

Interconnector developers and
other interested parties

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Dear stakeholders

Cap and floor regime: Update on our Initial Project Assessment of the Greenlink interconnector

This open letter provides an update on our assessment of the Greenlink interconnector to Ireland. We have considered new information submitted to us in response to our March 2015 Initial Project Assessment (IPA) consultation. We are seeking your views on this new information before we make our final decision. There are details on how you can send us your views at the end of this letter.

Background

Electricity interconnectors can offer significant benefits to existing and future consumers, but interconnection between Great Britain (GB) and other markets remains limited. This is why we have put in place our cap and floor regime for new electricity interconnectors. We want to help deliver more interconnection in a way that is economic, efficient and timely.

The first step in our assessment of new interconnector proposals is an IPA. This looks at the needs case and impacts of projects, interactions between projects, and whether projects are likely to be in the interests of GB consumers. We published a consultation on the IPA for four new interconnector projects – FAB Link, IFA2, Viking Link and Greenlink – in March 2015.¹ We confirmed our minded-to decisions to grant cap and floor arrangements to the first three of those projects in July 2015.²

The Greenlink project is a proposed 500MW HVDC interconnector between GB and Ireland, which is being developed by Element Power (EP). Our March 2015 consultation noted that we were minded not to grant the Greenlink project a cap and floor regime. This was because our analysis at the time showed that the project was unlikely to be in GB consumers' interests. Our market modelling indicated limited benefit from projected flows across the interconnector. We also expected the project to increase the cost of operating the transmission system in GB, and offer limited strategic benefits, as it connects to a

¹ Cap and floor regime: Initial Project Assessment of the FAB Link, IFA2, Viking Link and Greenlink interconnectors: https://www.ofgem.gov.uk/sites/default/files/docs/2015/03/ipa_march_2015_consultation_-_final_0.pdf

² Decision on the Initial Project Assessment of the FAB Link, IFA2 and Viking Link interconnectors: https://www.ofgem.gov.uk/sites/default/files/docs/2015/07/ipa_decision_july_2015_0.pdf

smaller market with a similar generation mix and more correlated wind output (when compared to other markets).

Areas of reassessment

We received 15 responses in total to the March consultation, which provided a range of views. In particular, EP responded with new information which directly related to our economic modelling and assessment of GB transmission system impacts.

Some of the issues raised were discussed in other consultation responses, notably in National Grid Electricity Transmission's (NGET's). We have also met EP, NGET and others to discuss these points.

In light of this, we are proposing to change our assessment. The purpose of this open letter is to set out those changes and invite views on their merit and implications. We are not proposing (or consulting on) any broader changes to our methodology for assessing interconnector projects or to our analysis. Although other information has become available since the analysis we did earlier this year (such as updates to government energy policy and NGET's 2015 Future Energy Scenarios), we consider that the range of scenarios we previously used was broad enough and remains appropriate. If applicable, we may do more analysis based on updated assumptions as part of the Final Project Assessment³, but we do not intend to continuously update our analysis of individual projects.

Economic modelling of interconnector flows

Our March 2015 consultation gave our view of the effects of interconnector flows on the market, based on the analysis in the report we commissioned from Pöyry (published in December 2014). We considered base, high and low scenarios, which were intended to cover a wide range of possible impacts. The analysis for Greenlink showed that benefits to GB consumers (directly or via whole industry effects) were expected to be low in the base case and with an approximately symmetric positive and negative spread in the high and low cases.

This analysis was based on assumptions about how prices would be set in Ireland's Single Electricity Market (SEM), which is currently being reformed.⁴ In particular, as the SEM is expected to have relatively high levels of wind penetration, there will be times when wind is effectively curtailed in the day-ahead market⁵, with other more expensive generation 'constrained on' (ie switched on to generate). In its analysis for our base and high scenarios, Pöyry had assumed that at such times the Irish wholesale market price would reflect the cost of the generation that is constrained on. This was based on the latest methodology for modelling the SEM published by the Irish and Northern Irish TSOs at the time.

EP's response noted that the consultation on the I-SEM (Integrated Single Electricity Market) design published by the SEM committee in February 2015 suggests that the preferred market design is more likely to use the unconstrained wholesale price in the day-

³ Our August 2014 decision on the cap and floor regime noted that we may revisit aspects of the needs case at the Final Project Assessment stage if these have changed significantly. This is available at: https://www.ofgem.gov.uk/sites/default/files/docs/2014/08/decision_cap_and_floor_near_term_electricity_interconnectors.pdf

⁴ The Single Electricity Market (SEM) is the wholesale electricity market currently operating in the Republic of Ireland and Northern Ireland.

⁵ Due to a technical system limit on intermittent generation known as the System Non-Synchronous Penetration (SNSP) limit.

ahead market (ie where wind is not curtailed and other generation is not constrained on).⁶ This might then result in wholesale prices being more influenced by wind generation volumes. This means that, compared with the analysis included in our March 2015 consultation, the Irish day-ahead market price is likely to be lower than the GB price more often, or with a larger differential in existing lower-priced periods. Other things being equal, this should lead to higher revenues for Greenlink and a greater value of overall imports into GB with GB consumers benefitting from lower wholesale prices as a result.

We note that the consultations from the SEM committee on the detailed I-SEM market design have not concluded, and the market design is not yet confirmed. We have discussed this with the Republic of Ireland energy regulator, the Commission for Energy Regulation (CER). Without prejudice to the SEM committee’s decision, it seems reasonable to base our analysis on the unconstrained price. We should, however, recognise that this may change.

We have therefore asked Pöyry to update its analysis to use the unconstrained market price for Ireland. The results are shown in Table 1 below. This shows that the benefits of Greenlink are approximately £150m higher (in net present value terms) in the base and high cases. Although the results remain negative in the low scenario, we believe they are consistent with a conclusion that the trade benefits of Greenlink are more likely to be positive for GB consumers than in our previous analysis.

Table 1: Impacts of Greenlink on GB with SNSP limit excluded from I-SEM scheduling (Pöyry analysis)

£m NPV, 2013 prices		Base	Low	High
Greenlink	GB consumers	183	-285	452
	GB producers	-151	160	-241
	GB interconnectors	65	-17	95
	GB total ⁷	96	-143	306

Pöyry’s revised analysis also shows stronger revenues for Greenlink as shown in Chart 1 below. For example, in the base case from 2030 onwards, when more wind generation is on the system in both GB and Ireland, the revenues increase to a point where we can expect payments to consumers (as a result of revenues exceeding the cap), rather than being close to the floor as in the previous analysis. We note that EP’s modelling is more optimistic on comparable revenues overall.

⁶ The SEM committee consists of three Utility Regulator representatives, three Commission for Energy Regulation representatives, an Independent Member and a Deputy Independent Member. It is the decision making authority on all matters concerning the SEM. Please see the "Energy Trading Arrangements Detailed Design: Building Blocks Consultation paper": <http://www.allislandproject.org/GetAttachment.aspx?id=29216f1b-c0e5-4692-bc34-799bc05a72f5>

⁷ The cumulative total of the GB consumer, producer and interconnector welfare impacts may slightly differ from the GB total welfare figure due to rounding.

Chart 1: Greenlink’s projected congestion revenues with constrained (initial analysis) and unconstrained (updated analysis) I-SEM wholesale market price, Base case (£m, 2013 prices)⁸



If Irish prices are more influenced by variations in wind output (with a larger proportion of installed capacity than GB), this enhances the rationale for the project. We think that over time, this will give more strategic value by balancing intermittent renewables output and maximising the efficient use of renewable resources across the two systems. Over 25 years, the project is then more likely to have more extrinsic than intrinsic value (ie the economic basis for the project is more responsive, rather than tied to a long-term price differential).

Potential impacts on the GB system

In our March 2015 consultation, supported by analysis from NGET in its role as the GB system operator, we concluded that the system operation benefits of Greenlink connecting were minimal, but that significant increases were expected in operational costs due to constraints. NGET’s analysis suggested that the annual increase in system operation costs for Greenlink ranged between £9m and £27m per year. For this analysis, we converted the projected 2020 constraint cost to give a net present value to show the potential consumer impact over time, and to compare this with the trade impacts. This was projected as a material net disbenefit over a 25-year period.

In their consultation responses, both EP and NGET raised concerns over the net present value we used, and indicate that EP now proposes to use an intertrip at the Greenlink

⁸ For presentation purposes, the charts show total projected congestion revenues and indicative levels of cap and floor based on estimated total project costs. We have assessed Greenlink based on a GB cap and floor applying to 50% of the cost base, and so these levels and revenues would halve.

connection point on the GB system.⁹ This was not part of the IPA submission and therefore was not considered in our original assessment.

We understand that the intertrip would only be used if there was a system overload caused by a double circuit fault. This would avoid NGET having to take the actions which led to the constraint cost impacts previously identified. NGET has agreed that the effect of Greenlink on local constraint costs, and subsequent impact on consumers, would be minimal if an intertrip was part of Greenlink’s connection design.

We therefore consider that, conditional on Greenlink’s final connection agreement confirming that there will be no constraint costs attributable to the project (and that consumers will not be liable for costs as a result of any intertrip agreement), the negative impact can be removed from our assessment.

Furthermore, EP’s response proposed that Greenlink could provide ancillary service benefits through fast frequency response (FFR) to GB. We have discussed this further with NGET as system operator. In our March 2015 consultation, we said that limited frequency response capability is assumed for Greenlink because of the lower inertia of the Irish network. We now understand that there may be scope for Greenlink to provide FFR. However, without confirmation from Eirgrid (the Irish TSO) of the effects this would have on Irish system stability, it is difficult to attribute a value to Greenlink for this service. At the moment, we are not including a valuation in our project assessment. However, we recognise that if Greenlink were to be able to provide FFR, this could be a potentially significant benefit.

Implications for project assessment

As noted above, our current view is that the information we received from responses to our March 2015 consultation justifies changes to our analysis, altering the modelling of Irish wholesale prices and mitigating the negative effect on GB constraint costs. Either of these changes alone would offset the projected negative effect in the base case in our March 2015 consultation, but would not necessarily provide a strong enough justification to grant a cap and floor regime. However, the combined effect of both changes, together with non-quantified upside potential from fast frequency response, would potentially provide such a justification. A revised summary table, incorporating both adjustments, is below.

Table 2: Revised summary analysis of Greenlink

£m NPV, 2013 prices	Base	Low	High
GB wholesale price savings	147	-178	244
Impact of cap and floor payments	36	-107	208
Onshore reinforcements costs (<i>no estimate yet available but expected to be low</i>)	0	0	0
System operation impacts	0	0	0
Quantified GB consumer impact	183	-285	452
Total quantified GB impact	96	-143	306

If we were to agree to grant a cap and floor regime for Greenlink, we consider that this would need to be conditional on certain aspects. In particular, it would be conditional on the final form of Greenlink’s connection terms not negatively affecting our updated analysis and on the I-SEM market design being as indicated here. We’d also require confirmation that the Irish regulatory regime supported the other 50% of the value of the project.

⁹ NGET describes that intertrip services are required as an automatic control if generation or demand may be reduced or disconnected after a system fault to relieve localised network overloads, maintain stability, manage system voltages and/or ensure the transmission system can be quickly restored.

Conditions in line with those set out in our recent IPA decision for FAB Link, IFA2 and Viking Link would also apply.¹⁰

Tell us what you think

In the light of this updated analysis, we seek your views on:

- Whether the changes proposed to our analysis are appropriate, and whether the estimated impacts seem reasonable.
- What the implications for our overall assessment should be, including any conditions that should apply.

Please send responses or any questions by 11 September 2015 to:

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If you want your response to remain confidential, you should clearly mark the document(s) to that effect and include the reasons for confidentiality. It would be helpful if you could submit your response both electronically and in writing. Please put any confidential material in the appendices to your response.

Next steps

Subject to responses to this open letter, we expect to take a decision on the Initial Project Assessment for Greenlink in autumn 2015.

Yours faithfully,

Martin Crouch

Senior Partner, Electricity Transmission

¹⁰ See page 4 of our July 2015 IPA decision:

https://www.ofgem.gov.uk/sites/default/files/docs/2015/07/ipa_decision_july_2015_0.pdf