

EirGrid Response to the DECC Electricity Interconnection Policy Consultation

9th September 2022



1. Introduction

EirGrid, the licensed Transmission System Operator (**TSO**) for Ireland, welcomes this consultation and the opportunity to respond to the Electricity Interconnection Policy Consultation as prepared by the Department of the Environment, Climate & Communications (**DECC**). EirGrid is obliged per Condition 3 of its TSO Licence¹ to “operate and ensure the maintenance of, and if necessary, develop a safe, secure, reliable, economical, and efficient electricity transmission system”. Per Condition 9 of its License and Regulation 8 of SI 445 (2000), the TSO has a statutory obligation to “explore and develop opportunities for further interconnection”.

Interconnection in Ireland has delivered significant benefits to the Single Electricity Market (**SEM**) and in turn consumers, with these benefits due to increase further with the connection of the Greenlink and Celtic Interconnectors in the coming years.

EirGrid recognises the significant ambition to harness Ireland’s Offshore Renewable Energy (**ORE**) potential and considers additional interconnection development to be a key enabler to maximising the benefit of **ORE** and facilitating its development.

ORE will play a central role in meeting Ireland’s energy needs in this decade and beyond. EirGrid is fully supportive of the phased transition to an Enduring Regime as envisaged in the Government’s Policy Statement on Grid Development for Offshore Wind². The future development of a plan-led regime will involve the optimisation of an offshore network. EirGrid expects the development of interconnection and an optimised offshore network will be strongly coupled in the future.

The Ten Year Network Development Plan³ (**TYNDP**), published by the European Network of Transmission System Operators for Electricity (**ENTSO-E**) every two years, provides cost benefit analysis of network infrastructure projects including future interconnection projects. EirGrid actively participates in the studies underpinning the TYNDP to investigate the potential impacts of new interconnection using a number of indicators such as facilitation of renewables and emissions reduction. We believe our active involvement in this process ensures Ireland remains abreast of potential further interconnection opportunities.

¹ 2017 Version - [TRANSMISSION SYSTEM OPERATOR LICENCE \(cru.ie\)](#)

² [May 2021]- [Government’s Policy Statement on Grid Development for Offshore Wind](#)

³ April 2022- [Ten-Year Network Development Plan 2022 Scenario Report](#)

⁴ June 2019-EU Electricity Interconnection Targets

EirGrid would welcome engagement with DECC in relation to the matters set out in this consultation response in due course.

2. Response to Consultation Questions

Ireland's increased energy ambition

Q.1.a. 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?

Comments

As Ireland moves towards very high levels of renewable penetration, the potential for over-supply (when the total available generation exceeds system demand plus interconnector export flows) is expected to be significant. Preliminary analysis by EirGrid as part of the next iteration of Shaping Our Electricity Future indicates further interconnection can be a significant mitigant for this. Conversely, during periods of low availability of renewable sourced generation, increased interconnection to jurisdictions with diverse generation portfolios and demand profiles would be advantageous in enhancing Ireland's security of supply. This work is still underway but, undoubtedly further electrical interconnection is a key component in facilitating the development of Ireland's onshore renewables and significant ORE potential in addition to increased national electricity demand, storage and export via alternative energy vectors e.g. Hydrogen.

Government Policy provides a framework against which agencies of the State and wider industries consider further developments in Ireland. In the context of the Government's clear ambitions as set out in the Climate Action and Low Carbon Development (Amendment) Act 2021, the Climate Action Plan and Policy Statement on Grid Development for Offshore Wind, we believe it would be very beneficial for Government to be clear on its commitment regarding the delivery of further interconnection capacity, which EirGrid considers to be pivotal in the achievement of Ireland's energy objectives.

Q.1.b. 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?

Comments:

EirGrid supports the establishment of minimum interconnection targets. We note that the EU has set an interconnection target³ of at least 15% by 2030 to encourage EU countries to interconnect their installed electricity production capacity. This means that by 2030 each country should have interconnection in place that allows at least 15% of the electricity produced on its territory to be transported across its borders to neighbouring countries. However, under the existing European Electricity market arrangements, the business case for interconnection is largely dependent on the difference in marginal cost between markets and the cost associated with the infrastructure investment. Therefore, the business case is strongly coupled to forecast electricity generation and demand portfolios over a specific time horizon. In the future, it is possible that EU market arrangements may need to evolve to complement a power system dominated by renewables, which will require flexible operation of interconnectors to efficiently accommodate changing system dynamics.

In setting any target, consideration must be given to ensuring security of supply in the context of forecasted electricity generation against demand requirements. This is in addition to the climate and energy targets within the State, including the 2030 and 2050 climate targets outlined in the Climate Action and Low Carbon Development (Amendment) Act 2021 and the up to 80% renewable electricity target set in the Climate Action Plan 2021 while putting in perspective the notable timeframes required to bring an interconnector from inception to completion.

Q.1.c. Regarding the location of future interconnection, should priority be given to developing further interconnection with Great Britain or the EU IEM, or both?

Comments:

Opportunities for further interconnection should be considered with all markets where there is an appropriate business case that provides suitable socio-economic, system security and renewable integration benefits. This should consider further interconnection to both Great Britain and the European Union Internal Energy Market (EU IEM).

³ https://energy.ec.europa.eu/topics/infrastructure/electricity-interconnection-targets_en#eu-electricity-interconnection-target

However, undoubtedly, diversity in interconnection points to different electricity systems is an important consideration. For example, there is a limit to the benefits of multiple interconnectors between the same electricity systems where there may be a high coincidence of system security constraints and / or weather patterns which are very similar.

As high voltage direct current (HVDC) technology develops in the future, the diversification of interconnection to electricity markets which are geographically more distant could become viable. The feasibility of this could be considered as part of long-term development of interconnection in Ireland.

Q.1.d. 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?

Comments:

Increased interconnection capacity has many benefits for an isolated island power system such as the island of Ireland. The primary benefits are system security and access to increased arbitrage opportunities with other markets. These benefits have been shown to be significant in studies of future interconnection projects that we have carried out for the Ten-Year Network Development Plan (TYNDP) process.

The SEM, Irish and GB electricity systems have seen measured benefits from the East West Interconnector (EWIC) since its energisation in 2012. These include increased socio-economic welfare, supporting the development of renewable electricity sources in Ireland, increased system security and provision of services to support the electricity system. The EWIC also provides a mechanism to exchange cross border services with National Grid ESO for system security reasons including trading for system security and facilitation of renewables and providing blackstart in event of a total system blackout.

The Greenlink Interconnector is due to connect to the system in 2024. As noted in the CRU's Greenlink Determination, the Greenlink Interconnector has the potential to provide a net benefit to Irish consumers and Ireland as a whole.

The Celtic Interconnector will bring further benefits to the Irish electricity system and its users particularly in relation to security of supply as it provides access not only to an additional market in France but re-integration of the Irish electricity system with the pan European market and with a direct link with RTE, the French TSO, for the provision of cross border services.

The increase in interconnection capacity afforded by both the Greenlink and Celtic interconnectors will also directly support increased levels of renewable penetration on the system and mitigate the need to reduce available renewable generation on the system.

Studies carried out as part of the TYNDP 2022 (see footnote 3 for hyperlink), by EirGrid and ENTSO-E colleagues, cover various scenarios, and calculate these indicators for Celtic, Greenlink and other proposed interconnectors for SEM.

The scenarios depict several ways in which the energy system could evolve and as such it is recommended that with technology improvements, all viable opportunities to provide new or increased interconnection to other markets or geographical arrangements should be considered, to support diversity, increase resource flexibility, mitigate variability and further enhance security of supply arrangements for Ireland and the SEM.

As stated previously, as Ireland moves towards very high levels of renewables penetration, the potential for curtailment is expected to be significant. Preliminary analysis by EirGrid as part of the next iteration of Shaping Our Electricity Future indicates further interconnection can be a significant mitigant for this. This work is still underway but, undoubtedly further electrical interconnection is a key component in facilitating the development of Ireland's decarbonisation ambitions.

National Legislation

Q.2.a. Is the existing legislative framework contained in the 1999 Act appropriate to secure future development of interconnector capacity?

Comments:

The existing legislative framework, in the context of Ireland's current interconnector policy, is delivering both TSO and private sector investment in interconnectors.

It is noted however that Interconnectors do not appear to be separately defined in the ERA, but since the amendments in the ERA were made by Statutory Instrument under the European Communities Act³, it is reasonable to assume that it must have the same definition as in the Directive 2019/944/EC, namely 'equipment used to link electricity systems'.

Whether the definition of "interconnectors" includes multipurpose interconnectors is a question of interpretation. As long as the multipurpose interconnector satisfies this definition, then it is open to TSOs and third parties to develop such assets in line with the extant legislative framework in place.

However, in the absence of an updated interconnection policy, it is difficult to ascertain if there are any unintended blockers in the existing legislation or enablers required to be added, particularly with regard to the future development of hybrid / multipurpose interconnectors. On conclusion of the DECC's interconnector consultation process and finalisation of any updated interconnector policy, we would be better placed to comment as to whether any changes are required.

Q.2.b. What amendments, if any, do you consider necessary to the 1999 Act?

Please see EirGrid's response to the previous question Q.2.a above.

Brexit and future EU-UK interconnection

Q.3.a. 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?

Q.3.b. 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?

Comments:

The High Level Design (HLD) of SEM included implicit allocation of interconnector capacity within the pan European Single Day Ahead Coupling (SDAC) market. Post Brexit, the decoupling of the SEM GB interconnector assets from SDAC clearly introduces a significant change to the allocation of interconnector capacity within the market; however, market participants have developed trading strategies that allow the intraday auctions to allocate cross border flows based on the price spread between the SEM and GB markets. At present, interim challenges remain with the implementation of the proposed use of Multi Regional Loose Volume Coupling (MRLVC) in accordance with the Trade and Cooperation Agreement (TCA) between UK and EU. Further challenges will arise when the SEM re-joins the SDAC with the commissioning of the Celtic interconnector in 2026.

While these delays to MRLVC impact the existing efficiency of cross border trade between SEM and GB, the development of future investment in interconnection in the longer term is primarily driven by likely price arbitrage between regions rather than market design. The recent completion of financial closure on the NeuConnect interconnector linking Germany and GB for example demonstrates that longer term signals for investors in cross border interconnection development remain strong and that existing market integration challenges do not offset future opportunities. As both UK and EU develop emerging energy policies to support net zero carbon objectives and offshore development across both regions, it is possible that investment opportunities in interconnection will emerge.

EirGrid notes however that as European and UK energy market reforms continue to evolve in support of net zero target objectives the existing design of the SEM will also require further development. The most recent consultation by the Department for Business, Energy and Industrial Strategy (BEIS) in the UK of a Review of Energy Market Arrangements (REMA)⁴ and on-going European energy market reform developments will have an influence on how interconnectors operate between both regions and consequently on the future emerging design of SEM.

The role of the CRU

Q.4.a. Are the technical criteria employed by the CRU in assessing interconnector development applications appropriate?

Comments:

The CRU employs a suite of criteria in assessing interconnector development applications, with technical criteria a sub-set of same⁵. In terms of Ireland's current interconnector policy and objectives these extant criteria are appropriate though not without their challenges.

EirGrid proposes that these criteria will however need to be reviewed and considered in the context of the decarbonisation agenda, the conclusion of DECC's interconnector consultation process and finalisation of any updated interconnector policy and with reference to the development of hybrid/multipurpose interconnectors.

Q.4.b. What of the above three regulatory models offers the most viable route for development of future interconnection between Ireland and neighbouring countries?

Comments:

The CRU previously noted that “[] the right regulatory approach would depend on the circumstances of each interconnector being considered. The right approach may vary depending on legal requirements (e.g. as per the EU Third Package), the markets being connected, the policy environment at the time of investment, and the availability of efficient financing at the time of investment.”⁶

It is also noted that applying a different regulatory approach on one side of a interconnector to that in place, or proposed to be in place, at the other side could result in perverse incentives on the operation

⁴ UK launches biggest electricity market reform in a generation - GOV.UK (www.gov.uk)

⁵ <https://www.cru.ie/wp-content/uploads/2018/09/CRU18221-Policy-for-Electricity-Interconnectors-Assessment-Criteria-for-Electricity-Interconnection-Applications-Decision-Paper.pdf>

⁶ CRU Consultation Paper on Greenlink CRU/18/119 - 18 June 2018

of the link and as such the right approach needs to be cognisant of the arrangements applicable at each end.

EirGrid concurs with the CRU's view that the right regulatory approach would depend on the circumstances of each interconnector being considered. It is not a case that one particular regulatory model offers the most viable route for development.

The co-operation frameworks, within which the European transmission system operators operate interconnectors with their neighbours, differ in terms of technical, political and market rules from those in third countries (i.e. countries outside of the EU). As noted by the EU Expert Group on Interconnection, interconnectors with third countries play different roles for the EU as a whole and the EU member's national electricity systems by enabling electricity trade and thus ensuring security of supply and stability of grids.

As such in considering the appropriate model for any interconnector, where the interconnector is to a Member State, the arrangements must be set against, and consistent with, the wider EU framework, including the EU Network Code framework. This is essential to ensure that such an interconnector is positioned to align with, and maximise the further integration of, the European Market.

While no one size fit all in terms of the appropriate funding model, EirGrid is of the view that a wider scope review of how these models can be developed and structured to support more efficient operation of interconnectors is necessary. The focus of the models to date has been to provide sufficient certainty to support the financing of these significant investments. However the development of a high-RES, highly decentralized, flexible system by 2030 and beyond will introduce more cost and complexity both in terms of quantifying investment criteria and in terms of capturing the potential wider impact of this investment on consumers. EirGrid suggests that more extensible regulatory frameworks that provide investors with the necessary surety to enable such large scale investments to be developed and delivered while also providing system operators more flexibility in terms of the practical operational use of interconnectors over their asset lifespan to the ultimate benefit of consumers requires further consideration.

Hybrid Interconnection

Q.5.a. To what extent can dual purpose hybrid interconnectors contribute to Ireland's post 2030 climate and energy objectives?

Comments:

A revision of the Trans-European Networks for Energy (TEN-E) Regulation⁷ was published on 30 May 2022, aiming to improve the security of supply, market integration, competition and sustainability by supporting the modernisation of cross-border energy infrastructure aligned to objectives of the EU Green Deal. Among other inclusions, the TEN-E Regulation identifies priority corridors which allow for investment in electricity, gas, and oil infrastructure. This includes offshore grid corridors of which Ireland is a member of two.

Under the new TEN-E Regulation, the European Commission will adopt a list of Projects of Common Interest and Mutual Interest and listed projects will be required to meet mandatory sustainability criteria and be implemented in a way that does not hinder the achievement of environmental objectives.

Through the TEN-E Regulation, ENTSO-E, of whom EirGrid is a member, has been legally mandated to develop high-level offshore network development plans based on non-binding ORE generation targets for Member States. For Ireland, this has the potential to indicate a significant increase in levels of cross-border interconnection. Hybrid and multipurpose interconnectors are expected to play a significant role in this and future energy scenarios for Ireland post-2030 may seek to employ hybrid and multipurpose solutions as a means for efficient cross-border interconnection.

⁷ TEN-E Regulation 2022, available at <http://data.europa.eu/eli/reg/2022/869/oj>

Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013

Q.5.b. What is the appropriate policy and regulatory framework to provide for development and operation of dual-purpose hybrid interconnectors?

Comments:

The interface between offshore transmission and cross-border interconnection functions via hybrid / multipurpose interconnectors has several potential benefits when compared to the counterfactual point to point deployment method. These include a reduction in landfall points, cost reduction (CAPEX and OPEX), reduced curtailment and increased infrastructure utilisation rates.

EirGrid's view is that hybrid / multipurpose interconnectors will play a significant role in a future offshore network development. However, there are a number of market, regulatory and legal challenges which will need to be addressed including but not limited to establishing market/ trading arrangements, revenue models, licence conditions for both the owner/operator of such an interconnector(s) but also of the offshore and or offshore system operator with whom they would interface.

There is extensive work needed nationally to address the suite of challenges and enable the development of hybrid / multipurpose interconnector projects in Ireland.

Q.5.c. 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?

Comments:

As noted above Interconnectors do not appear to be defined in the ERA, but since the amendments in the ERA were made by SI under the European Communities Act, it is reasonable to assume that it must have the same definition as in the Directive 2019/944/EC, namely 'equipment used to link electricity systems'. Whether the definition of "interconnectors" includes multipurpose interconnectors is a question of interpretation. As long as the multipurpose interconnector satisfies this definition then it is open to TSOs and third parties to develop such assets in line with the extant legislative framework in place.

In regard to considering if hybrid/multipurpose interconnectors are new infrastructure separate from conventional point to point interconnectors, it would be important to align with the approach at a European level. Distinguishing between the two forms of interconnector particularly if no distinction is seen at European level and in the rules and requirements set out for the development and operation

of interconnectors in European Directive and Regulation, would present challenges to the development of hybrid/multipurpose interconnectors.

However, in the absence of an updated policy, it is difficult to ascertain if there are any unintended blockers in the existing legislation or enablers required to be added, particularly with regard to the future development of hybrid / multipurpose interconnectors. On conclusion of the DECC's interconnector consultation process and finalisation of any updated interconnector policy, we would be better placed to comment as to whether any changes are required.

Q.5.c. 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?

Comments:

It is noted that the European Parliament resolution of 16 February 2022 on a European strategy for offshore renewable energy (2021/2012(INI)) stated that “30. [the European Parliament] Strongly believes that the EU and the Member States should support research into and the development of multipurpose interconnectors (MPIs); stresses the need to create a long-term framework for MPIs that can efficiently integrate the offshore and onshore markets; calls on the Commission to assist manufacturers of different equipment in developing a common standard that can ensure compatibility and interoperability among interconnectors; highlights that new technologies, such as MPIs, need to be designed, tested, demonstrated and de-risked in order to speed up market entry; calls for suitable framework conditions to be created in order to ensure fast development of these technologies;”⁸

The Electricity Market Directive and Electricity Market Regulation are silent on the concept of hybrid interconnectors as its foundation is the existing European market arrangements based on bidding zones within Member States connected by point to point interconnection. As such, while not being a barrier per se, the Directive and Regulation do not facilitate hybrid interconnectors explicitly. Work is being undertaken at EU level to consider how this technology can be incorporated into the existing framework, using the bidding zone concept from the existing regulations to explore concepts of offshore bidding zones and how these can interact with traditional Member State bidding zones. ENTSO-E has expressed the view that the existing Energy Market Regulation will work for offshore as well as onshore arrangements. As hybrid interconnector projects are developed, careful consideration will need to be given to the offshore bidding zone design and its interactions with onshore bidding

⁸ https://www.europarl.europa.eu/doceo/document/TA-9-2022-0032_EN.html

zones at the connection point. Also, the implications of Article 13(7) need to be taken into account in terms of which system operator is responsible for any compensation that may arise.