

Commission for Regulation of Utilities  
The Exchange  
Belgard Square North  
Tallaght  
Dublin 24

21 May 2020

Emailed to: [electricityinterconnectors@cru.ie](mailto:electricityinterconnectors@cru.ie)

**RE: Greenlink Electricity Interconnector “Cap and Floor Request”**

Dear Mantas,

The Irish Wind Energy Association (IWEA) welcomes the opportunity to engage with the Commission for Regulation of Utilities (CRU) and provide feedback on the consultation paper on the Greenlink electricity interconnector Cap and Floor request.

IWEA is the representative body for the Irish wind industry, working to promote wind energy as an essential, economical and environmentally friendly part of the country’s low-carbon energy future.

**Introduction**

IWEA welcomes the progress being made on the Greenlink interconnector and we support the CRU’s minded to position to allow a Cap and Floor regime to apply to the Greenlink interconnector. However, we note that interconnection must be coupled with well-designed markets that incentivise efficient flows in order to maximise the integration of renewables on the island of Ireland.

Systems with high levels of distributed variable renewable generation need flexibility to respond to changes in generation and demand to maintain the stability of the power system. Interconnection is a proven and mature technology that can provide this flexibility along with many other benefits. It helps to smooth variations in production from wind and solar generation sources as Ireland can export excess wind power at times of high production and import power from other markets at times of low wind production.

For Ireland to achieve its 70% RES-E target by 2030 at a net benefit to Irish consumers, the Baringa 70by30 report<sup>1</sup> envisaged Ireland having two new interconnectors, Celtic and Greenlink, as well as the North-South interconnector built in the mid-2020s. EirGrid’s

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<sup>1</sup> <https://www.iwea.com/images/files/70by30-report-final.pdf>

Tomorrow's Energy Scenarios 2019 report<sup>2</sup> set out two scenarios which meet 70% RES-E that include both Greenlink and Celtic interconnectors being delivered on time (2023 and 2026 respectively). The National Climate Action Plan<sup>3</sup> also sets out a Marginal Abatement Cost Curve for Ireland to achieve 70% RES-E by 2030, which shows increasing onshore and offshore wind capacity are the most economical options for electricity production, and assumes that the two planned interconnectors are delivered by the mid-2020s.

Adherence to these delivery timelines and development of this additional interconnection as early as possible is therefore essential to minimising curtailment and integrating increased renewable generation on the grid. Clear timelines and certainty of delivery on additional interconnection also sends a positive signal to the market regarding future curtailment mitigation which will likely reduce RESS auction prices for support contracts that will be in place for up to 15 years.

### 70by30 Implementation Plan: Saving Power

To achieve a 70% renewable electricity target, Ireland will need to substantially increase the level of onshore, offshore, and solar generation installed on the power system today. This will bring significant system challenges as it requires the System Operators to manage levels of variable renewable generation which are higher than any power system on Earth today. It is vital that we deliver the system level measures required to integrate and maximise the use of renewable electricity on our grid while maintaining a secure and stable power system.

IWEA is in the process of finalising a broad piece of work called the '70by30 Implementation Plan' that aims to provide analyses and policy recommendations in areas such as achieving our onshore and offshore wind targets while saving money for consumers and maximising the integration of renewables on our grid.

A volume of the '70by30 Implementation Plan' report refers to 'Saving Power' and sets out how to deliver the necessary policy measures to ensure our electricity system is able to efficiently and securely integrate significant levels of variable renewable generation by 2030. The goal is to identify how we can minimise dispatch down and maximise the use of renewable electricity on our grid by 2030.

Delivering the Greenlink and Celtic interconnectors and ensuring they operate efficiently is a key part of 'Saving Power'. IWEA's recommendations in relation to improving the current market design regarding interconnector operation are set out below.

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<sup>2</sup> EirGrid TES 2019 report <http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-TES-2019-Report.pdf>

<sup>3</sup> Ireland's Climate Action Plan <https://www.dccae.gov.ie/documents/Climate%20Action%20Plan%202019.pdf>

## Market Design

Interconnectors expose the Irish power system to larger GB and EU markets, which is good if they are competitive and the market is driving efficient flows. With well designed, well-functioning markets, interconnection, at the optimum size and location, is very beneficial for Irish consumers.

We agree that, with the right market design, the Greenlink interconnector will reduce renewable curtailment, contribute towards our emissions reduction targets and deliver benefits to consumers through reduced RESS auction bids and lower wholesale energy prices. The analysis carried out by Baringa in their 70by30 study assumes that the interconnectors are operating efficiently, and curtailment is being minimised.

The potential impact of additional interconnection on wind curtailment is illustrated in the figure below which is from the SEAI funded study '*Identifying the relative and combined impact and importance of a range of curtailment mitigation options on high RES-E systems in 2030 & 2040*'.<sup>4</sup> If we assume that the Celtic and Greenlink interconnectors perform in an ideal way (i.e. use 100% of their capacity to export when curtailment occurs), then as a single measure this will reduce curtailment by approximately a quarter from 44% in the business-as-usual (BAU) case (circled in red) to approximately 20% (circled in purple) by 2030. The BAU case assumes that no additional interconnection is brought into place by 2030 outside of that which already exists today and no additional system level measures are made, such as increasing SNSP levels. The results show that curtailment levels could increase to 44% and we would need over 21GW of installed wind capacity, due to these high curtailment levels, to meet 70% RES-E. This would make it very challenging and expensive to continue developing renewable generation in Ireland and highlights the importance of delivering additional interconnection coupled with well-designed markets.

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<sup>4</sup><https://www.seai.ie/data-and-insights/seai-research/research-projects/details/identifying-the-relative-and-combined-impact-and-importance-of-a-range-of-curtailment-mitigation-options-on-high-rese-systems-in-2030--2040>

All Island Wind Curtailment Vs Additional Idealised Interconnection and Storage

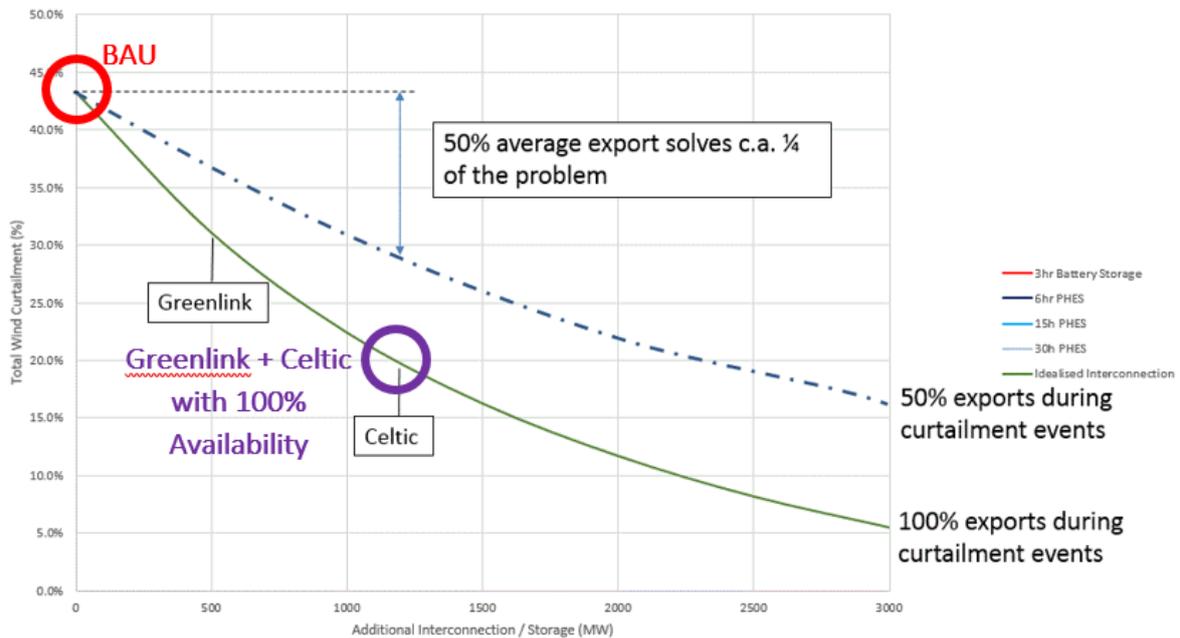


Figure 1: Curtailment vs. Additional Interconnector Capacity for varying average IC exports (every point on each line represents a 70% RES-E system, all other system assumptions are as at 2020)

The existing interconnectors have typically been exporting approximately 50% of their capacity during curtailment events under the current market design and operational framework. Therefore, instead of reducing curtailment to approximately 20% when Greenlink and Celtic are complete, it would only reduce to approximately 30% if they are operated like Ireland’s interconnectors today.

In perfectly coupled markets, interconnectors should be scheduled to flow efficiently according to price signals. However, the Irish market is not yet fully integrated with European markets and so the interconnectors are not operating at their most efficient potential at present.

IWEA have analysed the performance of the interconnectors since the introduction of I-SEM and note that often the interconnectors are not performing efficiently during curtailment events due to the current market design. For example, Figure 2 demonstrates that in the period from 01/10/2018 to 30/08/2019, interconnector flow was in the opposite direction to the price signal in the balancing market 45% of the time i.e. the interconnectors were not dispatched efficiently 45% of the time meaning available renewable generation was not utilised and curtailment actually increased, even though they were scheduled to operate correctly in the Day-Ahead Market (DAM).

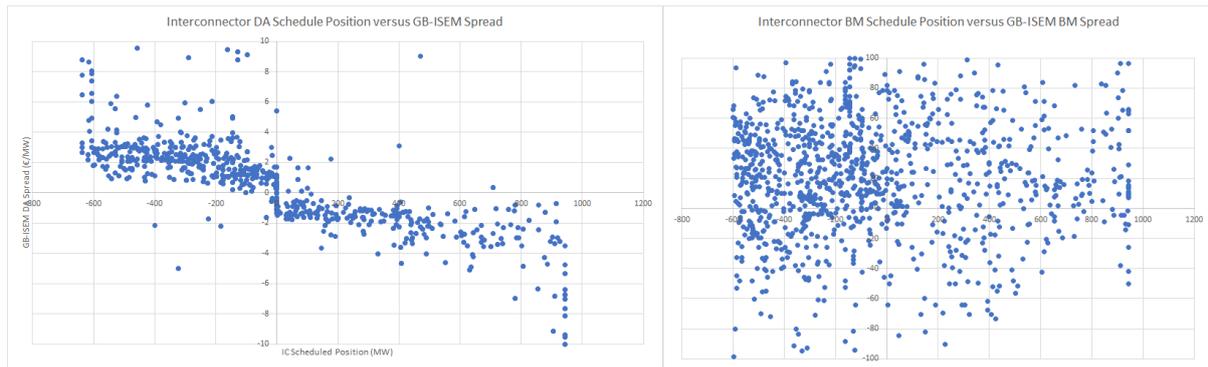


Figure 2: Interconnector flows and GB-ISEM Price spread during curtailment events between 01/10/2018 and 30/08/2019. Day-ahead market on left. Balancing market on right.

**Graph Explanation:** When plotted in the above graph format, an efficient interconnector should see points in the top-left and bottom-right quadrants indicating the interconnector is flowing with the price signal. Points in the top-right and bottom left quadrants signal inefficient interconnector scheduling where flow is against the price signal. We can see from the above graphs that during curtailment events between 01/10/2018 and 30/08/2019, the interconnector was generally flowing with the day-ahead market price signal but by the time of dispatch there was often a price signal for the interconnector to change its operation. This means that the curtailment of wind during these days could have been alleviated by a late adjustment to the interconnector schedule.

Two IWEA recommendations to improve interconnector performance are set out below.

## 1. Implement Single Intraday Coupling (SIDC)

In SEM, interconnectors are scheduled in the day-ahead market, 24 hours in advance of dispatch and adjusted in the intraday markets IDA-1 and IDA-2. The day-ahead market is coupled with the rest of Europe via the pan-European trading platform (EUPHEMIA) while the IDA-1 and IDA-2 markets are just coupled with Great Britain.

There is also an intraday continuous market which is an ex-ante trading market that closes on a rolling basis one hour before the start of the relevant trading period. This allows market participants to adjust their positions as close to real time as possible. However, currently it is a SEM only market, meaning trading does not take place across the interconnectors with other jurisdictions.

There is a pan-European trading platform known as Single Intraday Coupling (SIDC) that links the intraday continuous markets of Member States, thus allowing trading across the interconnectors much closer to real time, but Ireland is not yet a part of this.

The fact that the continuous intraday market is a SEM market only means that capacity on the interconnectors cannot be used to trade closer to real-time. This limits the flexibility of the interconnectors/market to respond to changes in wind forecasts and help minimise curtailment closer to real-time.

Implementing SIDC in Ireland would involve the SEM coupling with the EU intraday continuous market and allow pan European trading based on available interconnector capacity one hour in advance of real-time dispatch. Forecast errors one hour in advance of dispatch are low and so SIDC will vastly improve interconnector efficiency meaning more up to date wind and market conditions can be taken into account in interconnector trading.

The work required to implement SIDC would require significant resourcing and regulatory support and would span 1-2 years. However, SIDC is mandated by the EU regulation on Capacity Allocation and Congestion Management and SEMO have recently produced a roadmap for its development.<sup>5</sup>

We recommend that the implementation of SIDC be progressed as soon as possible and we encourage regulatory support of EirGrid/SONI to deliver the required changes.

## 2. Maximise counter-trading until SIDC is implemented

As SIDC will take time to implement, IWEA believes an interim solution is required where EirGrid/SONI trade to adjust interconnector schedules before dispatch (i.e. SO counter-trading) based on up to date wind forecasting and system information.

In decision 11-062, the SEM Committee decided on a dispatch hierarchy that allowed priority dispatch for renewables while being 'a reasonable balance of the various requirements on the TSOs'. In 11-062 the SEM Committee decided to:

*'Adhere to an 'absolute' interpretation of priority dispatch whereby economic factors are only taken account of in exceptional situations and where this can be done in a manner that does not threaten the delivery of renewables targets.'*

This hierarchy in 11-062 below sets out that interconnectors should be re-dispatched after renewables. IWEA interprets this as meaning there is an obligation on TSOs to counter-trade on interconnectors closer to the time of dispatch in order to minimise system curtailment.

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<sup>5</sup> [https://www.semopx.com/documents/general-publications/ROADMAP\\_Nov\\_2019.pdf](https://www.semopx.com/documents/general-publications/ROADMAP_Nov_2019.pdf)

1. re dispatch price making generation and SO counter trading on the interconnector after Gate Closure;
2. re dispatch price taking generation:
  - a. Peat
  - b. Hybrid Plant
  - c. High Efficiency CHP/Biomass/Hydro
  - d. Windfarms, and within windfarms
    - i. windfarms which should be controllable but do not comply with this requirement/are not derogated from same;
    - ii. windfarms which are controllable;
    - iii. windfarms which are not required to be controllable/are derogated from this requirement/those in commissioning phase.
  - e. Interconnector re-dispatch;
  - f. Generation the dispatch down of which results in a safety issue to people arising from the operation of hydro generation stations in flooding situations

Currently the TSOs are incentivised to reduce their dispatch balancing costs against forecast projections. There is a risk that this may impact the incentives on the TSOs to counter-trade to minimise dispatch down, particularly as there may be instances where counter-trading may increase dispatch balancing costs. IWEA believe the incentives on the TSOs should be to maximise renewable generation and reduce the emissions from the scheduling and dispatch process. This should be the objective when seeking to counter-trade to minimise dispatch down, until such time as more real-time market solutions such as SIDC come into effect.

There may be instances where EirGrid/SONI attempt to counter-trade but the request is rejected by National Grid for reasons such as system security limitations in GB. This obviously cannot be helped but it would be beneficial for industry participants to have access to more transparent market information such as up-to-date information on counter-trade requests, whether these were successful or rejected. This would also be incorporated into any relevant incentive and reporting mechanism.

IWEA believes that these recommendations should be incorporated into the upcoming PR5 reporting and incentives framework.

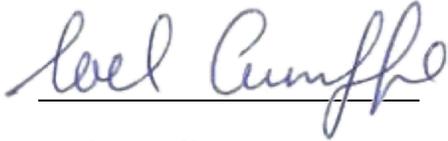
Given the timeframes for the development of the Greenlink interconnector, and the timelines which have been outlined to develop the SIDC, it is possible there may be an overlap where active counter-trading by the SOs on Greenlink may be required in the early years of operation before SEM is coupled to the SIDC. Consideration should be given to procedures for how this counter-trading would occur in the operation of the Greenlink interconnector.

## Conclusion

In conclusion, we would like to thank the CRU for the opportunity to provide feedback on your consultation on the Greenlink electricity interconnector Cap and Floor request. We again welcome the progress being made on the Greenlink interconnector and we support the CRU's

mindful to position to allow a Cap and Floor regime to apply to the Greenlink interconnector.  
We are available to discuss any of the points raised in this response if you require.

Best Regards,



Noel Cunniffe

Head of Policy

IWEA