

Consultation

Interconnector policy review: Working Paper 1 – Review of the cap and floor regime

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We are consulting on the analysis, proposed conclusions, and proposed recommendations from workstream 1 of the interconnector policy review, which undertakes a review of the cap and floor regime to date. We would welcome views from a range of stakeholders.

This document outlines the scope, purpose, and questions of the consultation and how you can get involved. Once the consultation is closed, we will consider all responses. We want to be transparent in our consultations. We will publish the non-confidential responses we receive alongside a decision on next steps on our website at [Ofgem.gov.uk/consultations](https://www.ofgem.gov.uk/consultations). If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

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Executive summary

In August 2020, Ofgem launched a review of its regulatory policy and approach to new electricity interconnectors. The objectives of the review are two-fold: firstly, to establish whether there is a need for further GB interconnection capacity beyond those projects currently with regulatory approval; and secondly to consider Ofgem's approach to the regulation of future GB interconnection. The review has been broken down into four workstreams considering specific aspects of our regulatory policy and decision-making.

This working paper summarises our analysis, findings, and provisional recommendations from workstream 1 – a review of the cap and floor regime to date. In this workstream we have looked back at whether the objectives of the regime have been met, or will likely be met in the future. We have also considered the effectiveness of the regime in meeting those objectives and considered changes or alternatives that might help us deliver those objectives more efficiently. This includes the regulatory design of the cap and floor regime and the structure of our current assessment framework.

Based on the results of engagement with stakeholders and our internal analysis, we are proposing the following conclusions and initial proposals:

- The cap and floor regime has been successful in delivering its objectives of incentivising the development of further GB electricity interconnection capacity that is in the interest of consumers, and from a range of market participants. Prior to the cap and floor regime there was 4 GW of electricity interconnector capacity; a further 10.9 GW of capacity is now either operational, under construction or in development with regulatory approval under the cap and floor regime.
- The principles of the cap and floor regime remain appropriate to incentivise further interconnector capacity development. The hybrid design of the regime provides a balance between market-based commercial incentives and a regulated regime, ensuring projects can move forward whilst minimising risk to consumers and maximising incentives on developers. However, there are areas where we consider a need for change to improve the design and effectiveness of the base regime, and to better reflect the changing needs case for future interconnection.
- We consider it appropriate to retain the application window approach for further interconnection; this allows for efficient planning from developers and assessment by

Ofgem. However, we want to be more intelligent about inviting and assessing prospective future interconnectors, including by taking account of analysis by National Grid Electricity System Operator (NGESO) through enhanced and more proactive network planning processes. We will therefore consider options to ensure that future application windows are more targeted to better reflect consumer impact and wider system impacts – ensuring future windows are strategically planned and delivered. This might include targeting specific capacity levels, or specific locations.

- The cap and floor assessment framework (initial project assessment, final project assessment, and post-construction review) appears to still be fit for purpose. We do, however, see a need for enhanced flexibility within this framework, in particular around the setting of project timelines and deadlines for submissions. We also see a need for enhanced due diligence and maturity criteria for projects applying for a cap and floor regime at the initial project assessment stage. This is to ensure that those projects that apply for a regulatory regime have a sufficient degree of certainty of progression.
- More engagement between Ofgem and other National Regulatory Authorities (NRAs) could improve our ability to assess the maturity of a project and to ensure as much alignment as possible between connecting countries' regulatory procedures.

We are now seeking stakeholder feedback on our analysis, conclusions and initial proposals through this public consultation. We will then consolidate the findings across each workstream in a single decision paper, which will provide our final recommendations for the future regulation of interconnectors in GB.

1. Introduction

Context

1.1. Electricity interconnectors are the physical links that allow the transfer of electricity across borders. The cap and floor regime is the regulated route for electricity interconnector developers in Great Britain. We decided to roll out the cap and floor regulatory regime to new near-term electricity interconnectors in August 2014 to incentivise the delivery of further cross-border infrastructure.

1.2. Before the cap and floor regime was introduced, a limited number of electricity interconnectors had been either built or proposed: IFA (2GW) to France, Moyle (0.5GW) to Northern Ireland, BritNed (1GW) to the Netherlands, and the East West interconnector (0.5GW) to the Republic of Ireland. These interconnectors were mostly developed as standalone projects on a merchant basis.

1.3. We recognised that there was benefit in further interconnection and therefore a need to develop a regulated regime for electricity interconnectors to incentivise further development. We proposed a cap and floor regime initially for the Nemo Link interconnector (1GW) to Belgium in 2013¹, and more broadly as an enduring regime in 2014.²

1.4. We have subsequently held two cap and floor application windows in 2014 and 2016, and have awarded a cap and floor regime in principle to nine interconnectors totalling 10.9GW in cross-border capacity. If all of these projects go ahead, alongside existing interconnectors and approved projects under development on a merchant basis, GB interconnection capacity could increase to 15.9GW.

1.5. We have committed to reviewing our regulatory policy and approach ahead of any further cap and floor application windows. This is to ensure that both further interconnection, and the regulatory framework for delivery, remain in consumers' best interests. We consider

¹ Cap and Floor Regime for Regulated Electricity Interconnector Investment for application to project NEMO (2013): <https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-regulated-electricityinterconnector-investment-application-project-nemo>

² Decision to roll out a cap and floor regime to near-term electricity interconnectors (2014): <https://www.ofgem.gov.uk/publications-and-updates/decision-roll-out-cap-and-floor-regime-near-term-electricityinterconnectors>

that now is the right time for this review for a number of reasons as set out in our August 2020 open letter to interested stakeholders.³

1.6. We are also undertaking our review in the context of Government's net-zero target for carbon emissions by 2050. In December 2020 the Department for Business, Energy, & Industrial Strategy (BEIS) published its Energy White Paper⁴ setting out how the UK will clean up its energy system to reach net-zero. In the Energy White Paper BEIS committed to working with Ofgem, developers and European partners to realise at least 18GW of interconnector capacity by 2030.

Scope of the review

1.7. The first objective of the interconnector policy review is to establish whether there is a need for further GB interconnection capacity beyond those projects currently with regulatory approval. If so, the second objective of this review is to consider Ofgem's approach to the regulation of future GB interconnection.

1.8. We decided to deliver this review through four workstreams (WS):

- WS1 – Review of the cap and floor regime to date
- WS2 – Socio-economic modelling
- WS3 – Review of the wider impacts of interconnection
- WS4 – Multiple Purpose Interconnectors (MPIs)

1.9. We decided to use a targeted engagement approach in order to maximise value from stakeholder input and invited interested stakeholders to notify us of their interest in the interconnector policy review in our August 2020 open letter. We have subsequently engaged with stakeholders through workstream-specific groups and stakeholder forums.

³ Open letter: Notification to interested stakeholders of our interconnector policy review (2020): https://www.ofgem.gov.uk/system/files/docs/2020/08/open_letter_-_interconnector_policy_review.pdf

⁴ Energy white paper: Powering our net zero future: <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future>

Scope of workstream 1

1.10. The aim of workstream 1 is to critically review the cap and floor regime to date, looking back as to whether the objectives of the regime have been met, as well as considering whether there are changes or alternatives which might help us deliver those objectives more efficiently. This review looks at both the regulatory design of the cap and floor regime (such as setting the cap, setting the floor and regime duration), as well as our assessment framework (application windows, IPA, FPA and PCR).

1.11. Through our stakeholder engagement we received a substantial amount of feedback and supporting information. In this consultation we have tried to distil feedback into common themes and present those that we consider most impactful. In response to this consultation stakeholders are welcomed to raise which points we might have missed or could be considered further.

1.12. Our review does not cover specific charging and market arrangements (e.g. cross-border capacity allocation or Capacity Market provisions) for interconnectors. These topics sit outside of the regulatory regime and the scope of our review.

1.13. This consultation paper should be read alongside those published for the other workstreams of this review and not in isolation, as the information and proposed recommendations presented in each paper are interlinked.

1.14. Throughout this document we present a number of proposed recommendations; these are summarised in Section 6. Following consultation, we will build on these recommendations and proposals to determine our approach to the regulation of future interconnection. Any proposals, recommendations or potential changes discussed in our working paper consultations will not be confirmed until our final decision on the interconnector policy review. In addition, any proposals or recommendations for change that are discussed in our working paper consultations will not be retrospectively applied, and will not affect or change aspects of the existing cap and floor regime that applies to projects that we have already approved.

What are we consulting on?

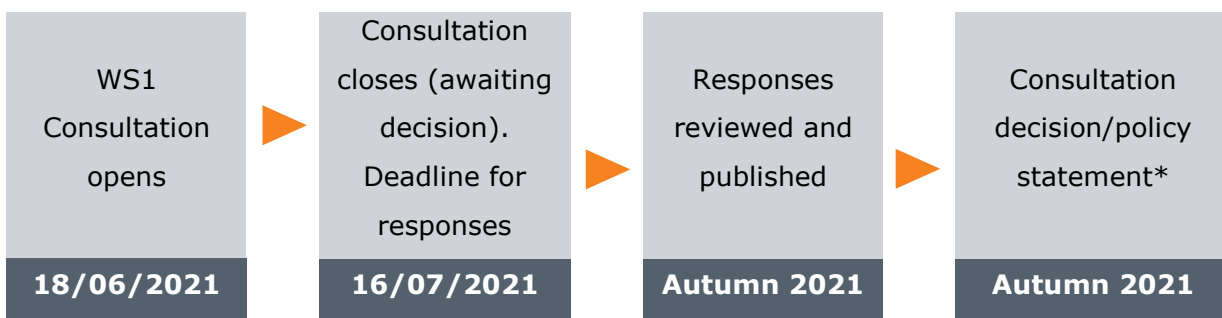
1.15. The purpose of this consultation is to get views from stakeholders on our analysis, proposed conclusions, and initial proposals from workstream 1 of the interconnector policy review.

1.16. Consultation questions are summarised in Section 6

Consultation stages and next steps

1.17. This consultation is one of four working papers covering each of the workstreams. Based on the responses received and drawing upon each working papers, we will publish our decision paper presenting our final proposals in relation to the future of the cap and floor regime in Autumn 2021. We will endeavour to action those final recommendations following that decision.

Figure 1: Consultation stages



How to respond

1.18. We want to hear from anyone interested in this consultation. Please send your response to the email address detailed on this document's front page.

1.19. We've asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can. We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations.

Your response, data, and confidentiality

1.20. You can ask us to keep your response, or parts of your response, confidential. We'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose. If you do want us to keep your response confidential, please clearly mark this on your response and explain why.

1.21. If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you do wish to be kept confidential and those that you do not wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we'll get in touch with you to discuss which parts of the information in your response should be kept confidential, and which can be published. We might ask for reasons why.

1.22. If the information you give in your response contains personal data under the General Data Protection Regulation (GDPR) and domestic legislation on data protection, the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 1.

1.23. If you wish to respond confidentially, we'll keep your response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We won't link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.

General feedback

1.24. We believe that consultation is at the heart of good policy development. We welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?


1.25. Please send any general feedback comments to stakeholders@ofgem.gov.uk

How to track the progress of the consultation

1.26. You can track the progress of a consultation from upcoming to decision status using the 'notify me' function on a consultation page when published on our website.

[Ofgem.gov.uk/consultations](https://www.ofgem.gov.uk/consultations).


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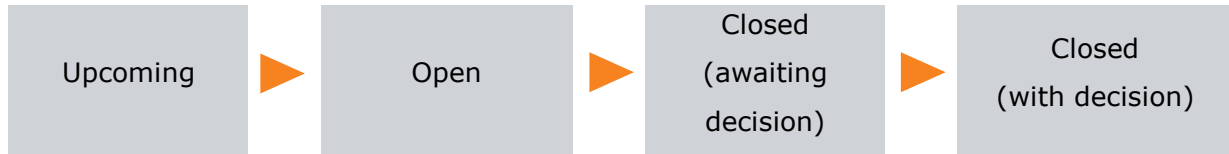
Email *

CAPTCHA

Check the box below to verify you're human

I'm not a robot 

1.27. Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:



2. Our approach to workstream 1

Section summary

This section summarise the analysis we undertook as part of workstream 1, and the key outcomes that have informed our conclusions and early recommendations.

Questions

Question 1: Do you agree with the approach we have taken to workstream 1?

Question 2: Do you think we have missed any important strengths, weaknesses, opportunities or threats when critically assessing the cap and floor regime?

Methodology

2.1. To inform the content and outcomes of workstream 1, we undertook a combination of qualitative and quantitative analysis. We also reviewed relevant regulatory decisions under the cap and floor regime and academic studies where appropriate. Additionally, we adopted a targeted engagement approach with our stakeholders to assess the effectiveness of the cap and floor regime and to identify changes or alternatives that might improve the design of our assessment framework or the mechanics of the regime.

Qualitative analysis

2.2. We conducted our qualitative analysis in two phases. Firstly, we identified and engaged with the key internal and external stakeholders interested in our review. Secondly, we reviewed the information gathered to classify and critically assess strengths, weaknesses, opportunities and threats (SWOT analysis).

Phase 1: Stakeholder engagement

2.3. Our August 2020 open letter⁵ invited interested external stakeholders to notify us of their interest in the review and each workstream. A total of 65 stakeholders indicated their interest in the Policy Review as whole, of which 39 expressed interest in workstream 1 specifically. Interested stakeholders include interconnector project developers, academia, generators, TSOs, consumer associations, investors, independent consultancies and law firms, supply chain providers, and the system operator.

2.4. In October 2020 we issued a call for evidence to the workstream 1 external stakeholder group seeking views on the following questions. A total of 14 stakeholders responded to our call for evidence for workstream 1.

- What has worked well under the existing cap and floor regime?
- Are there any current challenges with the cap and floor regime that we should consider addressing?
- What suggestions do you have to address any challenges?

2.5. In addition to our call for evidence we also sought external stakeholder input by attended relevant industry forums, such as the GB Interconnector Forum and Energy UK stakeholder groups. All information gathered through this process were used in our SWOT analysis along that from our internal stakeholder engagement.

Phase 2: SWOT analysis

2.6. We selected a SWOT analysis matrix as our analytical tool to conduct a critical review of the cap and floor regime. This matrix allows us to assess the individual points raised by our stakeholders and to consolidate them into key common themes. To do so, we used system of concept coding and key themes categorisation while considering the causal relationship between them. The common themes we identified reflect the views of all stakeholders who participated in this first stage of the review and are presented in the table below. In some

⁵ Open letter: Notification to interested stakeholders of our interconnector policy review: https://www.ofgem.gov.uk/system/files/docs/2020/08/open_letter_-_interconnector_policy_review.pdf

instances, there were conflicting views between different stakeholders; where this was the case we have made this clear.

Table 1: SWOT analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • The cap and floor regime has created a clear and stable regulatory framework which incentivises timely investment and competition in the sector. • It provides the level of revenue certainty required to develop large-scale interconnector projects, striking a fair balance between risk and rewards for both developers and consumers. • The flexibility to request regime variations is a positive intervention in order to enable a range of financing solutions. • The application process, including the window approach, and subsequent assessment framework is clear and transparent. 	<ul style="list-style-type: none"> • Aspects of our assessment framework that could be improved or modified: (i) our application window approach, (ii) the eligibility criteria and the CBA⁶ methodology currently used, and (iii) key regime timelines. • Potential room for improvement to aspects of the regime design (i) determination of cap and floor levels, and (ii) the setting of corporate tax rates. • Project finance developers sometimes face a number of challenges when applying for and progressing through the cap and floor regime. • It was noted that there is sometimes a lack of regulatory alignment between GB and the connecting country.
Opportunities	Threats
<ul style="list-style-type: none"> • Consider modifications to the assessment framework and regime design to address the weaknesses raised. • Review the existing methodologies used to calculate cap and floor levels, IDC⁷ rates, as well current benchmark parameters. • Consider options to ensure that any future regime works for all market participants. • Enhance engagement with connecting NRAs. 	<ul style="list-style-type: none"> • There is a shift in interconnector welfare distribution among stakeholders. • Window approach may become redundant if number of projects become marginal. • Other technologies are now competitive to deliver the three objectives of the cap and floor regime. • Impact of Brexit on potential regulatory divergence and efficiency of trade.

⁶ Cost Benefit Analysis (CBA)

⁷ Interest during construction (IDC)

	<ul style="list-style-type: none">• Cumulative risk to consumers if many projects need floor payments.• Uncertainty on the ongoing participation of interconnectors in the GB Capacity Market.
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Quantitative analysis

2.7. We undertook a high level quantitative analysis of the cap and floor regime’s impacts both in terms of overall interconnection capacity brought forward and benefits delivered to GB and GB consumers overall. The data used for this analysis is derived from the relevant consultation and decision documents for Window 1 and Window 2 projects. The results of our analysis are presented in the next Section.

3. Impact of the cap and floor regime

Section summary

In this section, we assessed whether the objectives of the regime have been met and presents stakeholders feedback on which of its elements have proved to be successful.

Questions

Question 3: Do you agree with our conclusion that the cap and floor regime has met its objectives to date? Is there any other information you think we should take into consideration in our analysis?

Question 4: Do you agree that the principles of the cap and floor regime remain fit for purpose and suitable to potentially incentivise further GB interconnection?

3.1. In order to assess whether the original objectives of the regime have been met, we have reviewed the cumulative impacts since its introduction. We have also considered the feedback received from our external stakeholders highlighting the key positive aspects of the regime.

Objectives of the cap and floor regime

3.2. Prior to the cap and floor regime in GB there were four interconnectors providing the GB electricity market with 4GW of cross-border capacity. The only route to market was through a merchant approach which means the developer was fully exposed to downside risk and was required to apply for exemptions from certain aspects of EU law. Despite strong commercial signals, the inherent risks involved under this route to market resulted in limited further investment in GB interconnection. Consequently, Ofgem identified the need to develop a regime to offer a predictable and stable framework within which investment could be made to increase GB interconnection capacity.

3.3. We applied the cap and floor regime to Nemo Link (to Belgium) as a pilot project and, following our development of the regime with CREG, the Belgian regulator, the cap and floor regime was rolled out to other near-term interconnectors in 2014. This was following the high-

level principles for interconnector regulation that we established in 2011, and can be summarised in the following objective: *"We are aiming to bring forward timely, economic and efficient investment in interconnection where that is in the interests of existing and future consumers."*

3.4. The cap and floor regime aims to unlock beneficial investment by providing long-term downside protection at the floor to reduce investment risk, whilst providing benefits to the consumer at the cap in return for their exposure at the floor. The regime was also designed with the intent to be open to third party investors, attracting new entrants and additional investment, and to ensure impartial and unbiased treatment between corporate financed and project financed⁸ developers, and between existing and future developers.

3.5. Given the substantially low levels of interconnection at that time, there was no central view on the optimal levels of interconnection for GB. However, market signals (via revenues) incentivised developers to identify opportunities where price differentials existed between markets and additional interconnector capacity would be well-utilised, driving arbitrage revenues and providing social welfare benefits. The regime was based on a developer-led approach, where developers were responsible for the location, size and timing of their investment following market price signals. This approach was further confirmed through Ofgem's Integrated Transmission Planning and Regulation (ITPR) project.⁹

Quantitative analysis

3.6. After approving Nemo Link, our first cap and floor regime project, we rolled out the regime to all interested near-term interconnector projects in 2014^{10,11}. Since then, we have

⁸ Throughout this consultation, we use 'corporate finance developers' to refer to companies who develop and operate interconnectors as part of a wider company group and using corporate financing approaches. We use 'project finance developers' to refer to companies developing interconnectors as single-purpose assets on a standalone basis, and using alternative financing approaches, such as non-recourse project finance.

⁹ Integrated Transmission Planning and Regulation (ITPR) project: final conclusions: https://www.ofgem.gov.uk/sites/default/files/docs/2015/03/itpr_final_conclusions_decision_statement_publication_final.pdf

¹⁰ For the purposes of Window 1 we determined 'near-term' to be projects that could feasibly connect by the end of 2020 based on developers' schedules.

¹¹ Decision to roll out a cap and floor regime to near-term electricity interconnectors: <https://www.ofgem.gov.uk/publications-and-updates/decision-roll-out-cap-and-floor-regime-near-term-electricity-interconnectors>

granted a cap and floor regime in principle to other eight new projects through two application windows in 2014 (Window 1) and in 2016 (Window 2) as shown in table 2 below.

Table 2: Interconnector projects information

Type	Project Name	Country	Capacity (GW)	Status
Pre-cap and floor	IFA	France	2	Operational
Pre-cap and floor	Moyle	Northern Ireland	0.5	Operational
Pre-cap and floor – Exemption	BritNed	Netherlands	1	Operational
Pre-cap and floor	EWIC	Republic of Ireland	0.5	Operational
Pilot	Nemo Link	Belgium	1	Operational
W1	IFA2	France	1	Operational
W1	Viking Link	Denmark	1.4	Under Construction
W1	NSL	Norway	1.4	Under Construction
Exemption	ElecLink	France	1	Under Construction
W1	FAB Link	France	1.4	Future
W1	Greenlink	Republic of Ireland	0.5	Future
W2	GridLink	France	1.4	Future
W2	NeuConnect	Germany	1.4	Future
W2	NorthConnect	Norway	1.4	Future

3.7. To date, two cap and floor projects are already operational (Nemo Link and IFA2), with another two currently under construction (Viking Link and NSL). These four projects account for an estimated capital investment of £4.1bn¹² and an extra 4.8GW, and will increase GB total interconnection capacity to 8.8GW.

¹² Figure inflated to 2020 prices.

3.8. Five other projects (FAB Link, Greenlink, GridLink, NeuConnect and NorthConnect) are currently at different stages of development. These represent an additional £6.1bn¹³ of estimated capital investment and an additional 6.1GW of potential capacity. If all these projects go ahead, a total of 10.9GW of additional capacity would have been brought forward under our cap and floor regime, compared to 4GW of pre-cap and floor capacity.

3.9. In addition to the above, the projects approved under the cap and floor regime are expected to deliver substantial socio-economic benefits to GB consumers by lowering electricity bills, supporting decarbonisation and enhancing security of supply.

3.10. The net quantifiable impact on GB consumer welfare from Window 1 projects assessed at the initial project assessment (IPA) stage was estimated at £13.6bn¹⁴, and the equivalent impact for Window 2 projects was estimated at £8.9bn¹⁵. We recognise that only a portion of the projects contributing to these benefits at IPA stage are operational or under construction, and that a number of projects are delayed relative to the positions modelled at IPA stage. Furthermore, we recognise that there have been significant changes in energy policy and decarbonisation ambition since the IPA assessments were performed.

3.11. We saw a negative shift in total GB welfare across all projects between Window 1 and Window 2. The reasons of this negative impact included the cannibalisation on other interconnectors' revenues and reduced generator profit as a result of new interconnectors marginalising wholesale price differentials. Key figures are presented in table 3 below.

¹³ Figure inflated to 2020 prices.

¹⁴ Figure inflated to 2020 prices from Initial Project Assessment (IPA) for Window 1 interconnectors: <https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-initial-project-assessment-fab-link-ifa2-viking-link-and-greenlink-interconnectors>

¹⁵ Figure inflated to 2020 prices from Initial Project Assessment (IPA) for Window 2 interconnectors: <https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-initial-project-assessment-gridlink-neuconnect-and-northconnect-interconnectors>

Table 3: Window 1 and Window 2 total welfare estimates

£m NPV, 2020 prices ¹⁶	Base Case (MA)	
	Total W1	Total W2
Net GB consumer welfare (incl. system impact)	13,677	8,970
Total GB welfare (incl. system impact)	3,914	-682

Stakeholder feedback

3.12. Overall, the majority of stakeholders concluded that the cap and floor regime has been successful in delivering its objectives. It has created a clear and stable regulatory framework which incentives for timely investment and competition in the sector. It also provides the level of revenue certainty required to develop large-scale interconnector projects, striking a fair balance between risk and rewards for both developers and consumers.

3.13. Stakeholders also welcomed the flexibility to request regime variations in order to enable a wider range of financing options within the interconnector market, such as non-recourse project finance, supporting the outcome of our May 2020 decision.¹⁷ This increased the level of confidence required by private investors and lenders to access the interconnector market, supporting the development of project financed interconnector projects. This in turn enhanced competition in the sector, which could drive general cost reductions through technological development, skill sharing and supply chain competition.

3.14. Overall, stakeholders were supportive of the clarity and transparency of the assessment framework under the regime, including the application process, the eligibility criteria used, the assessment phases (IPA, FPA and PCR¹⁸) and the underlying regime principles.

¹⁶ Figures inflated to today’s prices based on: <https://www.bankofengland.co.uk/monetary-policy/inflation/inflation-calculator>

¹⁷ Decision on proposed changes to our electricity interconnector cap and floor regime to enable project finance solutions: <https://www.ofgem.gov.uk/publications-and-updates/decision-proposed-changes-our-electricity-interconnector-cap-and-floor-regime-enable-project-finance-solutions>

¹⁸ Initial Project Assessment (IPA), Final Project Assessment (FPA) and Post Construction Review (PCR).

3.15. Some stakeholders recognised the merits of our window approach, as it incentivises developers to produce timely plans whilst allowing Ofgem to compare projects through a fair, transparent and organised process. In this way, it is possible to consider the interactions between different projects, and award a cap and floor regime only to those projects that offer value to GB.

3.16. Additionally, our cost assessment process is perceived as an effective proxy for competition, ensuring that majority of a project's costs are defined by competitive market processes, and therefore incentivising developers to make cost efficient decisions.

3.17. All of the factors above contributed to a substantial increase in interconnection capacity in GB, which stakeholders saw as critical to improve security of supply and competition in the electricity wholesale markets, and to help contribute to decarbonisation. Increased interconnection is also viewed as one of the main sources of flexibility required to manage the future energy system and accommodate the substantially higher share of renewable generation source expected to be deployed in the next decade. We explore the wider impacts of interconnection, including flexibility, in workstream 3 of the policy review.

3.18. It is important to note that whilst stakeholders were generally supportive of the cap and floor regime in meeting its objectives, a number of areas for improvement so that the regime could better meet its objectives were noted. This feedback is discussed in detail in Section 4 of this consultation document.

Has the cap and floor regime met its objectives?

3.19. Based on our analysis and on the feedback received, we believe that the cap and floor regime has been successful in meeting its original objectives and that the principles of the cap and floor regime remain fit for purpose and suitable to incentivise further GB interconnection.

Incentivising investment

3.20. The regime to date has already delivered a substantial increase in GB interconnection capacity, with significant further capacity under development within the regime. If all of the current cap and floor projects go ahead alongside existing and non-regulated connections, we will have 15.9GW of interconnection capacity. We therefore consider that this objective has been met.

In the interests of existing and future consumers

3.21. All projects awarded a cap and floor regime in principle across Window 1 and Window 2 were modelled to deliver positive GB consumer welfare in addition to providing wider strategic and sustainability benefits. The regime also includes various provisions that further protect the consumer, such as conditions relating to regulatory approval, and an availability threshold for floor eligibility. We therefore consider that this objective has been met.

Open to range of market participants

3.22. Four cap and floor interconnectors (Nemo Link, IFA2, NSL and Viking Link) have been developed by National Grid Ventures, with the remaining five projects developed by a range of private developers. To date most progress has been made by National Grid Ventures, as a part of the wider National Grid corporate group. Two project finance developers have regime variations confirmed and a number are at an advanced stage of development. We consider that this objective has been largely met, although challenges do remain for project finance developers that we discuss further in Section 4.

4. Potential regime improvements and alternatives

Section summary

This section presents stakeholder feedback on the aspects of the regime we should review in order to improve it. It also provides our preliminary analysis on potential alternatives we could consider for doing so.

Questions

Question 5: Do you agree with our initial proposals with respect to potential changes to the assessment framework of the cap and floor regime?

Specifically:

- a) To consider a more coordinated and system-wide approach to application windows, potentially informed by a more proactive role for NGESO. Do you have any views on the options presented for our approach to potential future application windows?**
- b) To review our eligibility criteria for any potential future regime, and to explore the potential to raise the maturity threshold for applicants.**
- c) To consider changes to the current incentives mechanisms to help ensure timely delivery of projects. Do you have any suggestions for modifications or alternatives?**

Question 6: Do you agree with our initial proposals with respect to potential improvement to parts of the technical design of the cap and floor regime?

Question 7: Do you have any suggestions for ways in which any potential future regime could work better for a broad range of developers?

Question 8: Are there any other potential regime improvements that we should we should explore that are not considered in this section?

4.1. In reviewing the aspects of the regime that could be improved, we grouped the feedback received from our stakeholders into four broad categories: (i) assessment framework, (ii) regime design, (iii) challenges faced by project finance developers and (iv) external engagement. When it was not possible to clearly allocate the points raised by our stakeholders, we treated them individually.

4.2. Where necessary, we have also provided a short description of the key arrangements of the regime that stakeholders commented upon, and the rationale behind them.

Assessment framework of the cap and floor regime

4.3. Stakeholders identified the following aspects of our assessment framework that could be improved or modified: (i) our application window approach, (ii) the eligibility criteria and the CBA methodology currently used, and (iii) key regime timelines.

Application window approach

4.4. Under the current arrangements, developers are asked to submit their project proposals to Ofgem through pre-determined and time-limited application windows, along with sufficient information and analysis demonstrating that their projects are in GB consumers' interest. Importantly, application windows are a key facilitator of the developer-led approach underpinning the regime, allowing developers to identify the location, size and timing of their proposed projects based on price signals in the market. However, the approach also allows us to compare and contrast projects on similar timeframes, and to take account of interactions between projects in our assessment. The key advantages of this approach have been already described in Section 3.

Stakeholder feedback

4.5. A number of stakeholders highlighted that the regime has been inconsistent and not sufficiently transparent with the frequency in which application windows have opened, causing uncertainty about timelines and the possibility of future windows. One stakeholder noted that the current approach has prevented projects that had achieved adequate maturity from submitting their proposals, forcing them to wait for another potential window, and subsequently deferring the delivery of benefits to consumers. Some stakeholders also highlighted that the current arrangements are better suited for balance sheet developers, as they are able to accommodate the uncertainty around timings of each new window more easily.

4.6. Some stakeholders suggested that assessing multiple projects at the same time might not be the best solution. It was noted that setting a common connection date for each window has created alignment in the construction periods of projects, creating or exacerbating supply chain bottlenecks and in turn has led to higher costs and increased delays. Similarly, one stakeholder noted that if the number of projects applying for the regime became marginal, the advantage of having multiple projects in the same window might become redundant, so a grouped assessment would not be necessary.

4.7. Stakeholders also suggested that assessing substantially different projects (e.g. in terms of cable route, consents required, design, regulatory routes available) under the same windows and timelines through a 'one size fits all' approach is not suitable. Additionally, respondents noted that the current window approach is misaligned with application approaches and timeframes in other countries, adding complexity to the regulatory approval of each project.

4.8. Some stakeholders noted that the developer-led approach of our current window design may not be best suited to identify the most beneficial projects going forward. The significant additional interconnection capacity expected to become operational in the coming years will contribute to a progressive reduction of price differentials between the UK and the connecting countries, and an increasing cannibalisation of future revenues. This would negatively impact the business case for future projects, affecting developers' ability to rely solely on price signals to propose new projects. It is also important to note that at present, as discussed in our Wrokstreams 2 and 3 consultation papers, our interconnector market modelling is not capturing wider costs or benefits.

4.9. It was also indicated that meeting the UK's Net Zero targets and renewable energy ambitions would require a substantial increase in offshore wind generation capacity and the necessary transmission infrastructure. In the future, relying exclusively on price signals to identify future point-to-point connections may lead to suboptimal outcomes. On the contrary, central coordination and planning is considered fundamental for the development of a cost-efficient and sustainable offshore grid. We note that the Offshore Transmission Network Review (OTNR) project is currently exploring these topics in more detail.¹⁹

¹⁹ Offshore Transmission Network Review (OTNR): <https://www.gov.uk/government/groups/offshore-transmission-network-review>

Initial proposals

4.10. We recognise stakeholder feedback on the limitations of a window based approach, specifically key concerns around supply chain bottlenecks, uncertainty on timings, and potentially decreasing value of assessing projects in tandem. On balance, however, we still see merit in an application process based on pre-determined windows, specifically in order to provide clear signals on upcoming assessments, and to understand the interaction between projects coming forward.

4.11. We are therefore proposing to review our current application window process ahead of the implementation of a possible future regime. We want to seek a wider range of stakeholder views on the topic and potential future options, as set out below, through this consultation.

4.12. In addition to targeted stakeholder feedback through workstream 1, we see from workstream 2 that as a result of the transformation of UK energy system in response to Net Zero policy ambition, price signals and the role of interconnectors are also changing. Relying exclusively on market price signals to identify future interconnector projects in a fully developer-led approach might lead to sub-optimal outcomes in the future.

4.13. Therefore, we think that a shift towards a more coordinated and system-wide approach to application windows may be preferable. Such an approach would incorporate market signals as well as envisage a more prominent role for NGENSO in identifying where, when and how much future interconnection is needed through enhanced and holistic network development planning processes. We note that this is consistent with consideration and early thinking through the OTNR project and our review of GB energy system operation.²⁰

4.14. In the following paragraphs we have considered potential alternative options to the current window approach that could support such a shift in approach and respond to stakeholder feedback. Some of these potential options were suggested by our stakeholders and some have been raised internally through policy development. These options should not all be considered mutually exclusive.

²⁰ Review of GB energy system operation: <https://www.ofgem.gov.uk/publications-and-updates/review-gb-energy-system-operation>

- *Option 1: Case-by-case applications* - Under this option, developers would submit their applications for a cap and floor regime once mature enough. We would then assess the applications on a project-specific and first-come-first served basis. This would be the strongest option for maintaining the developer-led aspect of the regime and allowing flexibility in their project planning. It may also mitigate the risk of creating bottlenecks in the supply chain for interconnectors, addressing some of the concerns raised by stakeholders.

However, we would not be able to compare different projects with each other to ensure that only the best projects are considered under the cap and floor regime. It may also lead to suboptimal solutions when considering wider impacts that are not directly linked to market price signals. Finally, this may lead to additional burden on the regulator with an unpredictable stream of cap and floor applications.

- *Option 2: Pre-determined window with a pre-determined capacity level* - Under this option, developers would still be invited to submit their applications through pre-determined windows, although only a limited level of new interconnector capacity will be offered. Under this option, the NGENSO would play an important role in providing an indication of what level of new capacity can be considered beneficial in each window.

Ofgem would still be able to compare multiple projects. This option would incentivise competition among developers, as only the most beneficial projects among those proposed would be considered against the level of capacity indicated. We recognised however that the benefits of competition might not materialise if the submissions equalled less than the total amount of capacity offered.

- *Options 3: Pre-determined window with a pre-determined geographical scope* - Similarly to Option 2, developers would apply to our cap and floor regime through a pre-determined window, although under this option the window will be focused on a specific geographical area. The NGENSO would play an important role in providing an indication of where each window should be focused on, based on the potential system benefits (avoided network constraints, avoided renewables curtailment, etc.) that further interconnection can bring in a given area.

However, this option could prevent projects connecting to potentially cheaper and low carbon energy markets to come forward if a new window does not match the location of the interconnector proposed.

- *Option 4: Cyclical investment rounds* - Under this option, windows would be opened on a regular basis, for instance on an annual or bi-annual basis. The predictability of this approach would support developer planning, limiting the risk of supply chain constraints, and timing more efficiently the connection of future projects. It would also allow for better alignment of the regulatory timelines of each NRA involved. We consider that this option responds directly to a number of concerns raised by stakeholders.

4.15. We have not considered potential alternative delivery options in more detail at this stage. We consider that a developer-led approach to interconnector development has driven the benefits expected to date, and has helped to ensure the cap and floor regime has met its objectives. Subject to our final position on approaches to application windows, we may also explore the role of competition in interconnector delivery in more detail, to ensure our proposed application and assessment frameworks can sufficiently capture the potential benefits of competition.

4.16. In order to inform next steps on this recommendation we would particularly welcome stakeholder views on a potential shift in our approach to window-based assessments, the potential options that are presented, and any other options that should be considered.

Eligibility criteria and CBA methodology

4.17. Under the current approach, we set out some high-level eligibility criteria ahead of application windows. These criteria are set out in our Window 1²¹ and Window 2²² notification decisions.

4.18. Once the eligibility of each applicant is confirmed, each project is assessed through the IPA stage of the regime. This assessment aims to understand social welfare impacts of each project by considering:

²¹ Decision to open a cap and floor regime for near term interconnectors:
https://www.ofgem.gov.uk/sites/default/files/docs/2014/08/decision_cap_and_floor_near_term_electricity_interconnectors.pdf

²² Decision to open a second cap and floor application window:
https://www.ofgem.gov.uk/sites/default/files/docs/decision_to_open_a_second_cap_and_floor_application_window_for_electricity_interconnectors_in_2016.pdf

- the impacts of projected flows between the connecting markets through independent socio-economic market modelling;
- the impacts on the operation of GB's transmission system and the costs of onshore transmission reinforcements needed to accommodate the four projects with support of modelling from NGESO; and,
- a qualitative assessment of hard-to-monetise impacts, such as strategic or sustainability benefits that the projects could provide.

4.19. Full details of our IPA assessments can be found in our Window 1²³ and Window 2²⁴ IPA consultations.

Stakeholder feedback

4.20. Some respondents consider that the CBA analysis carried out at the IPA stage does not consider the likelihood that projects from previous application windows do not materialise. They highlighted that assuming that all projects are delivered could impact negatively on the assessment of future projects. One respondent suggested derating the existing cap and floor capacity that is under development in future modelling to reflect uncertainty on progress. Feedback suggested this could also be reflected through modelling sensitivities.

4.21. Stakeholders indicated that it was unclear what factors were considered to inform final regulatory decisions on the outcome of the IPA, and the respective level of weighting or importance of each of the assessment areas. They noted that this made it difficult for stakeholders to replicate our assessment in full.

4.22. The majority of respondents also noted that the cap and floor regime does not sufficiently consider the wider impacts of interconnectors on GB consumer welfare when assessing and selecting projects. These wider impacts include decarbonisation benefits,

²³ Cap and floor regime: Initial Project Assessment for the FAB Link, IFA2, Viking Link and Greenlink interconnectors: <https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-initial-project-assessment-fab-link-ifa2-viking-link-and-greenlink-interconnectors>

²⁴ Cap and floor regime: Initial Project Assessment of the GridLink, NeuConnect and NorthConnect Interconnectors: <https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-initial-project-assessment-gridlink-neuconnect-and-northconnect-interconnectors>

flexibility, security of supply and operability. We note that these topics have been addressed in more detail under workstream 3 of the policy review.

4.23. Finally, stakeholders noted that some projects have not progressed in line with the original plans proposed at the IPA stage. Whilst the reasons for such delays are different, the limited eligibility criteria might have led to less mature projects being considered for and awarded a cap and floor regime in principle. In particular, it was noted that some developers might not have sufficiently engaged or secured firmer support from the relevant authorities in the connecting country prior submitting their cap and floor application to Ofgem.

Initial proposals

4.24. In response to stakeholder feedback we will review the methodology currently used in our CBA and supporting analysis in order to ensure it appropriately addresses sensitivities around projects coming online and the wider impacts of future interconnectors. Any such future assessment methodology should be clear and transparent for stakeholders so that they understand the assessment being undertaken. We are seeking views on our equivalent consultation papers for workstream 2 and workstream 3, where we have considered these topics in more detail.

4.25. We also consider it appropriate to review the project eligibility criteria we have set previously, and to explore the potential to raise the maturity threshold that potential applicants would have to meet in any future application framework. This would provide additional certainty that the projects awarded a cap and floor regime progress, mitigating the concern highlighted by stakeholders that some projects under the regime might not materialise (and reducing the impact this may subsequently have on other projects).

4.26. In particular, developers could be asked to provide more substantial evidence that their project is being actively considered in the connecting country for regulatory approval, and that a clear and well-defined route to market exists. This would ensure that those projects that apply for a regulatory regime have a sufficient degree of certainty of progression. Alongside this, we may want to strengthen our own due diligence checks and more proactively engage with our counterpart regulators.

4.27. We recognise that too high a threshold could disincentivise projects from coming forward. The potential additional development costs required to meet higher thresholds compared to the risk of not obtaining a cap and floor regime could make early investments in a project less attractive than otherwise would be the case. Therefore, we invite stakeholders to

share their views on what could constitute an appropriate maturity threshold for any potential future application framework, and how Ofgem could assess this more effectively.

Key regime timelines

4.28. The cap and floor regime includes provisions to incentivise developers to submit realistic project plans at the IPA stage and to deliver their projects in a timely manner. These provisions also ensure that consumers are protected from changes to the needs case of a project and from undue delays.

4.29. In addition to these provisions, the band of revenue exposure between the cap and the floor means that developers remain commercially incentivised to make timely progress and to enter operations as soon as feasible (so that projects can earn revenues). This overarching commercial incentive works in tandem with the regulatory provisions that we have in place.

4.30. The relevant key provisions currently in place are:

- **Deadline for the FPA submission** -. Developers initially had a set deadline²⁵ from our IPA decisions to submit adequate information to trigger a final project assessment, although we note that this deadline was extended and then relaxed for Window 1 projects. If developers fail to reach FPA within a sensible timeframe, we would consider whether the award of a cap and floor still stands on a case-by-case basis.
- **Connection date** - This is the date by which developers committed to connect by when applying to one of our application windows.²⁶ In case of material delays relative to this date, we may choose to reassess the need case of a project to determine whether it is still in the interest of GB consumers.²⁷
- **Regime Start Date (RSD)** - The 25-year duration of the regime starts from the earlier of the actual connection date of the project or the expected completion date developers committed to (plus a 'grace period' that varies across application windows). In the case of project delays the effective length of the regime is reduced by the same length of that

²⁵ The developers must submit their FPA 3 years after the IPA decision.

²⁶ This being the end of 2020 for Window 1 projects, and the end of 2022 for Window 2 projects.

²⁷ Material delays originally included any prospective delays in project delivery of more than 24 months. This was subsequently updated and extended to delays of more than 36 months.

delay. Developers may request relief for those delays where they consider those delays were caused by force majeure events.²⁸

Stakeholder feedback

4.31. Stakeholders highlighted a need for flexibility on the setting of commissioning date and RSD-related provisions. Stakeholders noted that the development stage of a project is complex so setting such deadlines at IPA stage leads to a high degree of uncertainty. Such uncertainty becomes a material risk, particularly for project finance developers, when coupled with provisions that could limit their ability to recover their costs over the entire length of the regime. This in turn may lead to higher financing costs at the floor or at worst, failure to secure adequate financing to allow projects to progress. Additionally, a common RSD and connection date for multiple projects may lead to higher development cost due to intensified competition for capital among projects, pressure on the supply chain, and congestion in regulatory process.

4.32. Stakeholders welcomed the introduction of a mechanism to provide relief to the RSD for delays due to force majeure events, however noted that the underlying principles of how we would assess such delays are still unclear. Developers suggested the development of a more flexible approach to the RSD and connection date, supported by a more transparent and well-understood set of principles for assessing delays, could effectively tackle these issues.

4.33. Respondents also pointed to the fact that there were differences in project timescales because interconnectors have inherently different physical characteristics. As such, a one-size-fits-all approach to deadlines within application windows does not reflect the complexities and uncertainties of developing an interconnector (for example, longer interconnectors would need more cable-laying campaign seasons during construction).

Initial proposals

4.34. We acknowledge that previous information on the principles and conditions to request changes to RSD might have not been sufficiently clear. In this regard, we have recently published a consultation and subsequent decision on our proposed approach to address delays

²⁸ For more information, see: <https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-interconnectors-decision-pre-operational-force-majeure-arrangements>

to the RSD due to force majeure events.²⁹ We invite stakeholders' comments on whether this publication provides sufficient clarity on this topic.

4.35. We recognise the risks flagged by stakeholders. However, it is important to note that the RSD is aligned to the connection date that developers committed to when applying to our cap and floor regime, and it is specifically designed to incentivise them to propose realistic and deliverable timelines for their projects. This becomes increasingly important if we choose to strengthen maturity and eligibility requirements in the future. Therefore, we consider that there would still be a need for some sort of related conditions or provisions in potential future frameworks.

4.36. Additionally, the connection date and the subsequent RSD are fundamental elements in the CBA assessment underpinning our decision to grant a cap and floor regime. These dates determine when the benefits of a future projects would start to be delivered, and the date after which consumers are expected to provide financial support through the floor. Therefore, lack of knowledge of these elements at IPA stage may limit our ability to assess the projects properly.

4.37. Our preliminary recommendation is to consider modifications to the current incentive mechanism, or alternative incentive mechanisms for developers to meet their RSD, as long as these ensure the timely delivery of projects, and protect consumers from undue delays. We are seeking stakeholder views on the above and on possible options or alternatives.

Regime design

4.38. The following paragraphs focus on the feedback received from stakeholders in regards to (i) methodology and parameters used to determine the return at the cap and the floor and (ii) corporate tax rates.

²⁹ For more information, please visit: <https://www.ofgem.gov.uk/publications-and-updates/consultation-our-proposed-approach-circumstances-where-interconnector-projects-cap-and-floor-regime-start-date-has-been-delayed-due-force-majeure-events-pre-operational-period>

Determining the cap and floor levels

4.39. The cap and floor regime sets a maximum (cap) and minimum (floor) level for the revenues that can be earned by the interconnector over a 25-year period. In our default regime, the cap and floor levels are set based on project costs using a typical regulated asset base (RAB) model. We then apply different financial return parameters to set the cap and the floor independently.

4.40. The floor is designed so that an efficient developer with a notional financing structure is able to recover their costs to ensure they are financeable when revenues are not sufficient. To determine returns at the floor, we apply a cost of debt index to 100% of the Regulated Asset Value (RAV), not just the geared portion. Therefore, whilst the floor is not designed to create value for equity providers (i.e. it does not make a project commercially viable), it allows equity providers to earn a minimum return (at a notional cost of debt).

4.41. The cap is designed so that an efficient developer with a notional financing structure can earn a return above the headline equity return rate to incentivise investment. This is because, to determine returns at the cap, we apply the equity return rate, which is estimated using a Capital Asset Pricing Model (CAPM) approach, to 100% of the RAV, not just the ungeared portion.

4.42. Supported by analysis undertaken by CEPA³⁰, we set the key benchmark parameters used in these calculations based on our assessment of the risks that regulated interconnectors were exposed to under our regime at that time, and considering other regulatory frameworks in place at the time for comparison.

4.43. As part of our current policy, developers may request variations to the default regime design, provided they can demonstrate that these are in the interests of GB consumers. This is to reflect that certain aspects of the default regime may be less suitable for some types of financing solutions, and therefore it might limit the pool of capital developers can access. To date, two projects, Greenlink and NeuConnect, have requested regime variations, some of which we have subsequently approved.³¹

³⁰ Cap and Floor Regime for Regulated Interconnectors – subsidiary documents:
<https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-regulated-electricity-interconnector-investment-application-project-nemo>

³¹ Decision on proposed changes to our electricity interconnector cap and floor regime to enable project

Stakeholder feedback

4.44. From our engagement process, it was noted there are a range of different methodologies, time horizons and considerations in relation to estimating our interest during construction (IDC) rate, the cap rate and the floor rate.

4.45. For both Window 1 and Window 2 projects, cap and floor return rates are set on a project-specific basis using the FID date as the reference date.

4.46. The cap rate relies almost entirely on fixed input values across all Window 1 and Window 2 projects. The only input that can change across projects is the total market return, which tends to only change marginally, as it is based on average equity returns over a long period. Stakeholders observed that as a result, the cap rate is not necessarily reflective of current or recent market evidence and shows limited variation across projects.

4.47. On the other hand, the floor rate is calculated based on average bond yields over a much shorter time window (20 working days) leading up to the FID date. Stakeholders observed that as a result, the floor rate reflects current market conditions and changes significantly across projects.

Table 4: Cap and floor rates of projects with an FPA decision

Real-RPI rates	Nemo Link³²	NSL	IFA2	Viking Link
FID date	26/02/15	25/03/15	09/11/16	26/09/18
Cap rate	8.10%	7.98%	8.10%	8.23%
Floor rate	0.92%	0.88%	-0.21%	0.17%

4.48. Stakeholders noted a difference in approach to calculating IDC rates between Window 1 and Window 2. For Window 1 projects it is set on a project-specific basis, using the FID date

finance solutions: <https://www.ofgem.gov.uk/publications-and-updates/decision-proposed-changes-our-electricity-interconnector-cap-and-floor-regime-enable-project-finance-solutions>

³² The rates shown in this table for Nemo Link were estimated for the British half of the interconnector and therefore differ from the rates used to set cap and floor levels, as these were averages of British and Belgian rates, since, for Nemo Link only, cap and floor levels were set for the entire projects (both the British and Belgian half). For all other projects, cap and floor levels were set only for the British half, and therefore the rates shown in this table match those used to set cap and floor levels.

as the reference date. However, for Window 2 projects, the IDC rate is set on an annual basis for each relevant financial year and applied to all projects that reach FID during that financial year.

4.49. A more fundamental difference is that the methodology used to calculate the IDC rate uses different calculations, input data, and observation windows. For Window 1 projects, the IDC rate is estimated using different observation windows for different parameters; for example, the cost of debt component of the IDC rate (a WACC rate) is set equal to the floor return rate (20-day average) while the risk-free rate used to calculate the cost of equity component of the IDC rate is estimated based on a 10-year average.

4.50. Due to the way in which it is calculated, the IDC rate, similarly to the floor rate, changed significantly across Window 1 projects. The new methodology, used for Window 2 projects, returns a relatively more stable IDC rate year on year.

Table 5: IDC rates of projects following FID

RPI-real	Nemo Link ³³	NSL	IFA2	Viking Link	Window 2			
FID date	26/02/15	25/03/15	09/11/16	26/09/18	18-19	19-20	20-21	21-22
IDC rate	5.37%	6.37%	6.75%	4.39%	2.84%	3.12%	2.64%	2.69%

4.51. It was also highlighted that there are differences in how similar cost of capital rates are calculated in other regulatory regimes, for example the price controls for regulated networks. Whilst acknowledging that some difference might be justified, it was suggested that we consider whether a more standardised approach to setting cost of capital rates could be adopted both across the different rates used in the cap and floor regime, and between this and other regimes.

³³ The rates shown in this table for Nemo Link were estimated for the British half of the interconnector and therefore differ from the rates used to set cap and floor levels, as these were averages of British and Belgian rates, since, for Nemo Link only, cap and floor levels were set for the entire projects (both the British and Belgian half). For all other projects, cap and floor levels were set only for the British half, and therefore the rates shown in this table match those used to set cap and floor levels.

Initial proposals

4.52. Given stakeholder observations we propose a review of the methodologies used to calculate IDC, cap and floor rates, and the current benchmark parameters. This will allow us to consider standardisation both within the cap and floor regime and between this and other regimes across Ofgem in response to stakeholder suggestions.

4.53. A review of the methodologies could potentially include:

- Rationale behind the existing methodologies;
- Input data, sources, and observation windows used in these methodologies;
- Methodological differences between IDC, cap, and floor rates;
- Differences between Window 1 and Window 2 projects;
- Whether rates and underlying inputs are set on a project-specific basis, window-specific basis, or in relation to specific financial years;
- Whether fixed input values should be used and, if so, how often they should be reviewed and updated, if necessary.

4.54. We welcome stakeholder feedback through this consultation on the methodologies that we should consider for further review, suggestions on our approach to these methodologies, and any evidence in support of these.

Corporation tax and capital allowance rates

4.55. Under the current approach adopted for Window 1 and Window 2 projects, the corporation tax rate and writing down allowance rate are set on a project-specific basis by fixing them for the entire duration of the regime at FID, in line with the prevailing rates for the financial year within which FID is reached.

Stakeholder feedback

4.56. Stakeholders noted that under the current approach any changes to either rate coming into effect after the financial year in which FID is reached would not be reflected in the cap and floor levels, therefore not aligning with actual costs. It was noted that these arrangements differ from those adopted in other regimes designed and administered by Ofgem, for example the price controls for regulated networks.

4.57. Stakeholders observed that cap and floor levels are mostly fixed for 25 years (in real terms), and only updated annually to reflect inflation and availability incentives, and on an ad-hoc basis (following request from the developer and subject to conditions and Ofgem's approval) to reflect a significant difference between forecast and outturn operating and decommissioning costs. Revenue allowances for regulated networks, however, are more flexible, as they are set every five years. Additionally, some components, including corporation tax rates, are updated on an annual basis; as a result, these revenue allowances in other regimes reflect the actual corporation tax rate in each year, rather than an ex-ante forecast rate fixed at the start of the price control.

4.58. Some stakeholders suggested that more flexibility could be introduced into the cap and floor regime to capture changes in corporation tax and capital allowance rates following FID and throughout the duration of the regime.

Initial proposals

4.59. We acknowledge feedback on differences between Ofgem regimes. However, we also note that the cap and floor regime and RIIO price controls are intrinsically different in a number of ways, and therefore a different approach to the treatment of tax might be justified.

4.60. To respond to stakeholder feedback, we recommend a review of potential changes to the cap and floor regime to reflect changes in corporation tax and capital allowance rates following FID.

4.61. One potential option could be to introduce a mechanism to reflect changes to the corporation tax rate. Cap and floor levels are already updated to reflect outturn inflation, availability incentives, and, if required, one-off adjustments to controllable operating expenditure and decommissioning costs; a similar adjustment could be designed to reflect changes in corporation tax rates and, potentially, writing down allowance rate.

4.62. We welcome stakeholder feedback on the scope of potential changes to our approach to corporation tax and capital allowances in the cap and floor regime, any additional options for changes, and supporting evidence for those options.

Challenges faced by project finance developers

4.63. The cap and floor regime was intended to support a wide range of different financing options. Early feedback, however, suggested some aspects of the regime might not be suitable for certain types of financing solutions. For this reason, we introduced a regime variations process to enable developers to request variations to the default regime where they could be justified.³⁴

Stakeholder feedback

4.64. A number of stakeholders noted that project finance developers face a number of challenges when applying for and progressing through the cap and floor regime. We have grouped feedback in this area into four themes.

- **Default regime not aligned with project finance needs** - Stakeholders highlighted that alternative financed projects were forced to request regime variations because the standard/default regime didn't consider their specific needs. They claimed that this situation added complexity and uncertainty to the process, which increased investors' risk perception over projects and, therefore, the cost of financing them.
- **FPA/FID circularity** - Participants pointed out that following requests for regime variations, specifically for actual cost of debt, independent developers were facing challenges when trying to reach financial close. This due to a perceived circularity issue at the FPA stage in which costs and interest rates have to be fixed in order to set preliminary cap and floor levels, but lenders are reluctant to fix those rates until the FPA process has been completed so that they have certainty on the project cost allowances and subsequent cap and floor levels. We have taken steps to manage this with active projects.
- **OPEX uncertainty at FPA** - In addition, stakeholders commented that the lack of certainty about the future operating costs the regime would allow to be recovered at the FPA stage caused project finance developers to experience difficulties at financial close.

³⁴ Enabling a range of financing solutions under the cap and floor regime:
<https://www.ofgem.gov.uk/publications-and-updates/enabling-range-financing-solutions-under-cap-and-floor-regime>

We note that we are open to assessing Opex at FPA stage if the developer can provide sufficiently mature cost estimates.

- **Floor to cover minimum equity return** – One stakeholder suggested that as currently structured the floor does not provide protection of equity investment, which has led to no projects being funded through project finance yet. They therefore recommend that we consider offering a minimum level of equity return in any future cap and floor regime. We note that the floor in the default regime allows a small return on equity (at the cost of debt), as the cost of debt benchmark is applied to the full project RAB.

Initial proposals

4.65. We recognise the feedback and challenges highlighted by developers, and have taken steps where possible in the current regime to mitigate these, for example by providing the flexibility for developers to request variations to the default regime. We also note that a number of projects seeking project financing are in the advanced stages of development.

4.66. We will further consider options to ensure that any future regime works for all market participants equally. We would welcome stakeholder suggestions on ways to ensure a level playing field for a range of developers in a possible future regime.

Engagement with other NRAs

4.67. Ongoing engagement with the NRA in the connecting country is important throughout the cap and floor regime. We maintain good working relationships with our colleagues in connecting countries to ensure that we can progress projects efficiently and effectively.

Stakeholder feedback

4.68. Participants highlighted that other NRAs have different regulatory regimes and assessment frameworks, and that elements of these regimes may not be compatible with elements of the cap and floor regime. Specifically, respondents noted a lack of coordination regarding timelines, the application process and assessment stages; the mismatch of regulatory periods between NRAs; and the differences between the cap and floor regime and investment regimes in connecting countries.

4.69. Contributors highlighted that there was no mechanism in place to resolve cross-border differences in regulatory timings or decisions, and nor was there any guidance as to whether it was for the developer to resolve such differences or whether it was for the NRA to resolve, or whether it was for both parties to seek a resolution.

Initial proposals

4.70. We have maintained positive working relationships with the NRAs in connecting countries and also with wider European regulatory bodies. Through these relationships we have noted positive feedback on the cap and floor regime and have worked with our European colleagues to resolve differences in regulatory approach where required. However, it is not our role to influence regulatory approaches or decision making outside of our jurisdiction.

4.71. We do see there being room for improvement in our regulatory engagement on specific projects as they develop and progress through the cap and floor regime. Most notably, we consider that it would be beneficial to increase proactive engagement when initially assessing projects at IPA stage. This would provide us with a better understanding of the level of regulatory support, routes to market, and realistic timelines in the connecting country. Earlier and enhanced due diligence in this area will help us assess the viability of assessed projects and support our assessment of their planning and maturity.

5. Conclusions and recommendations

Section summary

In this section we summarise the conclusions and initial proposals that have been set out and discussed throughout this document.

Questions

Question 10: Do you agree with our conclusions? If not, please concisely explain why and provide supporting information if available.

Question 11: Do you agree with our initial proposals? If not, please concisely explain why and provide supporting information if available.

Conclusions

5.1. As a result of the analysis performed under workstream 1 of the interconnector policy review, as described in this consultation document, we have concluded the following:

- The cap and floor regime has met its objectives to date. Specifically, it has incentivised investment in additional GB interconnector capacity, has brought forward projects that are in the interest of the GB energy system and GB consumers, and has attracted investment from a range of market participants.
- Nine interconnectors with a total of 10.9 GW of cross-border capacity are currently operational, under-construction, or under-development within the cap and floor regime. If all of those projects reach commercial operations alongside existing and non-regulated interconnectors, GB will reach 15.9 GW of interconnection capacity.
- Stakeholders are generally positive about the cap and floor regime as a mechanism by which to incentivise investment, and the processes by which the regime is implemented. Specifically, stakeholders note:
 - It has created a clear and stable regulatory framework which incentivises timely investment and competition in the sector.

- It also provides the level of revenue certainty required to develop large-scale and long-term interconnector projects, striking a fair balance between risk and rewards for both developers and consumers.
- The flexibility to request regime variations is a positive intervention in order to enable a range of financing solutions.
- The application process, including the window approach, and subsequent assessment framework is clear and transparent.
- There are a number of aspects of the regime that could be improved upon to better meet its objectives if we are to consider extending the regime in the future. Specifically:
 - Stakeholders identified the following aspects of our assessment framework that could be improved or modified: (i) our window approach, (ii) the eligibility criteria and the CBA methodology currently used, and (iii) key regime timelines.
 - Stakeholders identified the following aspects of our regime design that could be improved or modified: (i) methodology and parameters used to determine the return at the cap and the floor and (ii) corporate tax rates.
 - Challenges remain for project finance developers, specifically through the added complexity of being required to request regime variations, and the subsequent interaction of those variations with the default regime.
 - There is room for earlier enhanced and proactive engagement with our counterpart NRAs in connecting countries, to further explore regulatory alignment as far as possible.

Initial proposals

5.2. In response to the conclusions drawn from workstream 1 we are seeking views on the following proposals:

- The principles of the cap and floor regime remain fit for purpose and suitable to incentivise further GB interconnection. However, we should consider modifications to the assessment framework and regime design in order to work more clearly for all parties and to better reflect the current energy policy environment.
- We should reconsider aspects of the current window-based regime application approach. This should be more targeted, whether on a capacity or location basis, and further supported by strategic and proactive analysis performed by the ESO.

- We should review the eligibility criteria for applications into a possible future regime, and consider options to enhance the maturity threshold for successful applications. In support of this we should enhance due diligence at application stage, including through earlier and more proactive engagement with the connecting NRAs.
- We should consider modifications to the current incentives for the timely delivery of interconnection within the regime. Specifically, we should consider how and when we set key regime deadlines such as target connection date and regime start date, and also how we monitor and enforce these within the regime.
- We should review the existing methodologies used to calculate IDC, cap and floor rates as well as of the current benchmark parameters. This could lead to further standardisation both within the cap and floor regime and between this and Ofgem's other regulatory regimes and frameworks. We should also consider potential changes to the cap and floor regime to reflect changes in corporation tax and capital allowance rates following FID.
- We will further consider options to ensure that any future regime design and assessment framework works for all market participants equally.
- We should enhance engagement with connecting NRAs throughout the regime in order to further explore regulatory alignment.

5.3. Following this consultation, and our review of stakeholder responses, we will confirm our final proposals in our interconnector policy review decision. Our proposed detailed steps to implement our final proposals will also be set out in our decision.

6. Consultation questions

Section summary

In this section we set out the specific questions on which we would like feedback.

Questions

Where possible, we would welcome feedback on the individual questions per section. However, we recognise this may be detailed and time-consuming, so would also appreciate feedback on the broad themes or overarching questions if preferred.

In responding please be as specific and concise as possible – for example, if providing feedback on specific conclusions or recommendations, please clearly explain.

Section 2

Question 1: Do you agree with the approach we have taken to workstream 1?

Question 2: Do you think we have missed any important strengths, weaknesses, opportunities or threats when critically assessing the cap and floor regime?

Section 3

Question 3: Do you agree with our conclusion that the cap and floor regime has met its objectives to date? Is there any other information you think we should take into consideration in our analysis?

Question 4: Do you agree that the principles of the cap and floor regime remain fit for purpose and suitable to potentially incentivise further GB interconnection?

Section 4

Question 5: Do you agree with our initial proposals with respect to potential changes to the assessment framework of the cap and floor regime? Specifically:

- b) To consider a more coordinated and system-wide approach to application windows, potentially informed by a more proactive role for NGESO. Do you have any views on the options presented for our approach to potential future application windows?**
- d) To review our eligibility criteria for any potential future regime, and to explore the potential to raise the maturity threshold for applicants.**
- e) To consider changes to the current incentives mechanisms to help ensure timely delivery of projects. Do you have any suggestions for modifications or alternatives?**

Question 6: Do you agree with our initial proposals with respect to potential improvement to parts of the technical design of the cap and floor regime?

Question 7: Do you have any suggestions for ways in which any potential future regime could work better for a broad range of developers?

Question 8: Are there any other potential regime improvements that we should we should explore that are not considered in this section?

Section 5

Question 9: Do you agree with our conclusions? Please provide supporting information if available.

Question 10: Do you agree with our initial proposals? Please provide supporting information if available.

Other

Question 11: Do you have any further feedback on our analysis, conclusions or proposals presented in this consultation document?

Appendix 1 – Privacy notice on consultations

Personal data

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation (GDPR).

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally) not the content of your response to the consultation.

1. The identity of the controller and contact details of our Data Protection Officer

The Gas and Electricity Markets Authority is the controller, (for ease of reference, “Ofgem”). The Data Protection Officer can be contacted at dpo@ofgem.gov.uk

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

3. Our legal basis for processing your personal data

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest. i.e. a consultation.

3. With whom we will be sharing your personal data

Your personal data will not be shared outside of Ofgem.

4. For how long we will keep your personal data, or criteria used to determine the retention period.

Your personal data will be held in line with our processes.

5. Your rights

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete
- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data

- get your data from us and re-use it across other services
- object to certain ways we use your data
- be safeguarded against risks where decisions based on your data are taken entirely automatically
- tell us if we can share your information with 3rd parties
- tell us your preferred frequency, content and format of our communications with you
- to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at <https://ico.org.uk/>, or telephone 0303 123 1113.

6. Your personal data will not be sent overseas (Note that this cannot be claimed if using Survey Monkey for the consultation as their servers are in the US. In that case use “the Data you provide directly will be stored by Survey Monkey on their servers in the United States. We have taken all necessary precautions to ensure that your rights in term of data protection will not be compromised by this”.

7. Your personal data will not be used for any automated decision making.

8. Your personal data will be stored in a secure government IT system. (If using a third party system such as Survey Monkey to gather the data, you will need to state clearly at which point the data will be moved from there to our internal systems.)

9. More information For more information on how Ofgem processes your data, click on the link to our “[Ofgem privacy promise](#)”.