Wholesale Electricity and Gas Policy Division,
Department of the Environment, Climate and Communications
29-31 Adelaide Road
Dublin 2
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28 October 2022

Department of the Environment, Climate and Communications

By email: energyconsultation@decc.gov.ie

Response to consultation on Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems

Dear Sir/Madam,

MaresConnect Limited (**MCL**) welcomes the Department of the Environment, Climate and Communications' (**DECC**) consultation on Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems 19 September 2022 (the **Consultation**).

MaresConnect is a proposed 750MW electricity interconnector linking the power markets of Ireland (**IE**) and Great Britain (**GB**). MaresConnect has a GB interconnector licence and a GB grid connection agreement for 750MW interconnector at National Grid's Bodelwyddan station in North Wales.

MaresConnect is a near-term interconnector targeting commencement of operations in 2028 and is being developed by a highly experienced management team who have worked on 7 interconnector projects, including four connecting (or proposed) to Ireland. The Project is funded by a major shareholder, Foresight Energy Infrastructure Partners (**FEIP**), with funding committed through the development phase.

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We set out below our response to selected questions set out in the consultation.

Please do not hesitate to get in touch should you wish to discuss any aspect of this response.

Yours sincerely,

[redacted]

[redacted]

Mares Connect Limited

[redacted]

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Schedule

Response to Consultation

Risks

1. Are there any other security of supply risks that you can identify in addition to those set out in section 6?

GB's gas supply is heavily dependent on the importation of LNG on the global markets. The UK's policy has limited firmness, as LNG supply contracts are dependent on UK's ability to pay the global market price of LNG particularly at moments of supply stress. Recent events have illustrated the extreme volatility of global gas prices derived from actions far from Ireland's shores. The security of supply scenarios considers physical interruptions rather than pricing volatility that may make it economically unfeasible to import gas.

2. If there are other risks that you have identified, could you outline some mitigation options to address the risk(s)?

The security of supply issues in Ireland have been driven by the closure of older thermal generation (such as coal and peat-fired power stations), and an increase in electricity demand. Over the last decade there has been an almost 90% reduction in the derated capacity margin in Ireland, which was reported at 0 MW for winter 2021-22.

Recent Figures released by EirGrid show that system or amber alerts were issued eight times this year. That comes after one in 2017, none in 2018 or 2019, three in 2020, and six in 2021. As of August this year, no fewer than eight amber alerts had been issued, showing an increasing volatility in system security as greater levels of variable generators are relied upon. In summary, the national grid has come under increasing pressure since the start of this decade, with a spike in the number of amber alerts which has gone from just 13 in the last decade to 17 already this decade.

"Increasing electricity demand and tightening margins around electricity supply means we are having more system alerts. Pressure on supply has been heightened by increased electricity demand; a delay in new generators coming onto the grid; the withdrawal of some planned generators by developers; decreased availability of existing generators as they age; and the need for essential maintenance on other generators." (EirGrid 2022)

With a forecast SNSP of between 95-100% by 2030 assumed, as the country leans heavily towards reliance on renewable sources of power, quite simply when the wind

is low or negligible, the system is susceptible to very tight margins of supply, and security of supply becomes a genuine risk to the Irish consumer.

Take the greater Dublin region as an example, as part of Shaping Dublin's electricity Future, EirGrid highlight the significant additional transmission reinforcements required in and around the greater Dublin region to meet the growing demand. These reinforcements will help meet the growing and changing electricity needs of Dublin.

This includes the substantial electrification of transport systems, vehicles, heating and the development of housing, offices, and large energy users. These improvements will build a more resilient and reliable grid. However, in terms of security of supply, the growing demand in the greater Dublin region, further exacerbated with more data centres planned, is likely lead to very tight margins, especially when renewable output is low, demand is high, and the loss of any conventional gas-fired plant, or indeed the loss of the only existing interconnector in mid-eastern region, and this will likely lead to genuine security of supply scenarios.

Role of further Interconnection

MaresConnect considers it essential that one aspect to addressing the aforementioned security of supply concerns, is to provide further interconnection to bolster the security of supply, not only in the Dublin region, but in the context of the wider grid stability.

Interconnection increases the security of supply of energy across the system through provision of additional capacity to neighbouring systems. Provision of interconnection reduces reliance on energy imports from external markets, such as imported Russian fossil fuels. This cannot be achieved without reinforcing its electricity and energy system through greater interconnection of a power system largely based on wind.

Interconnectors between grids are an important way of both providing flexibility to the Irish power sector, ensuring security of supply, and removing grid congestion. Increased interconnection also provides grid infrastructure to import renewable electricity from Ireland’s neighbours at times of low wind in Ireland (again avoiding the need for fossil fuel generation), and given the long lead time for interconnection projects to come to fruition, action must be taken now to accelerate and enable the increased development of interconnection between Ireland and neighbouring countries.

It is important further interconnection between Ireland and EU/GB is carefully located at nodes on the Irish transmission network which do not exacerbate existing Irish transmission network constraints.

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In the T-3 2024/25 auction, over 1.5 GW of new-build contracts were awarded, however, several generation projects that had successfully secured capacity agreements in previous auctions at lower prices have not been delivered, with >400 MW of new-build contracts for the 22/23 winter terminated.

Mitigation Options

4. Do you have any additional mitigation options that you think should be considered?

We note that in section 7.2 of the Consultation DECC identifies additional electricity interconnection as a mitigation option, however this option appears to be specific to further interconnection with France. We recommend that this option is broadened to cover further interconnection, with the connecting country or countries left open for consideration on a case-by-case basis as projects come forward.

Ireland's geographical location limits the neighbours with which it can economically interconnect. To date the focus has been with Great Britain and latterly France. GB is a logical choice given its large generation base, some 10x that of Ireland's, and its close proximity. Technically this provides interconnection with a diverse generation pool and low loss power transfers. GB is a natural steppingstone to give Irish RES access to the electricity markets in continental Europe and the Nordic countries.

Ireland's most recent projects; Greenlink and Celtic are both being constructed in a similar timeframe. A high-level comparison of the two projects suggest that careful thought needs to be given to the location of new projects and their economic cost to Irish consumers.

Table 1. Comparison of key interconnector metrics between Greenlink and Celtic

Interconnector Parameter	Greenlink	Celtic
Destination	Wales	France
Capacity	500MW	700MW
Cable distance	155km	500km
Estimated losses	[2-3%]	[4-5%]
Estimated cost	€500m	€1bn
Cross border cost allocation split	50 Ireland: 50 UK	65 Ireland: 35 France
Cross border revenue split	50 Ireland: 50 UK	50 Ireland: 50 France
Funding source	Private capital	Irish and French states, EU
Regulatory model	Cap & Floor	Regulated Asset Base

France provides complimentary nuclear base load to Ireland's intermittent RES and provides integration with another Member State. These advantages need to be set against the cost of Irish consumers shouldering 65% of the project's high capital costs and power losses over the life of the project.

The recent development of Cap & Floor regulation provides a framework for Ireland and the UK to attract private capital to invest in interconnector capacity thereby freeing up state funds to invest in other parts of the economy. Cap & Floor regulation stimulates the development of new projects by private developers rather than reliance on foreign transmission system operators who may have limited resources to develop numerous projects on different borders in parallel. The regulatory asset base model favoured by France provides a different risk model and transfers greater risk to consumers. Regulated financial returns to the project owners are guaranteed under almost all circumstances.

GB support for further interconnection

Ofgem has recently undertaken a lengthy review of the UK's need for further interconnector capacity and concluded that now is the time to identify the next group of projects to connect with its neighbours. A third window opened on 1 September and closes on 10 January 2023 for projects to submit applications to be considered for Cap & Floor regulation. The last window was over six years ago and there is no guidance if there will be further windows in the future.

As part of the review, Ofgem commissioned Afry, the economic consultant, to evaluate the need and location of further interconnection on all of GB's borders. The draft report[1] identified the need for a further 1500MW on the Irish – GB border by 2030 over and above current planned projects to achieve net-zero targets in GB (see Table 3).

[1] Ofgem interconnector policy review – independent report, An AFRY report for Ofgem, December 2020

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Table 2. Extract from Afry December 2020 report

Exhibit 4.2 – List of potential interconnectors identified in the step-wise approach

Connection	Connecting to	Capacity	Commissioning year	Final IRR
NWE2025	Northwest Europe	1,400MW	2025	8.2%
SEM2025	Irish Single Energy Market	1,000MW	2025	7.2%
NWE2030	Northwest Europe	1,400MW	2030	10.8%
SEM2030	Irish Single Energy Market	1,500MW	2030	9.1%

Note: The identified interconnector capacities can consist of multiple projects.

The table above assumes Greenlink is included in the baseline and the additional projects are on the Irish – GB border only.

Ofgem's clear support of further interconnection with Ireland provides a near-term opportunity to develop further capacity within a favourable environment in the immediate future.

Diversification of cable risk

Despite advancements in cable burial risk assessments, interconnector cables remain susceptible (although extremely rare) to unplanned outages from anchor strike and other accidental damage. To avoid concentration of risk in one interconnector system, a number of comparable systems should be planned and sized to ensure no one single loss could lead to a broader system interruption. The development of an interconnected Europe is planned on a series of discreet interconnectors and the addition of further interconnectors to Ireland is consistent with such policy. Including the commissioning of MaresConnect, by 2030 Ireland will have five interconnectors with its neighbours and with relatively short cable lengths to minimise the probability of accidental damage and sized to maintain the integrity of the Irish network in the case of an unplanned outage.

Delocalised storage

Interconnectors provide access to storage infrastructure in the connected country. Through its interconnectors with GB, Ireland will have access to electricity storage in batteries and pumped hydro across the Irish Sea. The securing of access to these facilities can be contractually arranged by the TSO and suppliers to delocalise storage and diversify away from the concentration of risk on Ireland's small number of comparable facilities.

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6. Which electricity supply mitigation options, if any, should be considered for implementation?

MaresConnect supports the mitigating option set out in section 7.2 of the Consultation, being additional electricity interconnection, however we note that section 7.2 appears to consider further interconnection between Ireland and France, specifically. Please refer to our response to Question 4 above, setting out the reasons further interconnection with GB should be retained as an option. In DECC's final policy, we recommend that DECC identifies further interconnection as a mitigating action but leaves this open in terms of the connecting country.

We refer to DECC's consultation on the national electricity interconnector policy (**Interconnector Consultation**)[2]. We expect that DECC will consider the responses received to the Interconnector Consultation, particularly in relation to the security of supply benefits of interconnector projects, when considering the mitigating actions relating to interconnection.

Electricity interconnection targets

We note that in section 7.2 of the Consultation DECC states that when the planned interconnectors are commissioned (being the Greenlink Interconnector to GB, the Celtic Interconnector to France and the North-South Interconnector to Northern Ireland), Ireland will have exceeded the EU target for interconnector capacity of 15% of overall installed capacity.

Interconnection targets set by the EU under the regulations for trans-European energy infrastructure[3] [4] and the report of the Commission Expert Group on electricity interconnection targets[5] are important reference points in determining the future minimum interconnection targets for Member States. The EU has two meaningful targets which set a balance to meeting security of supply objectives without leading to the overbuild of capacity. The first is mandatory and the second a recommendation:

- *15% of Installed Generation Capacity (**15% Generation Target**):* The European Council of October 2014 requires Member States to meet an electricity

[2] Electricity Interconnection Policy Consultation published in June 2022.
[3] Regulation (EU) No 347/2013
[4] Regulation (EU) 2018/1999 addressing the Energy Union and Climate Action with regard to the Treaty of the Functioning of the EU
[5] Towards a sustainable and integrated Europe Report of the Commission Expert Group on electricity interconnection targets, November 2017

interconnection target of 15% of installed generation capacity by 2030[6] [7]. Although Ireland now operates as a single electricity market (**SEM**), this test is applicable to the Member State and the calculation would exclude the Moyle interconnector (Northern Ireland to Scotland) and generation located in Northern Ireland.

- 30% of Renewable Installed Generation (30% RES Target): The EU Expert Group recommends that countries below the threshold of 30% of the ratio of its nominal transmission capacity to its installed renewable generation capacity "should urgently investigate options of further interconnectors". The recommendation of the expert group reflects the penetration of intermittent renewable power in the energy mix and the need to ensure security of supply on days of low wind and solar production. This test is not mandatory and the expert group recommends including interconnection with third countries to be considered as part of the calculation. It is therefore appropriate to make the calculation on the basis of SEM and all interconnectors including Moyle.

EirGrid's and Soni's recent forecasts for Ireland's mix of thermal and renewable generation (set out in its reports; *Tomorrow's Energy Scenarios, 2019* and *Tomorrow's Energy Scenarios Northern Ireland 2020,* summarised in Table 1 below) provide a basis for determining if the tests are met, assuming Ireland will operate four interconnectors (Moyle, EWIC, Greenlink, Celtic and a further 750MW interconnector) by 2030.

[6] Defined as import capacity over installed generation capacity in a Member State *"for projects with significant cross-border impact, the impact on grid transfer capability at borders between relevant Member States, between relevant Member States and third countries "*– Annex IV of Regulation (EU) No 347/2013

[7] European Council (23 and 24 October 2014) – Conclusions

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Table 1. European Interconnector Capacity Targets

Generation Mix Summary	2025	2030	2040
	MW	MW	MW
TES 2019 and TSNI 2020 Scenario	***Centralised Energy / ACC***	***Centralised Energy / ACC***	***Centralised Energy / ACC***
Thermal Generation ROI	4,675	12,767	17,192
Thermal Generation NI	2,144	2,170	2,186
Thermal Generation (ROI + NI)	6,819	14,937	19,378
Renewable Generation ROI	6,460	9,660	12,755
Renewable Generation NI	2,334	3,107	4,437
Total Renewable Generation (ROI +NI)	8,794	12,767	17,192
Total Generation (ROI + NI)	15,613	22,427	29,947
30% Renewables IC Target SEM	2,638	3,830	5,158
15% Generation IC Target ROI	1,670	3,364	4,492

Note: All values sourced from EirGrid and Soni TES 2019 and TESNI 2020 reports. EirGrid's Centralised Energy scenario (CE) aligned with Soni's Addressing Climate Change scenario (ACC). 30% RES Target calculated as 30% of Total Renewable Generation (ROI + NI). 15% Generation Target calculated as 15% of the sum of Thermal Generation ROI + Renewable Generation ROI.

The test thresholds are set out in the green and amber lines in Chart 1 sitting above the forecast interconnector capacity over the three years 2025, 2030 and 2040. An additional 750MW of interconnector capacity is added to the four existing projects to reflect the advance of MaresConnect currently in development and targeted for operation before 2030 giving total interconnector capacity of 2,750MW.

This compares with the 15% Generation Target (SEM) and the 30% Renewables Target (ROI) of 3,364MW and 3,839MW, respectively. Under these scenarios Ireland's interconnector capacity shortfall would be 914MW against the 15% Generation Target and 1,130MW against the 30% Renewables Target. There is clearly significant headroom for further projects to interconnect with Ireland before coming close to meeting the EU tests.

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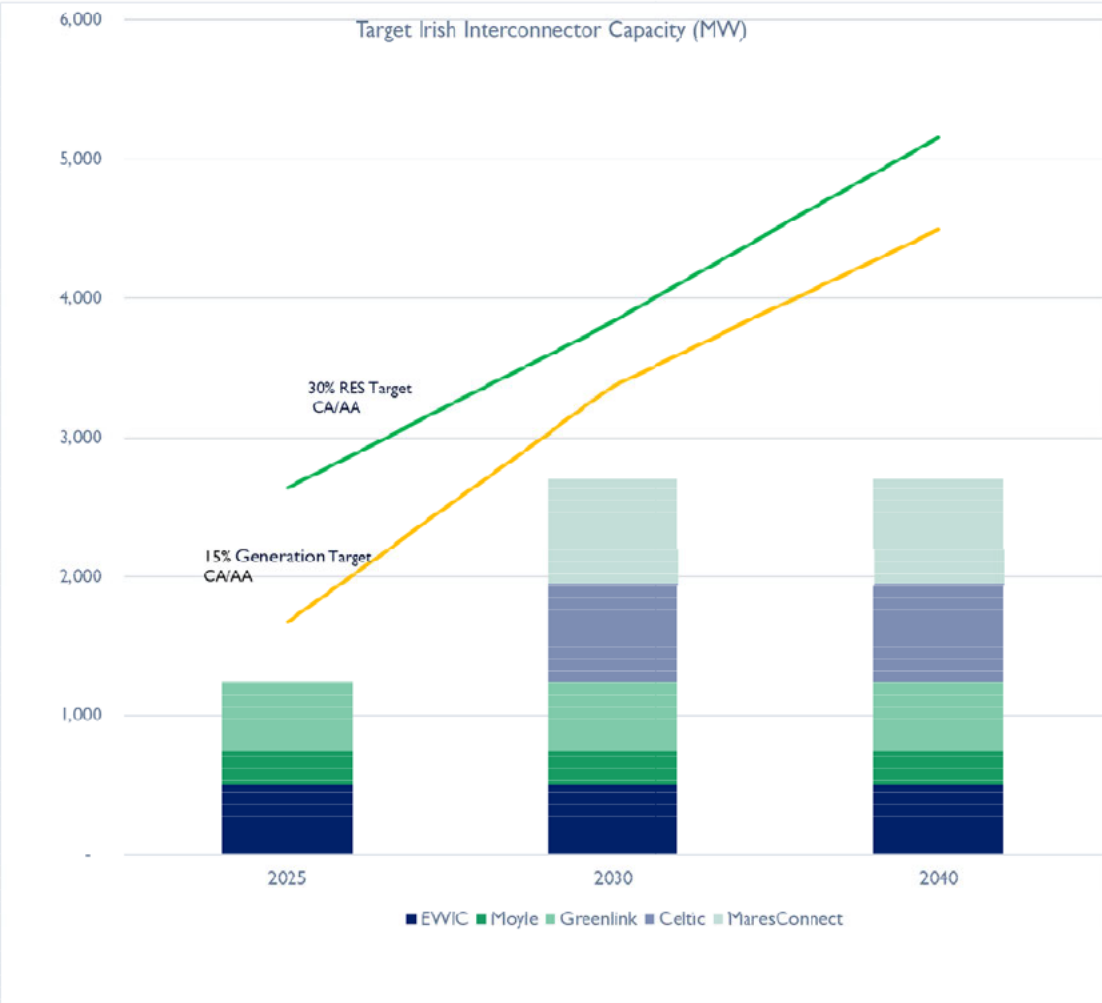
Chart 1. Target Irish Interconnector Capacity and Existing/Planned Capacity



Notes: Greenlink, Celtic and MaresConnect (or other new capacity) are assumed to commence operations before 2030. Moyle is assumed to remain at 250MW over all periods.

Under EirGrid's central cases of Centralised Energy (ROI) and Addressing Climate Change (NI) and including 750MW of new capacity from 2030 onwards, Ireland fails to meet either test under this scenario or any other TES scenarios.

The forecast growth in RES on the Irish system risks sending uneconomic pricing signals to wind and solar developers, raising the risk that RES project returns will be lower than forecast or worse, fail to materialise. In this context, it is crucial that Ireland progresses new interconnector capacity and takes immediate steps to support mature projects already in development to reduce curtailment costs and avoid RES developers taking projects to other jurisdictions.

We note that the EU targets for Member State levels of interconnection are a minimum level for all Member States and for a geographically isolated island nation like Ireland, the ideal interconnection targets are likely greater. We refer to DECC's ongoing Interconnection Consultation and recommend that DECC considers these matters in tandem to ensure that the security of supply mitigations relating to interconnection in this Consultation take account of the policy on electricity interconnection.

8. Do you have any views on how the mitigation options should be implemented?

A number of the mitigating actions identified by DECC in the Consultation would require regulatory and/or permitting authorisations to be obtained. To facilitate implementing the mitigating actions DECC has proposed, DECC should consider taking further mitigating actions necessary to ensure that these are obtained rapidly and within the required timescales. DECC could make a clear policy statement that these projects are required as a matter of urgency, and that the relevant government, regulatory and other administrative bodies should treat applications from projects identified as important for security of supply as a priority.

In particular, the timescale for obtaining planning permissions in Ireland is a major impediment to the rapid development of these important projects (and, importantly, private investment in these projects), which will need to be addressed in order to achieve the mitigation actions DECC proposes in its final policy. Specifically, we note that there is potential for significant delays for offshore planning applications being processed under the new Maritime Area Planning Act 2021 in the initial transition period. DECC could consider including in its policy review ways to ensure that projects needed to mitigate the identified security risks are progressed by the relevant authorities in the necessary timescales. This could include ensuring that the relevant authorities have the necessary resources for the expected large volume of applications required to be processed in the rapid timescales required.

In respect of the timely development of interconnector projects, identified by DECC as a potential mitigation to the security of supply risks, it would be beneficial for DECC and the CRU to regularly monitor progress to ensure any obstacles are identified and addressed at an early stage. In the short term, the CRU can address key priorities by putting the resources in place to progress an application from mature interconnector projects. This will ensure that developers are provided clear signals in terms of the administrative roadmap to ensure development projects reach operation by 2030.

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Policy Measures

9. Do you support the policy measures proposed in section 8 of the consultation paper?

We support the policy measures proposed in section 8 of the Consultation paper. We recommend that DECC adopts an internal policy that facilitates the implementation of the measures proposed in section 8 and we note the importance of planning and permitting processes for necessary infrastructure which we elaborate on in the response to question 8 above.

10. What further tools and measures do you think would contribute the most to Ireland's energy security of supply?

Further interconnection should be prioritised as a central part of Ireland's overall energy solution in the short and medium term, ensuring security of supply, particularly towards the back end of the decade when Ireland will rely on variable renewable energy to meet 80% of its growing demand and will substitute legacy fossil fuel generation to meet Ireland's base load demand. As demand continues to grow, because of the rapid drive towards electrification and the ever-increasing number of large demand customers such as data centres, security of supply will continue to be the top priority, particularly for an islanded system such as Ireland. As a result, greater levels of interconnection will play a crucial role in maintaining a safe and secure supply.

Future changes in the energy mix, such as increasing renewable generation capacity (in particular wind power) will drive the need for additional reserve and frequency response to cater for the variability and intermittency of generation sources. It is therefore important for the System Operators to have access to additional tools and services provided by HVDC interconnectors to manage system frequency to minimise operating costs.

Further electricity interconnection, particularly where it is delivered under regulatory regimes that incentivises private capital to come forward to fund the construction period, has the benefit of responding to a number of Ireland's energy goals:

Interconnection as a key enabler for energy and climate targets

Ireland has been clear in its energy ambitions and strategic priorities, setting pioneering targets which are essential if Ireland is to address the current energy crisis,

rapidly decarbonise, and leverage the island's plentiful renewable resources to become a leading exporter of green power.

Further interconnector capacity (over and above the Greenlink and Celtic interconnectors planned to come onstream by 2030) will be a key enabler to addressing these issues and tackle the ongoing security of supply risk and climate emergency, and most importantly will be an immediate solution in avoiding heavy curtailment of wind power coming onto the system over the coming decade.

Reducing substantial curtailment

To meet its energy and climate targets, Ireland will require further interconnection to come onstream as quickly as possible, particularly in the context of the 2030 targets. Further interconnection must be prioritised as a vital part of Ireland's overall energy solution; providing a route to market for offshore wind and solar, reducing curtailment costs associated with intermittent renewable energy sources, and allowing Ireland to become a net exporter of wind energy.

DECC's latest target of an additional 7GW of offshore wind by 2030, on top of the planned 8GW of onshore wind by 2030, will result in substantial curtailment when there are medium to high levels of wind penetration.

TYNDP 2022 results for Irish interconnector projects demonstrate strong social economic welfare and decarbonization potential. Analysis carried out by our advisors indicates that interconnection plays a material role in reducing the curtailment of RES generation on those sunny, windy days. For example, in 2030 additional interconnector capacity of 750MW would half Ireland's curtailment from 2TWh to 1TWh. The reduction in RES curtailment is both a direct benefit to producers and specifically renewable generators as well as a benefit to consumers who gain from increased access to low-priced renewable generation.

Policy designed to attract private capital and protect consumers

Cap & Floor regulation is a viable route for development of future interconnection between Ireland and neighbouring countries. The regime is well defined, has been shown to be financeable by the equity and debt capital markets, and provides an appropriate balance between incentivising developer investment and protecting consumers. Cap & Floor has attracted private capital into the electricity transmission sector to invest in interconnector projects, often in excess of €500m, thereby freeing up state funds to invest in other parts of the economy.

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Prioritisation of interconnector projects will require the investment of resource within the CRU and EirGrid, but when developed by private capital at zero upfront cost to the consumer and (subject to the appropriate scrutiny by the CRU) with a regulatory regime that protects consumers and bring significant social welfare and security of supply benefits, there is an overwhelming case for prioritising these projects.