



Energy for
generations

ESB Response: Draft National Policy on Electricity Interconnection in Ireland

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Introduction

ESB welcomes the opportunity to respond to the Department of Communications, Climate Action and Environment (DCCAE) consultation on a Draft National Policy on Electricity Interconnection in Ireland. In particular, ESB warmly welcomes the fact that DCCAE will give the Commission for the Regulation of Utilities (CRU) a policy steer in its assessment of new interconnection proposals.

ESB believes that there are a range of possible solutions to meet Ireland's energy policy needs of competitiveness, security of supply and facilitation of wind of which electricity interconnection is one option. We therefore recommend a consideration of alternatives when assessing new interconnector proposals.

In general, ESB agrees with the proposals in the Consultation Paper and sees them as comprehensive. In particular we support the proposal that all costs and characteristics associated with new interconnector proposals are considered by CRU. These should include any consideration of the connecting market, levels of system reinforcement required or any additional system costs driven for example by an increase in single largest infeed costs.

ESB's key points it wishes to make or reinforce are;

- Regarding competitiveness, CRU should adopt a holistic review of the costs and benefits of new interconnection when considering proposals. In particular, CRU should consider the impact on the gas market, on wholesale electricity prices, the impact on the total level of electricity capacity payments and the cost of recovering the electricity infrastructure including reinforcements 'deeper' into the transmission system..
- Regarding security of supply, before a security of supply benefit is monetised, credited to a project and underwritten by electricity customers, it is imperative alternative options be equally considered. This would establish whether these alternative solutions may provide a preferable outcome for Irish customers.
- Regarding facilitation of additional renewables, ESB agrees that interconnection in SEM has helped facilitate increased installed capacity of wind. ESB would urge future consideration of wind facilitation benefits to consider the rapidly changing technological landscape. Specifically, the combination of smart meters and immersion heaters from 2022 onwards will provide significant increased demand potential at times of high wind.
- At this juncture, ESB cannot see that any case should be made to incorporate Brexit as an explicit consideration in the CRU's assessment of new interconnector proposals.

The remainder of the response discusses each of the points above in more detail.

Ensuring Competitiveness through Holistic Assessment

In general, ESB supports the proposals in the Consultation Paper. The evidence requirement for interconnector proposals set out in Section 3 appear sensible and comprehensive. Any project that seeks underwriting by the electricity customer or any project that seeks to connect to and utilise the scarce resource that is connection capacity should provide assurances that their proposals are robust and that the promoter has the wherewithal to implement the project. The Consultation Paper proposals in Section 3 seems to provide a level of stress testing of project proposals which also appears sensible.

The general tenet of ESB's position is that any assessment of new interconnection, in particular where it is being underwritten by consumers must take a holistic view of the entire energy landscape. To this end, ESB believes that the consultation captures many of the key issues that CRU should take into consideration when deciding on future interconnection.

Overall, it would appear that interconnection to date in Ireland (and the Single Electricity Market (SEM)) has been positive. It has provided a link to a much larger market, it has helped to reduce curtailment of wind generation and it has brought a further competitive element to the all-island market.

At the same time, the addition of the East West Interconnector (EWIC) to Ireland's energy infrastructure has undoubtedly had a cost in addition to the benefits alluded to above. This is not at all to cast EWIC in a negative light but is merely a statement of fact. The interconnector itself has a capex and opex cost which is underwritten and paid for by the electricity customer over 20 years. There are other costs too however, costs which can only really be calculated by DCCAE or CRU who centrally hold all of the required information to carry out the calculation.

The key additional cost here would be related to the interaction with the gas market. The addition of EWIC has directly resulted in a reduction in gas transmission capacity bookings. Gas Networks Ireland's (GNI) fixed costs were then spread across fewer gas transmission capacity bookings with resultant higher transmission tariffs for all customer categories (power generation, industrial and commercial and domestics). Gas transmission tariffs in Ireland tend to feed directly into the wholesale electricity price since they represent a marginal cost. Therefore, the addition of EWIC will have had an upward impact on the wholesale electricity price at times; this would need to be considered in the context of the wider market reductions expected by interconnection.

Another aspect of any interconnector proposal assessment is the total risk exposure to the Irish consumer. EWIC was 100% underwritten by the Irish consumers meaning all upside is returned to Ireland but all exposures to downsides are carried also. ESB believes that this should be considered explicitly in any interconnector proposal assessment especially as there likely won't be a prevailing inward flow for future projects. Specifically, ESB would take the view that projects that are only partially underwritten by the Irish consumer should be treated more favourably than projects that are fully underwritten by consumers here.

As discussed above, interconnection has been positive for Ireland to date in particular in reducing levels of wind curtailment. The level of interconnection in Ireland is modest however and ESB contends that the impacts of additional interconnection will tend to have much greater impact than those seen with EWIC. ESB believes that these costs must be considered in a holistic manner which would appear to be in line with the assessment criteria proposed by DCCAE.

Ireland, as a nation has only so much resources to expend on energy infrastructure. It is of course crucial that the right amount of investment is made. If investment is too low, security of supply is threatened as too is investor confidence. But if too much investment is made, then costs for consumers are increased, potentially up to a point where competitiveness is challenged. In light of this, ESB believes that decisions on future interconnection support are significant.

Security of Supply

Interconnectors undoubtedly have a positive impact on security of supply compared to them not being there. The quantification of this security supply benefit must take into account the capacity credited to the interconnection assets and the cost of this compared to other alternatives.

The back-bone of Ireland's electricity security of supply is made up by the natural gas network, the holding of secondary fuels at all gas fired power stations (plus additional primary fuel at oil stations), significant reserves of peat at the peat fired stations (owned by Bord na Mona and ESB) and the holding of significant coal reserves at the Moneypoint power station.

- The gas network is expected to remain a critical element of Ireland's electricity security of supply. This position was recently reinforced by CRU by approving the twinning of the gas pipeline between Cludden and Brighthouse Bay in Scotland.
- In the case of the ESB peat stations and Moneypoint power station, there will be a transition from their current configuration with decisions to be made on these in the coming years with security of supply likely playing into those decisions.

As discussed above, the cost of securing security of supply through interconnection needs to be considered within the wider strategy for Ireland's security of supply. If interconnection can provide security of supply on a like for like basis with for example gas fired generation then perhaps more interconnection is the optimum solution.

However, the decisions from the SEM Committee in 2017 suggest that interconnection should be given a capacity credit of circa 50% of the total capacity of the interconnector; in general this means that a 500MW interconnector is deemed to be worth 250MW as far as security of supply to the electricity system goes. It would appear that this de-rating is based on the combination of historic forced outage information on the SEM interconnectors and the characteristics of the connecting market (GB in the case of current SEM interconnectors). In terms of quantifying the security of supply cost and benefits from interconnection, this is significant.

As discussed earlier, additional interconnection will have a significant impact on the gas network and will ultimately increase the price of gas and electricity (offsetting other price reducing benefits). Each time a gas plant is displaced by the electricity interconnector, the fixed costs of the gas transmission network must be recouped from a smaller user base. If the interconnector genuinely displaced the need for the gas generator then perhaps there is just an issue of revenue recovery and competitiveness for the gas network.

- However given the capacity credit attributable to the interconnector, the gas plant will most likely not be replaced from a security of supply point of view by the interconnector and will instead need to remain on the system. The gas plant will likely have limited opportunity to earn inframarginal rent in the market and so will need to recover a very high proportion of its costs in the capacity market. This can only increase the costs of the capacity remuneration mechanism to customers.
- The gas network operator will still have to make the gas network available for the gas plant in those days the interconnector can't provide reliability but will only get paid for the network on the days the gas plant needs it. In this sense, the per unit cost of using the gas network will rise for all users since less gas flows across the network in aggregate.
- The capacity of the gas infrastructure warrants mention also. Each gas interconnector between Ireland and GB can close to meet all demand for gas in Ireland. A new 500MW electricity interconnector will meet circa 10% of Ireland peak electricity demand.

The Consultation Paper suggests that CRU may consider security of supply and alternatives to interconnection when considering new interconnection proposals. ESB agrees with this and further suggests that it's made a mandatory aspect for consideration for CRU.

Alternative security of supply options to be considered could include gas storage or LNG for example. From an initial assessment, a gas storage or LNG project would provide a far superior security of supply benefit to the entire Irish energy system than a single electricity interconnector would as it will underpin gas supplies to domestic and industrial gas customers and simultaneously underpin supply to Ireland's fleet of gas fired generators. Another potential alternative is to utilise demand side response and peak shifting of load on the electricity system¹.

ESB suggests that before a security of supply benefit is monetised, credited to an interconnector project and underwritten by electricity customers, it is imperative alternative options be equally considered. This would establish whether these alternative solutions may provide a preferable outcome for Irish customers. For example, before CRU apportions a €50m benefit to an interconnector, it should consider whether the same level of security of supply could be provided by another solution for less than the €50m. If a lower cost option, with like for like security of supply benefits, is available then the higher cost benefit should not be credit to the interconnector

¹ In the future, smart metering and well-functioning energy markets in conjunction with technological innovation should allow disruptive service providers to provide a technological solution for customers which coordinates load with lower electricity prices thereby reducing peak power requirement overall and in doing so reducing the amount of peak capacity that the TSO must procure through capacity auctions. Alternatively, these solutions could actually receive capacity revenues for providing the same service. As more and more controllable load connects to the system through the electrification of heat and transport, this option will become more important.

proposals. Further discussion will be required at that time as to whether any security of supply benefit should be apportioned.

Reducing Wind Curtailment

As discussed above, a key positive of interconnection in SEM has been the ability to build out wind generation capacity and to reduce curtailment at the same time. The real time trading (known as counter-trading) engaged in by the EirGrid and SONI has facilitated the export of significant volumes of wind energy to GB thereby reducing the amount of wind curtailment. It is likely that future interconnection would be able to add to this wind export capability. On this point however, ESB would urge that consideration be given to the changing energy and technology landscape in I-SEM before apportioning or monetising a specific benefit to interconnection for reducing curtailment. Consideration should be given to emerging alternatives.

- Ireland has in place a plan to install smart meters in the vast majority of houses over the next eight years. By the end of 2022, it is proposed that 1.25 million smart meters will be installed. Smart meters in conjunction with well-functioning wholesale markets have the potential to be a game changer in terms of demand side response. This would be particularly the case for demand side measures that increase electricity consumption. Almost every house in Ireland has an immersion heater in their hot water cylinder and the average immersion heater size appears to be 3kW. This would suggest that the 1.25 million homes with smart meters in 2022 have the potential to represent up to 3.75GW of demand increasing potential at times of high wind. This demand increase would happen in practice where prices go very low when wind levels are high and an aggregator can coordinate the immersion heaters to activate and so take advantage of the low prices and to heat water at times of high wind². ESB would point out that there are already commercial and research projects underway both in Ireland and across Europe which are trialling these concepts. In terms of securing a service at lowest cost to consumers, ESB believes that this demand side approach warrants consideration since it leverages smart meters that are being installed anyway and also immersion heaters that are already in the vast majority of houses.
- The most recent connection application disclosure lists from EirGrid and ESB Networks suggest that there are 810MW of connection applications for battery storage units on the transmission and distribution systems. This is a significant volume of storage that could be available at times of high wind in the future to reduce the curtailment of excess wind. Incentives for new electricity storage are likely to be driven by the EirGrid and SONI's DS3 Program which provides a monetary value for providing flexibility and also by the new I-SEM market which seeks to provide a real time price for electricity thereby valuing flexibility.

In summary on this point, ESB recognises that interconnection to date in Ireland has been positive in terms of reducing curtailment of wind generation. Given the decision to install smart meters and

² This has the effect of demand shifting where the increased water heating at times of high wind reduces the need to use more electricity or oil or gas to heat water at a later stage in the day.

given the new incentives for electricity storage, ESB would urge a broad consideration and costing of alternatives when attributing any monetary value in an interconnection business case to curtailment reduction.

Consideration of Brexit

At this juncture, ESB cannot see that any case should be made to incorporate Brexit as an explicit consideration in the CRU's assessment of new interconnector proposals. While it is possible that the UK's decision to leave the EU will have an impact on the internal energy market, the shape of this impact is not yet known such that it would require a differentiation in approach when assessing UK proposals versus proposals from the rest of the EU.

The energy systems of the UK and Ireland are already interlinked. There is electricity interconnection but there is also gas interconnection. In particular, the GNI owned gas interconnectors supply gas to Ireland but also to Northern Ireland and the Isle of Man. In addition, many of the players active in the Ireland energy market are also active across the UK. This highlights the importance of a final agreement between the UK, Ireland and the EU on energy matters.

Given the above, it would seem imprudent or at least premature to single out electricity interconnector applications as warranting a different approach in assessment because of Brexit. To do otherwise raises many wider questions as to whether other utilities or services must have an additional resilience against a connection to the EU through GB. Gas interconnection would be a key example but there are likely others.

Therefore, ESB suggests that no additional weighting be applied to interconnectors from non UK EU countries when considering interconnector proposals. To the extent that the EU has allocated funding to certain projects in a Brexit context, this will be realised in the economic assessment of the interconnector proposal.

The Consultation Paper seeks views on the weight that might be placed upon the EU interconnection targets when assessing proposals. ESB considers this to be quite linked to the general Brexit question. GB currently has 3GW of interconnection capacity with mainland Europe and 1GW with I-SEM. By 2022 however, GB will have an additional circa 7.2GW of connections with mainland Europe³. This suggests that there will be wider discussions about the status of interconnection between the UK and the EU as part of Brexit negotiations. Therefore, ESB is of the view that it is premature to take views on explicit EU interconnection targets ahead of the UK's ultimate relationship with the EU being established.

³ Ofgem Electricity Interconnectors Webpage: <https://www.ofgem.gov.uk/electricity/transmission-networks/electricity-interconnectors>

Summary and Conclusion

In summary, ESB is of the view that interconnection in Ireland to date has been positive. It has provided a link to a much larger market, it has helped to reduce curtailment of wind generation and it has brought a further competitive element to the all-island market. However, ESB contends that the impacts of additional interconnection will tend to have much greater impact and costs than those seen with EWIC. ESB believes that these costs must be considered in a holistic manner which would appear to be in line with the assessment criteria proposed by DCCAE.

Ireland, as a nation has only so much resources to expend on energy infrastructure. It is of course crucial that the right amount of investment is made. If investment is too low, security of supply is threatened as too is investor confidence. But if too much investment is made, then costs for consumers are increased, potentially up to a point where competitiveness is challenged. In light of this, ESB believes that decisions on future interconnection support are significant.

In light of the above, ESB recommends that future interconnection proposals should be assessed with the following in mind.

- To ensure competitiveness, a holistic assessment of all costs and benefits should be carried out which considers the impact on the gas market, on wholesale electricity prices and the impact on the total level of electricity capacity payments and the cost for the interconnector and associated deep reinforcements.
- Regarding security of supply, before a security of supply benefit is monetised, credited to a project and underwritten by electricity customers, it is imperative alternative options be equally considered. This would establish whether these alternative solutions may provide a preferable outcome for Irish customers.
- Regarding facilitation of additional renewables, ESB agrees that interconnection in SEM has helped facilitate increased installed capacity of wind. ESB would urge future consideration of wind facilitation benefits to consider the rapidly changing technological landscape. Specifically, the combination of smart meters and immersion heaters from 2022 onwards will provide significant increased demand potential at times of high wind.

ESB would welcome the opportunity to meet with DCCAE regarding the contents of this response and in the meantime we are happy to elaborate on any aspect of the response.