in situations where both jurisdictions rely on each other at the same time. Interconnectors require a plan led approach where resource adequacy is considered over a long period of time. If this is considered at a European system level rather than a single TSO level then robust opportunities may be identified.

What is the appropriate policy and regulatory framework to provide for development and operation of dual-purpose hybrid interconnectors?

The current legal and regulatory regime does not adequately facilitate hybrid interconnectors. Revising all relevant changes to be made to include hybrid interconnectors into the relevant legal and regulatory regime will be extremely complex and require detailed analysis of a number of related policies and rules at both national and European level, such as third-party access, unbundling, market dispatch, cross-border trade to facilitate the use of such hybrid projects. In addition, any such analysis will need to consider how hybrid interconnectors will be facilitated in the Enduring Regime that will take a more strategic approach to windfarm development and will consider the offshore transmission system holistically with the onshore network.

Hybrid interconnectors, which serve the dual functionality of electricity interconnectors and connecting renewable offshore generation projects, are likely to incur higher risks than comparable onshore infrastructure projects or interconnectors generally, due to their intrinsic connection to generation assets which brings regulatory risks, financing risks, and markets risks. Therefore, a clear and transparent regulatory framework is required to be put in place to encourage and support the development of hybrid interconnector projects.

In considering the appropriate framework and the potential development of meshed grids, other factors to consider include whether the delegation of TSO tasks should be made to one lead TSO (including bidding zone management and operational security) or whether the creation of an ISO could be an

efficient and strategic regional initiative to ensure optimal planning and operation of the offshore grid. Alternatively multilateral governance arrangements setting out a clear allocation of tasks and supervision, agreed by the Member States, NRAs and TSOs concerned could also be made under existing legislation.

Another consideration is the potential differing market arrangements which may or may not be executed for offshore wind and its implications for hybrid interconnectors. Establishing an offshore bidding zone may be a suitable way to integrate hybrid projects into the electricity system. In the short term, an offshore bidding zone ensures that electricity can flow to where it is most needed, ensuring that offshore renewable energy contributes to regional security of supply. In the medium to longer term, they also provide price signals to incentivise the development of storage and other offshore demand facilities.

It is crucial that frameworks are determined through bilateral discussion with other jurisdictions (GB and France) to agree together rather than working in isolation, which may only lead to delays, conflicts or other issues which can hinder development.

What if any amendments to national legislation may be necessary to provide for the above? Should hybrid interconnectors be considered as new electricity market infrastructure, separate from conventional point to point interconnectors?

Hybrid interconnectors can develop from offshore transmission or from interconnectors. We believe that the infrastructure should be treated based on its primary or main use. In order to determine the primary use there needs to be a clear set of definitions regarding the separate elements of the system and how these are classified, licenced, funded, and incentivised.

At the simplest level, it must be determined whether hybrid interconnectors should be treated differently to other interconnectors under the national legislation. If so, the 1999 Act, amongst others, will need to be amended to include hybrid interconnectors.

Mechanisms will need to be included for the different elements of hybrid interconnectors, such as licensing, funding and ownership to interact under the existing regulatory regime. The CRU, for example, will require power to grant hybrid licensing and determine their regulatory treatment, funding etc.

The current regime is too restrictive to maximise the benefits of hybrid interconnectors and any amendments must give hybrid interconnectors the necessary flexibility they need.

Many of the regulatory barriers discussed below (e.g., rules relating to priority dispatch, third-party access, curtailment) will have implication at national level also and will require amendments at national level to facilitate hybrid projects.

Unbundling rules, as applicable since the Third Energy Package 2009, separating electricity transmission from electricity production will need to be taken into account.

Given the significant regulatory barriers referred to below and the uncertainty as to the exact nature of hybrid interconnectors being considered, it is somewhat premature to focus on amendments required to national legislation at this stage.

What are the principal barriers in existing EU electricity market rules, most notably the electricity market directive and electricity market regulation, to development and operation of hybrid interconnectors.

It has been acknowledged by the European Commission⁶ that the electricity market rules were not designed with the specific needs of offshore hybrid projects in mind. Complex areas such as market dispatch, unbundling, cross-border electricity trading and bidding zone configuration must all be considered in the context of regulating for hybrid interconnectors. In addition, rules on congestion income and grid connection Network Code will need to be reviewed to see if adaptations are required to complement hybrid projects.

Whilst the EU Electricity Market Directive and Electricity Market Regulation are drafted in broad terms, there are some provisions contained therein which may prohibit the development and operation of hybrid interconnections, particularly in relation to interconnection with third countries and the consideration of such projects forming part of the transmission system if they are being constructed through private investment or semi – private investment. In particular, the EU Electricity Market Directive and Electricity Market Regulation will need to be revised in order to define hybrid interconnectors and distinguish them from the type of interconnectors currently being planned for Ireland.

We have set out below some examples of definitions and provisions that in their current form may hinder/prohibit the progression of hybrid interconnectors. In many instances these provisions are touching on wider concepts which will need to be considered and adapted to cater for hybrid interconnectors:

Electricity Market Directive⁷

- Definitions such as ‘Interconnector’, ‘interconnected system’, may be broad enough to include hybrid interconnector, however for clarity and certainty these terms should be adjusted to specifically cater for hybrid interconnectors which connect offshore wind in addition to connecting electricity systems. These may result in a distinction being made between ‘direct interconnectors’ and ‘indirect interconnectors’.
- Article 1.34 defines ‘Transmission’ and may need to be revisited to reflect the hybrid model where the high voltage systems interconnect two offshore wind generators but that cable may not need to be part of the transmission system.
- Article 3.5 requires Ireland to ensure that Great Britain, for example, when operating within the internal market for electricity, complies with applicable Union and national law including that concerning environmental and safety policy. The extent of this obligation would need to be set out given the likelihood of interconnection with third countries, such as Great Britain.
- The role of the TSO generally in respect of hybrid interconnectors not forming part of the transmission system will need to be considered. Articles such as Article 40 (1)(d) refers to the TSO

⁶ Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions an EU strategy to harness the potential of offshore renewable energy for a climate neutral future, COM (2020) 741

⁷ Directive 2019/944

management electricity flows on the system which takes into account the exchanges with other interconnected systems. A distinction may be required to be made between interconnectors which form part of the transmission system and interconnectors which do not.

- The unbundling requirements of generation assets and transmission systems must be considered in the context of hybrid projects. Article 43 should be reviewed in this context although we note that a derogation to this is provided subject to compliance with certain criteria.
- The ownership of hybrid interconnectors will need to be addressed. Article 46 (1)(a) refers to the TSO as the owner of assets that are necessary for the activity of electricity transmission. Transmission has been defined to mean the transport of electricity on the extra high-voltage and high-voltage interconnected system with a view to its delivery to final customers or to distributors. Therefore, this aspect of Article 46 could be reviewed to differentiate interconnectors owned by the TSO and those which are not, with reference being made to further distinguish between direct and indirect interconnectors.
- On a related topic, third-party access (Article 6) and how this would interact with hybrid interconnectors will need to be considered. In particular in respect of hybrid interconnectors not forming part of the transmission system. Matters such as the nature of access , i.e., a long-term contract with a connected windfarm, the charging methodology, and treatment of different users will require changes.
- In light of the complexities of a mesh or hybrid offshore transmission system it would appear to us that the 10-year horizon is significantly insufficient. The current Irish ten-year network development plans provide little or no guidance on the investments required or strategy involved in developing hybrid interconnectors and this is a major lacuna. Article 51(7) allows for the TSO to sit on investments under the 10-year plan for 3 years without making an investment. Only after this time can the CRU then either require the TSO to execute the investment or invite tenders for the investment.

Electricity Market Regulation⁸

Similar principles as set out above will also need to be addressed. Other examples include:

- Under EU legislation, Article 16(8) requires that at least 70% of the total interconnected capacity must be made available for cross border trade. In the case of hybrid interconnector offering 70% of the physical capacity for cross-border trade could lead to significant curtailment or operational costs relating to the connecting offshore wind. This will need to be amended in the context of hybrid interconnectors. We note that the UK domestic regulations of already removed the 70% cap.
- Article 63 provides an exemption to new interconnections where they comply with specified criteria, however this is only on the basis that they are direct current interconnectors. This derogation may also apply to alternating current interconnectors in exception cases. This should be revised to factor in whether or not hybrid interconnectors fall under this exemption.

⁸ Regulation (EU) 2019/943