Consultation

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Consultation on the Regulatory Framework for Offshore Hybrid Assets: Multi-Purpose Interconnectors and Non-Standard Interconnectors

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In 2022 Ofgem launched the Multi-Purpose Interconnector (MPI) Pilot, to create a regulatory framework that would enable the development of novel MPI projects and contribute to national offshore wind and interconnection targets. We are now consulting on the proposed regulatory regime to apply to pilot projects which are granted a regime in principle. This covers the licensing framework, regulatory regime, and network charging. To accommodate our proposals for licensing and regulatory regime, we have expanded the definition of MPIs. Going forward the pilot scheme will cover Non-Standard Interconnectors (NSIs) in its scope, and both MPIs and NSIs are considered subsets of Offshore Hybrid Assets (OHAs). Market arrangements for OHAs have been covered separately in a consultation published collaboratively with the Department for Energy Security and Net Zero. We welcome responses from all interested 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. 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

Offshore Hybrid Asset (OHA) Pilot Regulatory Framework

In 2022, following the conclusions of Ofgem's Interconnector Policy Review[1], we launched the MPI pilot scheme, and in December 2022 we announced that two projects had passed the eligibility check and would be progressed to Initial Project Assessment: Nautilus to Belgium, and Lion Link (previously Eurolink) to the Netherlands.

In addition to Ofgem's work, MPI development forms a key part of the Offshore Transmission Network Review, and the Energy Bill, which when enacted, will introduce MPIs as a new asset class. However, we note that as of the date of publication of this consultation, the Energy Bill is at the Committee stage in the House of Commons. The final text of the Energy Bill, including the MPI-related Clauses, may be amended during its passage through Parliament and is, therefore, subject to change.

To reflect the asset classification stated in the Bill, we are updating Ofgem's MPI pilot scheme to include two distinct categories of projects: multi-purpose interconnectors (MPI) and non-standard interconnectors (NSI). These are referred to together as offshore hybrid assets (OHA) and the pilot scheme will be named the OHA pilot going forward to account for the expansion in scope. The deployment of these offshore hybrid assets can help to achieve Government targets for interconnection and low carbon infrastructure. We have progressed this work collaboratively with industry stakeholders through the MPI Framework Discussion Group, which has helped to build the insight and recommendations of this consultation.

Licensing Arrangements

From a licensing perspective, an MPI will be performing a new type of licensable activity: a dual activity of offshore transmission and interconnection which is not covered by the existing legal framework. To address this, the upcoming Energy Bill, when enacted, will introduce MPI-related provisions.

This consultation explains how we are proposing to categorise the pilot offshore hybrid assets in order to progress policy development on the licensing arrangements for operators of these novel assets. The key distinction is whether offshore transmission activities occur in GB or not:

[1] https://www.ofgem.gov.uk/publications/interconnector-policy-review-decision

- **Category 1 assets:** NSIs connected to an offshore generator in the connecting jurisdiction but not in GB, and which will conduct interconnection activities in GB and the connecting jurisdiction as well as offshore transmission activities only in the connecting state; and
- **Category 2 assets:** MPIs connected to an offshore generator in GB, which will conduct interconnection activities in GB and the connecting state as well as offshore transmission activities in GB (and optionally in the connecting state).

We are seeking feedback on our proposals for the licensing arrangements and on related regulatory matters.

Regulatory regime for OHAs

A new regulatory framework is needed to incentivise investment in OHAs. We discuss the relevant market frameworks and regulatory regimes that we have considered, including:

1. The cap and floor regime;
2. Possible elements of a RAB-based regime for the offshore converter platform;
3. Income from cross border trade (congestion revenue);
4. Revenue support mechanisms for OWFs; and
5. Revenues from balancing and ancillary services.

A number of possible regulatory regime options are described in this consultation and in the supporting appendices. Our preferred regulatory regime for MPIs includes a RAB-based mechanism for the offshore converter platform, and a narrow cap and floor for the MPI cable. Our preferred regime for NSIs is a narrow cap and floor for the cable. High level regime parameters are provided for the recommended options. We are seeking feedback on our options.

Charging

We set out high level principles relating to network charging arrangements for offshore generators connecting to OHAs and specify that we believe OFWs should not pay Transmission Network Use of System (TNUoS) charges if connected to an Offshore Bidding Zone.

Next steps

We are also consulting on market arrangements for OHAs in parallel with this consultation, jointly with the Department for Energy Security and Net Zero. Please see the document published on the same webpage as this consultation.

We expect to publish a decision on the regulatory regime for OHAs this autumn and to next consult stakeholders on which projects to award a regime in principle in late 2023.

1. Introduction – Offshore Hybrid Asset (OHA) Pilot Regulatory Framework

The OHA Pilot Scheme

1.1 In light of the proposed description of an MPI asset as contained in the Energy Bill and taking into account that not all offshore hybrid assets will qualify as MPIs in GB, we have updated the pilot scheme to include two categories of projects: multi-purpose interconnectors (MPI) and non-standard interconnectors (NSI).[2]

1.2 MPIs are a novel asset type combining offshore transmission with interconnection activities in GB, offering significant contributions to Government ambitions for 50GW of offshore wind capacity by 2030[3]. In addition, the development of OHAs more generally contributes to the target of 18GW of interconnection by 2030, is a means of investment in low carbon infrastructure at a fair cost to GB consumers and enables coordination and efficiency in the delivery of offshore networks.

1.3 OHAs can provide a number of benefits:

i) by reducing the impact on coastal communities and the marine environment through the reduction of the number of individual transmission cables and onshore converter stations required to deliver the same output radially;

ii) by increasing efficiency in the construction and use of the infrastructure, allowing the same cable to be used for wind energy transmission and cross-border trade;

iii) by making maximum use of renewable energy that might otherwise be curtailed by providing routes to export at times of excess generation, in turn reducing overall system costs to consumers and offering a route to market for wind developers that maximises output, reduces asset costs, and minimises delays; and

iv) as a means of grid flexibility and ensuring security of supply in a decarbonised grid.[4]

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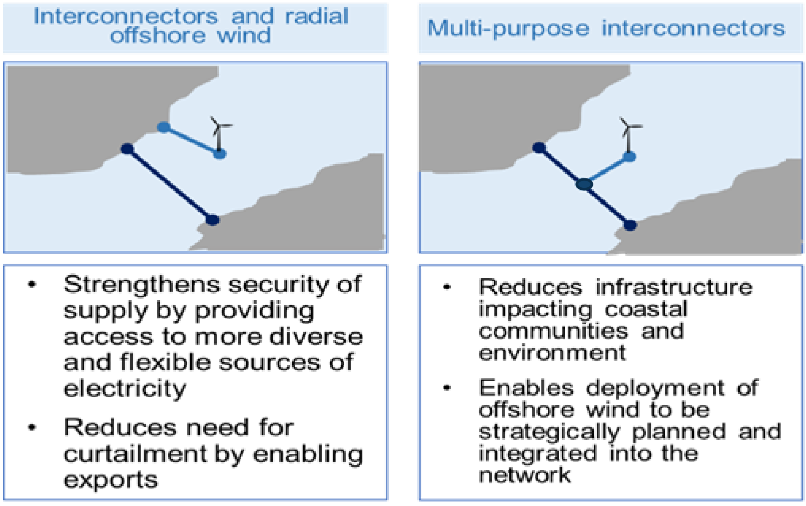
[2] Chapter 2 on Licensing Arrangements explains the difference between MPIs and NSIs – as relevant in the context of the pilot scheme.

[3] In December 2020, the UK Government's advisory body the Climate Change Committee (CCC) published a roadmap for the nation to achieve net-zero emissions including 100GW offshore wind by 2050

[4] Future Energy Scenarios Report 2022

Figure 1: Interconnector and radially connected offshore wind farm (left) compared to an MPI (right)



1.4 The cap and floor regime is the regulatory route for electricity interconnectors in GB. It was introduced by Ofgem in 2014 to encourage new investment in cross-border infrastructure. Ofgem has opened two previous application windows for developers to apply for a cap and floor regime and interconnector capacity has since increased from 4GW in 2012 to 8.4GW today, with a further 3.3GW under construction.

1.5 In summer 2020, Ofgem and the former Department for Business, Energy and Industrial Strategy (BEIS)[5] launched two related programmes on offshore network development: the Interconnector Policy Review (ICPR), which sought to establish whether there is continued need for GB interconnection capacity beyond the current approved projects under the cap and floor regime; and the Offshore Transmission Network Review (OTNR), which aims to ensure that transmission connections for offshore wind generation are delivered in the most appropriate and coordinated manner.

1.6 The business case for MPI development was explored in both reviews. In December 2021[6], through the ICPR Decision we decided to launch an MPI pilot scheme, acknowledging that an adjusted version of our cap and floor regime would in principle be a suitable regulatory model for MPI development. In April 2022, we consulted on our early minded-to decisions on the MPI regime (the

[5] In February 2023, the Department for Energy Security and Net Zero was established which took over energy policy responsibilities from the former BEIS.
[6] Interconnector Policy Review - Decision | Ofgem

"**April 2022 Publication**").[7] We then launched the pilot scheme in September 2022.

1.7 The objective of the OHA pilot scheme is to explore and deliver an appropriate regulatory framework (including regime design, assessment framework and standard licence conditions) to enable the development of early OHAs.

1.8 Lessons learnt through the pilot scheme will be used to adjust the framework for potential future OHA investment windows into an enduring regime.

MPI Framework Discussion Group

1.9 The MPI Framework Discussion Group (**MFDG**) was established in late 2022 with the purpose of engaging with industry stakeholders to develop proposals for the commercial and regulatory frameworks that will apply to MPIs.

1.10 Through collaboration and engagement with the Department for Energy Security and Net Zero, MPI developers, offshore wind farm (**OWF**) developers and NGESO, amongst other stakeholders, the work was split into four workstreams:

1. Contracts for Difference (**CfD**) (led by the Department for Energy Security and Net Zero)
2. Licensing (led jointly by Ofgem and the Department for Energy Security and Net Zero)
3. Regulatory regime, market arrangements and charging arrangements (led by Ofgem)
4. Operations (led by NGESO).

1.11 Through workshops and meetings, the MFDG provides an opportunity to collaboratively discuss risks and opportunities, and a space to test thinking and gauge stakeholder views. This consultation builds upon the input and discussions from workstreams 2 and 3.

Process of the OHA Pilot

1.12 We welcomed applications for the pilot scheme between 1st September and 31st October 2022. Following that we conducted our eligibility check and confirmed that two projects would progress to the Initial Project Assessment (**IPA**) stage of

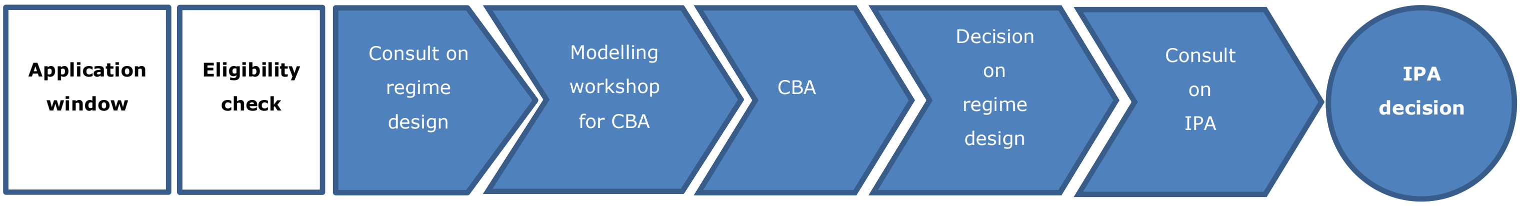
[7] Offshore Transmission Network Review – Multi-Purpose Interconnectors: Minded-to Decision on interim framework | Ofgem

the pilot scheme- Nautilus, connecting to Belgium, and Lion Link (formerly Eurolink) connecting to the Netherlands.[8]

1.13 We are currently in the IPA stage, conducting a needs case assessment, including a cost-benefit analysis (**CBA**), to establish whether either of these two projects are likely to be beneficial for GB consumers. Through a modelling workshop we will consult eligible project developers and other relevant stakeholders on the assumptions, scenarios and counterfactuals that are to be used in the CBA. The projects within the pilot scheme will go through the same CBA as point-to-point interconnectors in our third cap and floor application window. However, we will make specific adjustments to recognise the differences in OHAs as assets.

1.14 At the end of the IPA stage, we will publish a decision on which projects to grant a regulatory regime in principle.

Figure 2: The process for the IPA stage of the OHA pilot scheme



Related publications

- Update: Decision on Multi-Purpose Interconnector Pilot project selection (Norway) | Ofgem
- Update following our consultation on the Multi-purpose Interconnector interim framework | Ofgem, December 2022
- Decision on Multi-Purpose Interconnector pilot project selection | Ofgem, December 2022
- Multi-purpose Interconnectors Pilot Regulatory Framework | Ofgem, July 2022

[8] The December 2022 decision letter can be found here Decision on Multi-Purpose Interconnector pilot project Selection | Ofgem. In April 2023 a further letter was published to announce that two applicant projects to Norway, NorthConnect and Continental Link, had not passed the eligibility stage, accessible through this link Update: Decision on Multi-Purpose Interconnector Pilot project selection (Norway) | Ofgem

- Offshore Transmission Network Review – Multi-Purpose Interconnectors: Minded-to Decision on interim framework | Ofgem, April 2022
- Interconnector Policy Review - Decision | Ofgem, December 2021
- Offshore Transmission Network Review: proposals for an enduring regime and multi-purpose interconnectors - GOV.UK (www.gov.uk), September 2021

What are we consulting on?

1.15 This consultation firstly sets out how we intend to license OHA projects in GB, and then we set out our regime design options for a regulatory framework to apply to MPIs and NSIs respectively. Once confirmed following this consultation, this regime design and licensing arrangements will at a minimum apply to the OHAs within the pilot scheme that are awarded a regime in principle, and then be further developed following the legislative changes that will be introduced by the Energy Bill. We additionally set out our high-level principles for the network charging of MPIs, that are to be developed further, in the consultation's final chapter. Market arrangements for MPIs have been covered separately in a consultation published collaboratively with the Department for Energy Security and Net Zero.

Consultation stages

1.16 This consultation will remain open for six weeks for written responses. We do not foresee any further stages of consultation on regime design options for the OHA pilot projects. Alongside this consultation and the market arrangements consultation, other upcoming opportunities for engagement with the OHA pilot scheme include a modelling workshop on CBA scenarios, the four workstreams of the MFDG, and the IPA consultation to determine which projects will receive a regulatory regime in principle.

Stage 1	**Stage 2**	**Stage 3**	**Stage 4**
Consultation open	Consultation closes-Deadline for responses	Responses reviewed and published	Consultation decision
2 June 2023	14 July 2023	August 2023	Autumn 2023

How to respond

1.17 We want to hear from anyone interested in this consultation. Please send your response to the person or team named on this document's front page.

1.18 We've asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can.

1.19 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 (Regulation (EU) 2016/679) as retained in domestic law following the UK's withdrawal from the European Union ("UK GDPR"), 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 A.

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

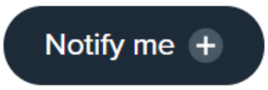
1.24 We believe that consultation is at the heart of good policy development. We welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

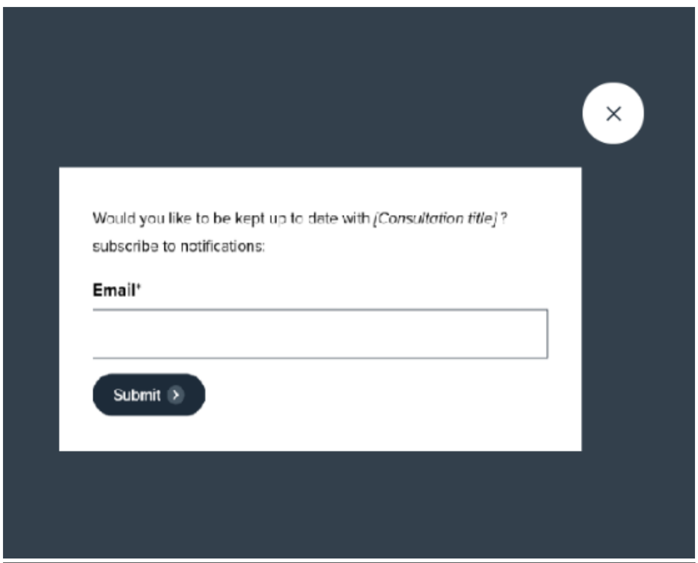
1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6.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

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

How to track the progress of the consultation

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





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:

Upcoming > **Open** > **Closed** (awaiting decision) > **Closed** (with decision)

2. Licensing Arrangements

Chapter summary

The purpose of this chapter is to describe the proposed licensing arrangements for operators of multi-purpose interconnectors (MPIs) as well as other relevant offshore hybrid assets (OHAs). It also sets out the proposed revisions to our minded-to position contained in our April 2022 consultation[9] (April 2022 Publication). We are seeking your feedback on our proposals for the licensing arrangements and on related regulatory matters.

Background

2.1 From a licensing perspective, an MPI will be performing a new type of licensable activity in GB that is not currently covered under the existing legal framework nor under Ofgem's licensing regime.

2.2 This new licensable activity will combine two existing licensable activities: **offshore transmission** (i.e. conveyance within an area of offshore waters of electricity generated by a generating station in such an area[10]) and **interconnection** (i.e. conveyance of electricity (whether in both directions or in only one) between GB and a place within the jurisdiction of another country or territory[11]).

2.3 Currently, these two licensable activities require two separate licences: an interconnector licence and a transmission licence (including offshore transmission provisions).

2.4 To address this, the Electricity Act 1989 (**the Electricity Act)** will be amended by the Energy Bill 2022-23 (**the Energy Bill)**[12] which, when enacted, will introduce MPI related provisions, including an MPI licensable activity, an MPI licence, a definition of an MPI as well as the prohibition of conducting MPI activities without the MPI licence. For the purpose of this consultation, we refer to an MPI as defined in the Energy Bill.

[9] https://www.ofgem.gov.uk/publications/offshore-transmission-network-review-multi-purpose-interconnectors-minded-decision-interim-framework
[10] Section 6C (6) of the Electricity Act.
[11] Section 4 (3E)(b) the Electricity Act. Sections s 4(1)(d) and 6(1)(e) are also relevant in this context.
[12] The current version of the Energy Bill, which may still be amended and therefore is subject to change, can be accessed under the following link: https://publications.parliament.uk/pa/bills/cbill/58-03/0295/220295.pdf

2.5 The MPI licence will be designed to authorise and regulate the dual MPI activity (ie the combined activities of offshore transmission and interconnection).

2.6 As explained later in this chapter[13], for an asset to qualify as an MPI, it has to meet the Energy Bill definition of an MPI and perform a dual activity of offshore transmission and interconnection in the GB jurisdiction. Therefore, projects, which will perform this dual activity in the connecting jurisdiction but only undertake interconnection activities in GB, will not qualify as MPIs in GB.

2.7 In this chapter, we explain how we propose to license operators of assets which meet the legislative definition of an MPI.

2.8 We are also proposing to introduce concepts of an offshore hybrid project and an offshore hybrid asset, which can apply both to MPIs and other relevant offshore hybrid projects that do not meet the legislative MPI definition.

April 2022 Publication

Interim licensing arrangements

2.9 In the absence of an MPI licence, in our April 2022 Publication we considered two interim licensing models for MPI project development: offshore transmission-led (OFTO-led) and interconnector-led (depending on which licence the asset would be operated under once commissioned).

2.10 The rationale behind creating interim licence arrangements prior to the introduction of an MPI licence was to avoid delaying the pilot scheme and to provide legal and regulatory clarity to the MPI project developers with projects progressing within the pilot.

2.11 At the time of April 2022 Publication, the timescales for the development and introduction of the MPI licence were uncertain. This was challenging because the pilot MPI projects would have to be licensed before the commencement of operations.

2.12 We intended to set out a simple threshold to determine the asset classification of an MPI for the licensing purposes based on the asset’s primary use (i.e. whether the activity of the MPI would be primarily offshore transmission from a connected offshore generator or interconnection). This would then dictate which interim

[13] Please see subsections 2.26 and 2.27.

licence arrangements would apply: an interim offshore transmission licence (resulting in the OFTO-led approach) or an interim interconnector licence (resulting in the interconnector-led approach).

2.13 In our April 2022 Publication, we recommended that, as a minimum, a simple calculation could be used based on the estimated load factor of the connecting GB offshore wind farm (OWF) and the capacity of the cable from the OWF to GB shore. This could be used to establish how often the asset is expected to be available for cross-border flows, compared with the offshore transmission of output of the connected OWF. This would be monitored by developers and Ofgem on a regular basis via a proposed reporting mechanism.

2.14 We also proposed that should asset usage fall outside of the parameters agreed at the point of Ofgem granting the licence based on the projected primary use of the asset, we would deal with such instances on a case-by-case basis. This solution was meant to avoid penalising early pilot projects.

2.15 Under this proposed interim licensing regime approach, with stakeholder insight and contribution, we identified the licence provisions that would need to be amended or added to the existing electricity interconnector and Offshore Transmission Owner (OFTO) licences.

Challenges with developing an interim licensing regime for MPI projects based on primary use classification

2.16 Whilst conducting the review process of the existing licensing regimes and from analysis of the MPI pilot project submissions received, we identified challenges associated with developing an interim MPI licensing regime for early MPI projects based on the primary use of the asset.

2.17 The identified challenges include that by using an interim licensing approach based on the primary use of the asset this would potentially expose an MPI project developer to the risk of not holding the appropriate licence; for example, if licensed as an interconnector but subsequently primarily conducting the activity of offshore transmission in GB.

2.18 In addition, the change in the nature of the licensable activity might not be a one-off occurrence. The act of re-licensing a pilot MPI to cover the appropriate licensable activity on a periodic basis would not provide legal and regulatory certainty to developers.

2.19 The risk of the changing nature of the conducted licensable activity could not be addressed through introduction of a combined OFTO-interconnector licence because the existing legal framework does not support this solution. Section 6 of the Electricity Act provides that the same person may not be the holder of an interconnector licence and the transmission licence.[14]

2.20 Further, under the existing legal framework and the applicable licensing regime for OFTOs, an offshore transmission licence cannot be granted without a competitive tender process. Therefore, significant legislative and licensing changes would have to be introduced to facilitate the OFTO-led interim licensing approach.

2.21 In addition, we learned from the pilot scheme submissions that we received, that some projects could be built sequentially, with offshore transmission assets delivered and operated prior to the operation of the cross-border interconnection assets.

2.22 This sequential asset delivery would require the deployment of the OFTO-led interim licensing approach and then a change to the interconnector-led interim licensing approach (including a revocation of the pre-existing licence and grant of the new licence) if the pilot MPI project would eventually be conducting primarily interconnection activity.

2.23 These challenges would mean that the proposed interim licensing regime for MPI projects, based on the primary use of the asset, may not provide legal and regulatory certainty that investors may require.

2.24 As a result of the identified challenges, we are now proposing a revised approach to the licensing arrangements for the pilot MPIs and other relevant pilot OHAs. This revised approach, set out further below in this chapter, takes into account the new MPI legislative provisions contained in the Energy Bill, which were not available at the time of our April 2022 Publication.

[14] Section 6(2A) of the Electricity Act (Electricity Act 1989 (legislation.gov.uk))

Revised Licensing Approach

2.25 Following the April 2022 Publication, we have considered our approach to MPI licensing further in light of:

- the MPI pilot applications which we received within the application window that was open between 1 September and 31 October 2022;
- continued stakeholder engagement with industry via the **MFDG** and with the Department for Energy Security and Net Zero; and
- our own analysis and review of the relevant existing licensing regimes, the existing legal framework as well as the MPI related provisions contained in the Energy Bill.

Implications of the MPI related provisions of the Energy Bill

2.26 The Energy Bill, when enacted, will result in amendments to the Electricity Act that will introduce MPI related provisions, including an MPI licensable activity, an MPI licence, a definition of an MPI as well as the prohibition of conducting MPI activities without the MPI licence.[15]

2.27 In particular, a multi-purpose interconnector is defined in the Energy Bill[16] to mean:

"so much of an electric line or other electrical plant as—

(a) is situated at a place within the jurisdiction of Great Britain; and

(b) subsists for both—

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[15] The MPI related provisions are contained in clauses 162 to 167 in the version of this Bill dated 25 April 2023, as brought from the House of Lords to the House of Commons (Committee stage). Consequential amendments are contained in Schedules 13 and 15. The current version of the Energy Bill can be accessed under the following link: https://publications.parliament.uk/pa/bills/cbill/58-03/0295/220295.pdf

[16] As of the date of publication of this consultation, the Energy Bill is at the Committee stage in the House of Commons. The final text of the Energy Bill, including the MPI related Clauses, may be amended during its passage through Parliament and is, therefore, subject to change. The Bill was introduced to Parliament on 6 July 2022.

(i) the conveyance of electricity (whether in both directions or in only one) between Great Britain and a place within the jurisdiction of another country or territory, and

(ii) the conveyance of electricity generated in offshore waters (whether in both directions or in only one) between a generating station and a substation or another generating station, or between two or more substations."

2.28 To qualify as an MPI, the asset is required to "*subsist for both*" performance of interconnection and offshore transmission activities in GB. This means that the asset must be connected not only to neighbouring countries but also to an OWF in GB offshore waters and must conduct both offshore transmission and interconnection activities in GB.

2.29 We note that in addition, an MPI may be connected to an OWF in the connecting jurisdiction and as a result it will conduct offshore transmission activities both in GB and the connecting jurisdiction. We consider that this configuration does not affect asset qualification as an MPI in GB.

2.30 However, an asset which is not connected to an OWF in GB waters and which subsequently does not conduct offshore transmission activities in the GB jurisdiction, in addition to its interconnection activities, will not qualify as an MPI.

2.31 Even if this asset is connected to an OWF in the waters of the connecting jurisdiction and conducts offshore transmission activities in that connecting jurisdiction, in addition to its interconnection activity, this configuration will not allow this asset to qualify as an MPI in GB. The offshore transmission activities in the connecting jurisdiction will be regulated by the relevant authorities of that jurisdiction.

The proposed concept of an offshore hybrid asset

2.32 We recognise that assets which will qualify as MPIs in GB and assets that will not qualify due to offshore transmission activities being conducted only in the connecting jurisdiction, will all have characteristics of a cross-border offshore hybrid asset.

2.33 For this reason, we are proposing to refer to these cross-border hybrid assets as **offshore hybrid assets (OHAs)** and projects launched to deliver these assets as **offshore hybrid projects.**

2.34 We recognise that the concept of an offshore hybrid asset will be familiar to developers, investors and relevant authorities in neighbouring European states.

2.35 An offshore hybrid asset is a relatively novel concept not only in GB but also in the EU and the wider European Economic Area. It has not yet been covered under any comprehensive EU legal framework.

2.36 Nevertheless, we note that these assets are referred to in recital 66 of the EU Electricity Regulation and described as "offshore electricity infrastructure with dual functionality (so-called '**offshore hybrid assets**') combining transport of offshore wind energy to shore and interconnectors".[17]

2.37 This specific wording of recital 66 was retained after the UK exit from EU and appears in recital 66 of the retained Electricity Regulation. For this reason, we propose to use the definition of an offshore hybrid asset as included in recital 66 of the retained EU Electricity Regulation. Therefore, the related offshore hybrid project can be described, by extension, as a project to deliver an offshore hybrid asset.

2.38 The Trade and Cooperation Agreement between the UK and the EU also refers to hybrid projects. In particular, Article 321 (Cooperation in the development of offshore renewable energy) requires the Parties to "*cooperate in the development of offshore renewable energy by sharing best practices and, where appropriate, by facilitating the development of specific projects".* This cooperation shall include "*hybrid and joint projects*".[18]

The proposed categorisation of offshore hybrid assets

2.39 To progress policy development on the licensing arrangements for operators of offshore hybrid assets, we are proposing to split the pilot projects and assets delivered by them into **two** categories:

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[17] Recital 66 of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast). L_2019158EN.01005401.xml (europa.eu).

[18] Article 321 of the Trade and Cooperation Agreement between the European Union and the European Atomic Energy Community, of the one part, and the United Kingdom of Great Britain and Northern Ireland, of the other part L_2021149EN.01001001.xml (europa.eu)

- **Category 1:** projects that will deliver non-standard interconnectors (NSIs), i.e. offshore hybrid assets connected to an offshore generator in the connecting jurisdiction but not in GB and which will conduct interconnection activities in GB and the connecting jurisdiction as well as offshore transmission activities only in the connecting state; and

- **Category 2:** projects that will deliver MPIs, i.e. offshore hybrid assets connected to an offshore generator in GB, which will conduct interconnection activities in GB and the connecting state as well as offshore transmission activities in GB (and optionally in the connecting state).

2.1 For category 2 assets, i.e. MPIs, there may also be different build permutations relevant to the licensing regime in GB:

- **simultaneous build**: when all components of the MPI assets as well as assets of the connecting offshore generation are built at the same time; and

- **sequential build**: when offshore generation assets as well as offshore transmission components of the MPIs are built and connected to the GB shore prior to the completion of the cross-border interconnection components of the MPI – or the reverse scenario – where the interconnection components of the MPI are completed prior to the later delivery of the offshore transmission components of the MPI together with the assets of the connecting OWF.[19]

Our proposed licensing arrangements for category 1 and category 2 asset operators

2.40 Following our review of the challenges surrounding the implementation of an interim licensing regime, we have reached the conclusion that we will not be

[19] For avoidance of doubt, the offshore hybrid assets do not include generation assets. Offshore generators are licensed in GB under a generator licence and cannot constitute part of the offshore hybrid assets which need to be certified in GB pursuant to the ownership unbundling rules.

proceeding with development of interim licensing arrangements for pilot OHA projects.

2.41 The feedback we have received from the pilot project developers emphasises the need for regulatory certainty on the MPI licensing framework.

2.42 As explained earlier in this chapter, we consider that developing interim licence arrangements based on the asset's primary use would not be fully supported by the existing legal framework. The potential sequential delivery of some pilot projects also resulted in additional challenges.

2.43 Following the preliminary assessment of the category 1 and category 2 projects progressing through the pilot scheme, as well as taking into account the MPI related provisions of the Energy Bill, we have taken the view that a more appropriate solution would be to develop an MPI licence with the Department for Energy Security and Net Zero as soon as reasonably possible for category 2 projects as well as adapt and amend the electricity interconnector licence for category 1 projects.

Our proposed licensing arrangements for category 1 asset operators

2.44 Category 1 assets are non-standard interconnectors that will not be connected to an offshore generator in GB and therefore will not perform the dual activity of the interconnection and offshore transmission in GB (although they will conduct offshore transmission activities in the connecting jurisdiction).

2.45 Therefore, category 1 assets will not meet the definition of an MPI as contained in the Electricity Bill and will not be eligible for an MPI licence.

2.46 The licensable activity that the operators of category 1 projects will conduct in GB will be interconnection, as defined under the Electricity Act,[20] and the asset's characteristics in GB will be these of an electricity interconnector, as defined in the Electricity Act.[21]

2.47 Therefore, we consider that the electricity interconnector licence is the appropriate licence for the operators of category 1 assets.

[20] Sections 4(1)(d), 4(3E)(b) and 6(1)(e) of the Electricity Act.
[21] Section 4(3E) of the Electricity Act.

2.48 We note that in our publications, we have already referred to category 1 assets as non-standard interconnectors.[22] We propose to continue doing so and use a related acronym of NSI.

2.49 In addition, we also propose to refer to category 1 assets as offshore hybrid assets because these assets are not standard point-to-point electricity interconnectors.

2.50 These assets will be connected to offshore generators in the connecting jurisdictions and will conduct offshore transmission activities in these states.

2.51 Consequently, the electricity interconnector licence granted to these NSIs will have to be adapted and amended to accommodate the complex nature of category 1 offshore hybrid assets.

2.52 This will need to include any appropriate amendments related to the offshore transmission activities conducted in the connecting state as well as the offshore bidding zone market arrangements, expanded on in our market arrangements publication, if applicable to category 1 project in that connecting state.

2.53 Ofgem intends to engage bilaterally with developers of category 1 projects in respect of changes required to the electricity interconnector licence. In addition, Ofgem will publicly consult with all relevant licence holders and stakeholders on any proposed amendments to the electricity interconnector licence.

2.54 We note that whilst category 1 assets will not meet the definition of an MPI as contained in the Electricity Bill and will not be eligible for an MPI licence, we have already referred to them as MPIs in our previous publications. We further note that developers of category 1 projects have also referred to them in the public domain as MPIs.

2.55 For publications and our communication with stakeholders going forward, we propose to reserve the term MPI for the assets that meet the legislative definition of an MPI. We propose to refer to hybrid assets that do not meet this legislative definition as category 1 assets, NSIs, and to refer to both MPIs and NSIs under the umbrella term OHAs.

[22] Multi-Purpose Interconnectors Pilot Regulatory Framework, dated 7 July 2022 (and as revised on 14 October 2022). Page 12 specifically states that *"Non-standard interconnector-led projects are projects where GB interconnection is combined with transmission of offshore generation outside of GB"* (link: Multi-purpose Interconnectors Pilot Regulatory Framework | Ofgem).

<u>Our proposed licensing arrangements for category 2 assets operators</u>

2.56 Category 2 assets are offshore hybrid assets that will be connected to an offshore generator in GB and therefore will perform the dual activity of the interconnection and offshore transmission in GB.

2.57 Consequently, category 2 assets will meet the definition of an MPI as contained in the Electricity Bill. They will conduct the MPI licensable activity and will be eligible for the MPI license.

2.58 Category 2 assets may also conduct offshore transmission activities in the connecting jurisdiction if they are connected to an offshore generator in that jurisdiction.

2.59 We propose to refer to category 2 assets (ie MPIs) more broadly as OHAs in the same way as category 1 assets.

2.60 We anticipate that the MPI licence for the regulation of category 2 projects will include both standard conditions and special conditions – similarly to the structure of the electricity interconnector licence. As set out in the Energy Bill,[23] the standard conditions for the MPI licence will be determined by the Secretary of State at the Department for Energy Security and Net Zero.

2.61 We expect that special licence conditions containing provisions on the applicable revenue regulation regime will be subsequently developed by Ofgem and added to the MPI licence through the statutory licence modification procedure, which includes public consultation.

2.62 In addition, we intend to engage bilaterally with relevant MPI developers on the draft special conditions of the MPI licence.

2.63 We anticipate that offshore generators connecting to category 2 projects in the GB jurisdiction will be regulated under the existing generator licensing framework.

2.64 We intend to review the links between the generator licence and the proposed MPI licence. If we identify a need for changes to the generator licence, we will publicly consult on them in due course.

[23] Clause 163 of the Energy Bill (in the version of this Bill dated 25 April 2023, as brought from the House of Lords to the House of Commons (Committee stage)). Link: https://publications.parliament.uk/pa/bills/cbill/58-03/0295/220295.pdf

2.65 Figure 3 below illustrates how we propose to license operators of category 1 offshore hybrid assets (i.e. NSIs) and category 2 offshore hybrid asset (i.e. MPIs).

Figure 3: Licensing approach for offshore hybrid assets/projects

Offshore Hybrid Asset/Project	
Category 1 (NSI)	**Category 2** (MPI)
• Non-GB connected offshore generator • Conducting only interconnection activity in GB.	• GB connected offshore generator • Conducting dual activity of both interconnection and offshore transmission in GB.
Interconnector licence (with amendments)	**MPI Licence**

Timescales and governance

2.66 Ofgem will act as an advisor and will support the Department for Energy Security and Net Zero in the development of the standard conditions of the MPI licence.

2.67 In our cooperation with the Department for Energy Security and Net Zero on the MPI licence, we intend to give due consideration to the provisions of the electricity interconnector licence and the transmission licence (including relevant OFTO provisions). This is because the dual licensable activity of the MPIs includes both the interconnection and offshore transmission activities.

2.68 Further, we intend to progress our work on the MPI licence which we anticipate being available by mid to late 2024. In parallel, we will be working on making appropriate amendments to the standard conditions of the interconnector licence for NSIs.

Question(s)

Q1: Do you have any views on our proposal to use, when appropriate, a wider common term of an offshore hybrid asset that could apply to both: category 1 assets (NSIs) and category 2 assets (MPIs)?

Q2: Do you have any views on our proposal to use the term of non-standard interconnectors (NSIs) for category 1 assets?

Q3: Taking into account the relevance of the provisions of the Electricity Act for the type of the licence that can be granted to an applicant, do you have any views on how we propose to license the operators of category 1 assets (NSIs) and category 2 assets (MPIs)?

3. Regulatory Regime for OHAs

Chapter summary

The purpose of this chapter is to set out regulatory regime options for the OHA pilot projects. The first section introduces high-level design principles for the OHA Pilot regulatory regime. This is followed by considering how, in our view, costs and revenues should be shared between the countries at either end of the OHA.

We then set out regulatory regime options, leading on to a set of proposed regulatory regime packages (see also Appendix B) and a recommended package, and at high level the design parameters (see also Appendix C) for the recommended regime package.

OHA Pilot Regulatory Framework design principles

3.1 To guide the development and design of the regulatory framework for OHA pilot projects, we have identified a set of high-level principles that will underpin it. These principles would guide the design of the regulatory regimes by setting criteria against which we expect to evaluate the specific design options for the regulatory approach.

3.2 The principles proposed below were originally developed and consulted upon for the Nemo Link[24] cap and floor interconnector pilot project. We have adapted them to take into account the characteristics of MPI and NSI projects. These principles have been developed with members of the MFDG and we are seeking views on their suitability.

Table 1: Six potential principles underpinning the OHA Pilot Regulatory Framework

Economic Viability	The regulatory framework will take into account the commercial viability of a project, as well as considering the wider benefits that efficient levels of interconnection can offer to consumers, for example security of supply or integration of renewable energy sources.

[24] Preliminary conclusions on the regulatory regime for project NEMO and future subsea electricity interconnector investment | Ofgem p.1

Integration in energy system	The regulatory framework will consider the wider benefit that efficient levels of interconnection and offshore wind can offer to consumers, including market integration, security of supply, congestion, and ensuring economically efficient dispatch. The framework will also be developed to be flexible to future changes and developments in infrastructure, including OHAs.
Consumer protection	The regulatory regimes will be developed ensuring that consumers are protected from the cost implications of excessive returns or market power that might accrue to operators of the OHAs. The regimes need to be transparent and robust in their administration.
Cost and revenue alignment	The regulatory framework will seek to align costs and benefits to ensure a fair and proportionate risk and reward balance between the relevant parties.
Coordinated regulatory treatment	Ofgem endeavours to develop the regulatory regime in coordination with connecting National Regulatory Authorities, while taking into account stakeholder engagement and consultation processes.
Level playing field	The regulatory treatment in GB for OHAs should facilitate participation of third-party developers and should be impartial and unbiased between incumbent Transmission System Operators (TSOs) and non-TSO developers.

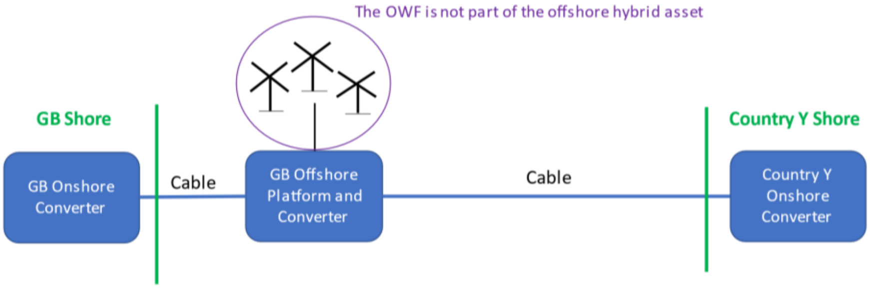
Question(s)

Q4: Do our proposed principles capture the basis upon which the OHA Pilot Regulatory Framework should be designed and developed?

OHA assets - cross-border sharing of costs and revenues

3.3 An MPI combines the activity of cross-border interconnection with the transmission of offshore generation in GB, as shown in **Figure 4**. The MPI enables the physical connection of an OWF to an offshore converter platform but the OWF’s assets are not part of the MPI asset.

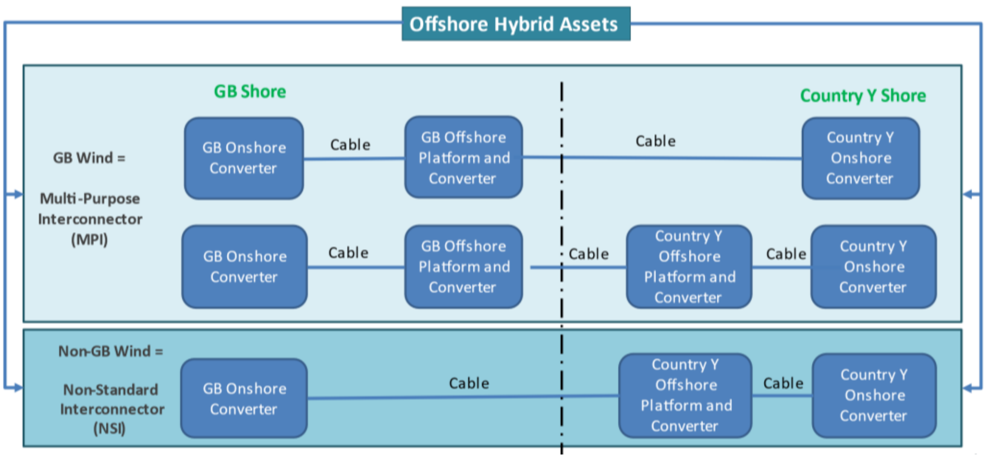
Figure 4: Offshore hybrid asset structure diagram



3.4 MPIs are likely to consist of a number of assets in GB: an onshore converter station, a cable connecting to an offshore converter platform, the offshore converter platform itself, and a further cross-border cable connecting either to an onshore converter station or another offshore converter platform in the connecting state.

3.5 However, as set out earlier, the OHA pilot scheme includes both MPIs and NSIs. Therefore, depending on the asset category, the offshore converter platform may be located in GB or in the connecting state, or in both. The most likely permutations are shown in the figure below.

Figure 5: Highlighting possible asset permutations



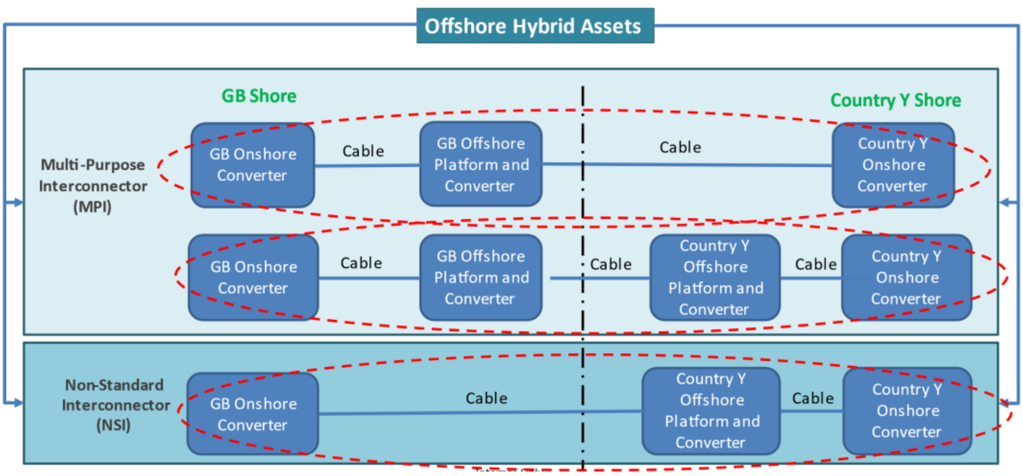
3.6 As OHAs are joint endeavours with the connecting countries, it is important to establish the physical boundaries and the relevant scope of these assets when considering which costs and revenues to share. **Figure 6**, **Figure 7** and **Figure 8** below show a variety of possible scope boundaries, for cost and revenue sharing purposes, applied to various physical configurations of a project. We note that these are not exhaustive, and we are seeking views on the advantages and disadvantages, as well as other possible configurations.

3.7 For the purposes of considering the options for cost and revenue sharing, Ofgem's preference is to take into consideration the whole system to system asset (see **Figure 6** below). This means that we include relevant components of OHA assets in the connecting jurisdictions.

3.8 This approach would be consistent with the existing approach to point-to-point interconnectors, where the whole asset is typically taken into consideration for the purpose of sharing its costs and revenues. Since congestion revenue accrues asymmetrically on each part of the cross-border cable, we think the entire system to system scope of the asset should be taken into account for sharing the costs and revenues of OHAs.

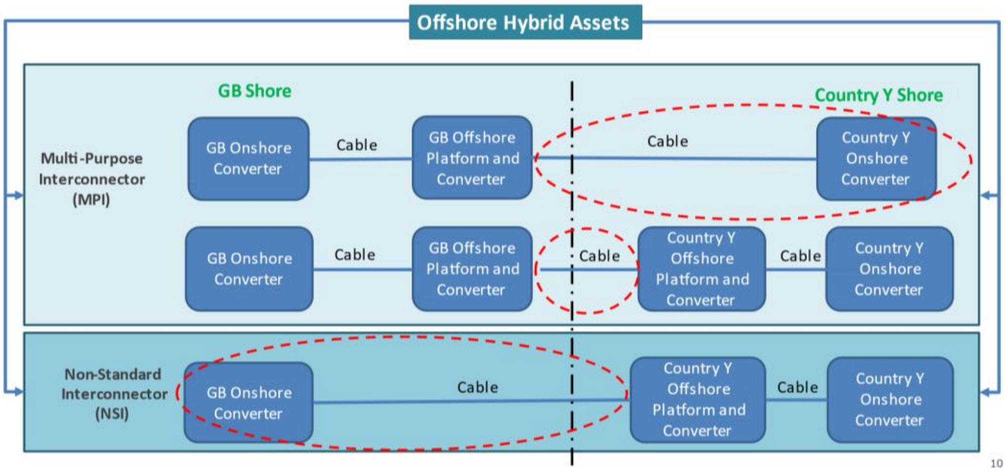
3.9 This is Ofgem's preferred approach as it enables the proportional sharing of the total costs and revenues between the connecting countries. However, there are two potential disadvantages to this. Firstly, the other jurisdiction may already have a regulatory funding arrangement in place, for relevant assets, with the incumbent Transmission System Operator (**TSO**). Secondly, some connecting countries are building "energy islands" rather than offshore converter platforms, which are built to accommodate multiple energy projects and are substantially more capital intensive, although it may be possible to separate out the costs of the relevant converter on the energy island and the relevant pro-rated civil engineering costs of the island to which it relates.

Figure 6: Cost and revenue sharing boundaries - system to system



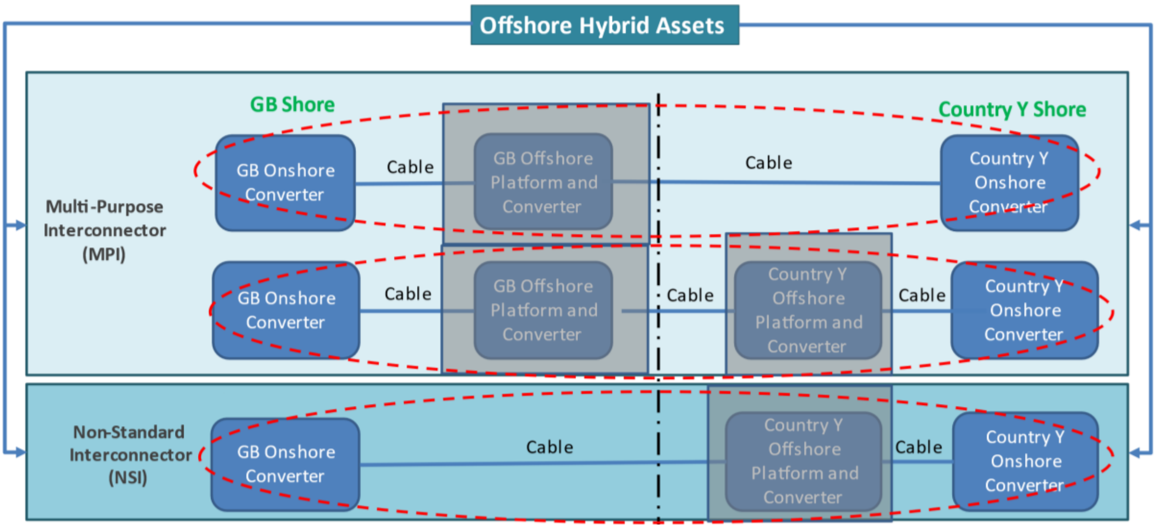
3.10 In **Figure 7** below, the red dotted line scope interpretations show an approach to sharing costs and revenues in which the offshore converter platform is effectively treated as an extension of the onshore grid in the relevant country. We understand this is a potentially preferred approach in some other connecting countries. We have reservations over this approach because the congestion revenue is likely not to accrue evenly on the different segments of the OHA cables under certain market arrangements. We are keen to ensure that costs and benefits resulting from cross-border trade are shared equitably between connecting countries as far as possible.

Figure 7: Cost and revenue sharing boundaries - extension of the onshore grid



3.11 A different approach involves treating the OHA assets as point-to-point interconnectors in terms of sharing costs and revenues. Under this approach only the costs and revenues related to the onshore converter platforms and the entire length of the cable are shared with the connecting country. As part of this approach, it could be argued that the offshore converter platforms exist for the national coordination of offshore wind, not for cross border trade, and therefore these platforms should be excluded from the components of the OHA assets, for which costs and revenues are shared between the two connected countries. The diagram in **Figure 8** below reflects such an approach, with the offshore converter platforms greyed out, coming under their respective national regulatory arrangements.

Figure 8: Cost and revenue sharing boundaries - excluding the offshore converter platforms



3.12 This discussion is not unique to OHA projects intending to connect to GB. Other offshore hybrid projects within the EU and the broader European Economic Area will face similar questions. We are in discussions with relevant NRAs to establish how the cost, benefit, and revenue boundaries of OHAs should be defined, but this does not overlap with nor prevents Ofgem from establishing a regulatory framework to apply to OHAs on the GB side. In these discussions Ofgem will aim to apply the principle of aligning costs and revenues equitably wherever possible as reflected in our design principles table above (see **Table 1**).

Question(s)

Q5: How should the cost and revenue sharing boundaries of an MPI or NSI be defined?

Q6: How should costs and benefits of MPIs and NSIs be shared with connecting countries?

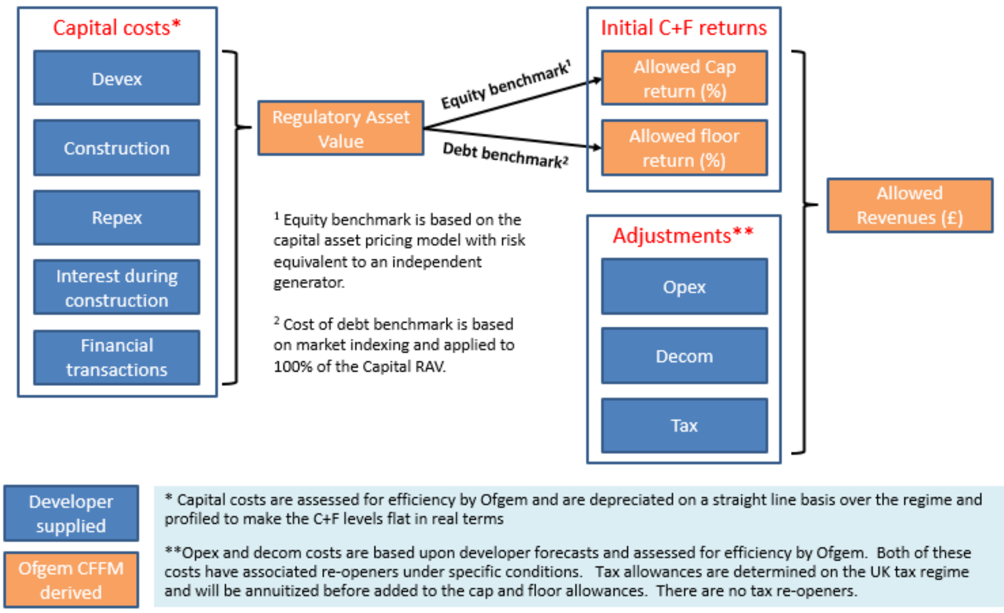
OHA revenues, costs and risks

3.13 The majority of OHA revenues come from congestion revenue earned from cross-border trade on its cable. Further revenues may accrue from participation in the Capacity Market or by selling balancing and ancillary services in either market.

These revenues are derived from the price differential between the two connected markets. Price differences and market revenues are expected to become more volatile in the future given increasing system intermittency in GB and in connecting markets.

3.14 OHA costs for the onshore converter platforms and shore-to-shore cable are comparable to those of a point-to-point interconnector, and **Figure 9** below shows how they relate to the existing interconnector cap and floor regime:

Figure 9: Cost and revenues diagram assuming cap and floor



3.15 However, unlike a point-to-point interconnector, an MPI is also expected to include a large and expensive offshore converter platform in GB as part of its design. The current regime model for point-to-point interconnectors, where costs are recovered primarily through congestion revenue, would, if the offshore converter platform costs were included, significantly alter the cap and floor levels. The floor would be pushed up and reduce the ability of the developer to earn a return above the floor, since the expected distribution of congestion revenue (and hence available revenue) from year to year does not change. The principles that underpin the design of the cap and floor regime would also be weakened as the offshore converter platform does not generate revenue from cross-border trade, which could reduce commercial incentives on developers.

3.16 We currently think that for MPIs it is unrealistic for congestion revenue to fund the GB offshore converter platform entirely, and that a separate revenue stream may therefore be required to cover the costs of the offshore converter platform.

3.17 A number of the regime options considered below from section 3.37 onwards and in Appendix B compartmentalise the assets, by separating the offshore converter platform from the cable. In these cases, the offshore converter platform would have a revenue stream and regime applied different from the remainder of the MPI assets. We also consider the commercial impacts on the connecting OWF because, although it is not part of the MPI assets, we are keen to preserve an attractive investment environment for OWF developers.

3.18 We have ruled out a fully aggregated regime that could pool together the revenues from each asset (the cable, the offshore converter platform and the OWF) and distribute them according to regime requirements. This is because such a pooling of revenues of transmission, interconnection and generation assets is not possible under the applicable licensing regimes and the relevant legal framework, including the unbundling requirements that will apply to MPIs.[25] Instead, adopting a compartmentalised regulatory approach to the cable and offshore converter platform may be more appropriate. A compartmentalised regime, where the MPI and OWF income streams are independent, is considered preferable on the grounds of protecting each party's individual business interest and reducing risk for each connected asset.

3.19 Developers further note that OHAs could also have an increased risk profile compared to point-to-point interconnectors due to first-of-a-kind technical risk, supply chain issues to procure materials, and the increased coordination risk arising from sequential build.

3.20 A stretched supply chain may lead to a high risk of delay in the construction of an OHA. Demand for the physical cabling and materials to build offshore energy infrastructure outpaces supply and has, to date, caused delays in the construction of point-to-point interconnectors under the cap and floor regime. However, routes to mitigate delay impacts outside of developers' control exist in the cap and floor regime for interconnectors, such as pre-operational force majeure events, and in addition Window 3 interconnectors will have access to the Reasonable Delay

[25] As explained under the 'Other Issues' section within this chapter, the Energy Bill will introduce to the Electricity Act the requirement for the MPI licence holders to be certified under the ownership unbundling rules. These rules already apply to the electricity interconnector licence holders.

Event mechanism.[26] We may also adopt such a project delivery delay mitigation mechanism for OHAs. Regime parameters, including the approach to project delivery delays, are discussed in section 3.56 onwards and Appendix C.

3.21 OHAs also have a higher coordination risk and may require additional technical and regulatory measures to remain adaptable to further changes. Coordinating OWF construction with the installation of a cross-border cable forming part of an OHA can be challenging. This is due to the sequencing challenges of seabed leasing rounds and CfD allocation rounds for OWFs as well as onshore permitting procedures, cable laying operations and offshore converter platform construction for the OHA. This places additional financial risk and increases the stranded asset risk for the OHA developer. We discuss how consumers could underwrite some of these risks through anticipatory investment in section 4.5.

3.22 Further, as the EU landscape moves towards the development of a meshed North Sea grid, early OHA projects are exposed to additional regulatory and physical changes as more OWFs and interconnectors are built. Revenue certainty across the lifetime of the OHA project could be disrupted by the addition of new OWFs and interconnectors which may reduce the congestion revenue of existing OHAs.

3.23 Finally, MPIs would be a new regulated asset type and we recognise that for the pilot projects cost estimation may therefore be more difficult than it is for point-to-point interconnectors.

Question(s)

Q7: Do you agree that the Reasonable Delay Event mechanism should also apply to MPIs and NSIs?

Q8: Are there any additional risks faced by MPIs and NSIs relative to point-to-point interconnectors?

Existing and future regulatory regime concepts

3.24 In the following sections we consider a range of existing regulatory approaches for offshore infrastructure that could apply to OHA projects, as well as novel regime design options and combinations of the existing approaches. We start with

[26] Consultation on Timelines and Incentives changes for the Third Cap and Floor Window for Interconnectors | Ofgem p. 18

considering individual regime types before moving on to consider how these regimes might apply to OHAs.

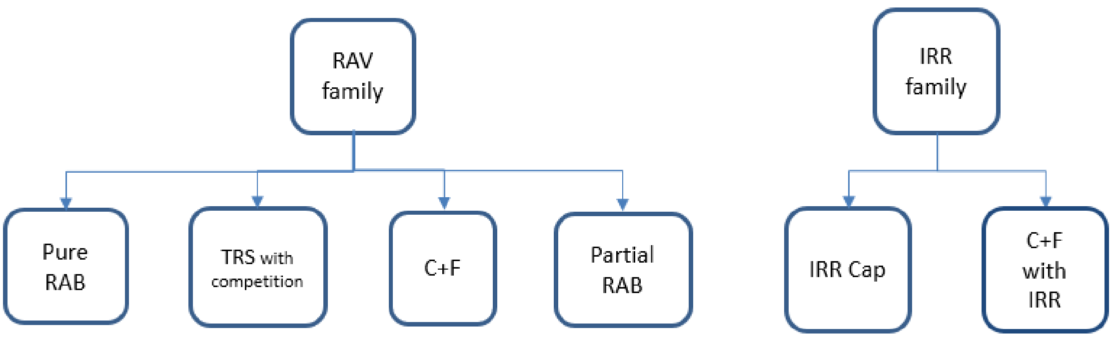
3.25 There are common characteristics between the existing regulatory regimes used in GB for offshore infrastructure. Using an asset value assessed by Ofgem, for example, is a key feature. They also commonly adopt the idea of a maximum allowable revenue stream for such assets based on an approved initial investment.

3.26 The existing offshore regime options differ in whether the cost of finance is established by reference to market metrics, as in the cap and floor regime for interconnectors, or by tender competition, as in the case of offshore electricity transmission assets (OFTOs). Unlike RAB regimes such as RIIO-2 where charging begins during construction, the costs of construction are only passed through to consumers after the asset becomes operational for OFTOs and interconnectors. Such costs are financed by the developer and are assessed by Ofgem and may be recovered over a specified operating period of the asset.

3.27 An alternative regime, currently applied to merchant interconnectors with exemptions, is based on limiting permitted market returns by reference to a maximum permitted rate of return (such as a cap on Internal Rate of Return - IRR), without a floor or other minimum revenue mechanism. This methodology could still be applied to an approved value of the assets.

3.28 Possible further variations can be envisaged, such as the new concept of a Partial RAB (described below in section 3.33), a narrow Cap and Floor, and also the more detailed variation of a cap and floor with IRR. Using IRR as a measure of returns (and actual project financial information) could be applied to most of the regime options in place of using the costs of capital derived from market information (see also section 3.36).

Figure 10: Potential revenue and investment return regimes



3.29 The different regime permutations also apportion the risks and rewards differently between consumers and the developer. This includes differing regimes for measuring availability and/or usage and performance incentives, generally based on the nature of the underlying assets and their use. As covered in sections 3.15 to 2.24, overall risks for OHAs are likely to be higher than for point-to-point interconnectors (in particular for early-mover pilot projects) and therefore it may be necessary to adjust the balance between risk and reward that will still stimulate investment. Generally, developer and consumer risk are negatively correlated, so the greater the risk and reward that the developer takes the lower the risk and reward the consumer takes (see **Figure 11** below). **Table 2: Existing regimes and some potential benefits and drawbacksTable 2** below summarises the existing regime options giving the rationale, where they are currently used and considers some of their advantages and disadvantages.

Figure 11: Axis of existing regimes based on risk and consumer support

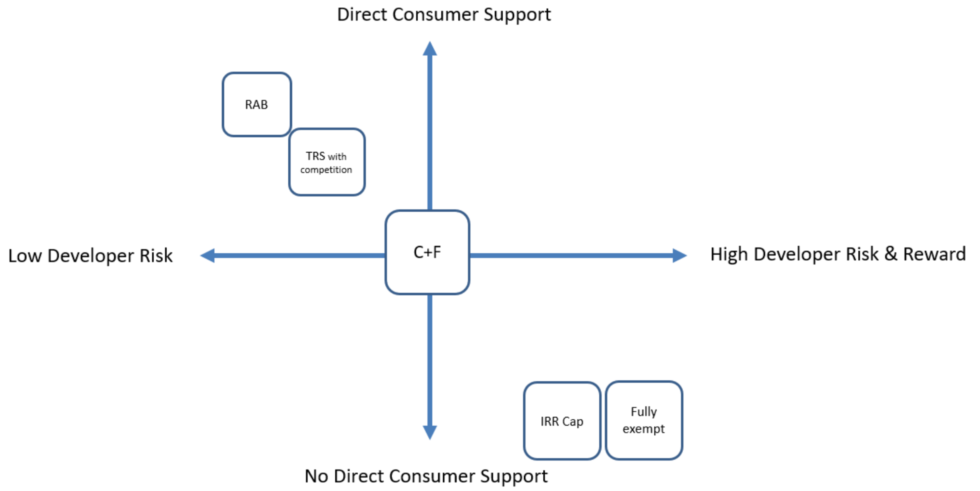


Table 2: Existing regimes and some potential benefits and drawbacks

	Regulated Asset Value family			**Internal Rate of Return family**
	Pure Regulated Asset Base (RAB)	Tender Revenue Stream (TRS)	Cap and Floor	Internal rate of return cap (IRR cap)
Rationale	No competition possible, level revenue stream	Competition possible using a tender, level revenue stream	Managing volatile revenues with lower bound protection	Profit cap to ensure consumers have a share of excess profit. Reduced information asymmetry between developers and regulators
What type of assets currently use this?	Onshore networks	OFTOs	Regulated Interconnectors (ICs)	Exempt ICs
Pros	Used widely throughout EU and GB, therefore understood on both sides of IC or OHA	Introduced an element of competition into what would otherwise be a natural monopoly	Based on notional parameters which are fixed across all projects	Simple regime, easy to regulate, closer to developer’s actual returns

	Regulated Asset Value family			**Internal Rate of Return family**
	Pure Regulated Asset Base (RAB)	Tender Revenue Stream (TRS)	Cap and Floor	Internal rate of return cap (IRR cap)
Cons	No inherent flexibility or incentive to innovate / maximise utilisation of the asset as the revenue stream is pre-defined	Some incentive to innovate via financing competition which is shared with consumers	Some incentive to innovate but not shared with consumers, and growing information asymmetry	A smaller pool of investors are willing to take this degree of downside risk (which may also affect risk/reward balance) Bespoke for each project using the special licencing conditions Less familiar in government and regulatory authorities

3.30 We consider four possible future regime concepts: RAB, Partial RAB, a narrow cap and floor, and a cap and floor with internal rate of return (IRR). These potential regimes all attempt to address specific shortcomings with the existing regimes in the table above, and in general are modifications of those existing regimes. In the case of IRR this could be used in place of the existing definition of the cap and floor by reference to cost of debt and equity benchmarks.

Regulated Asset Base (RAB)

3.31 The most commonly implemented model across EU Member States is a RAB model with a fixed return, and this would provide the most simplicity to developers and us in implementation. A pure RAB creates investment certainty and is future proofed to changes in congestion revenue but puts a greater risk burden on the consumer (assuming a fixed return). However, throughout the development of the offshore network regimes, Ofgem has been reluctant to adopt a pure RAB model in alignment with many connecting countries; instead creating regimes that include higher market-based incentives. Currently, among the interconnector landscape, interconnectors operating under a cap and floor regime, as opposed to a RAB regime, have had a higher incentive to maximise congestion revenue by targeting borders with structural price differences, offering their capacity at times that most benefit market needs and to operate at maximum efficiency, for example, by minimising outages. These are proactive measures designed to provide maximum benefit to consumers. We want to ensure the MPI and NSI regimes maintain this level of incentive to deliver maximum societal benefit.

3.32 Some of the package regime options presented in this chapter and Appendix B consider a variation of the RAB that would be appropriate to directly finance the GB offshore converter platform element of an MPI. When we refer to RAB throughout this chapter, we exclude the version of a RAB that pays projects during construction, a RIIO-style regime, or one that involves a competitive element.

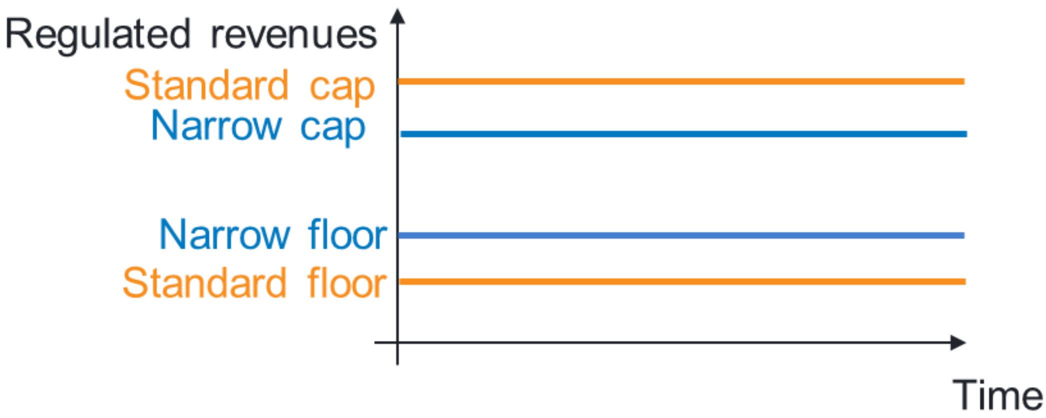
Partial RAB

3.33 The Partial RAB regime, a new concept for MPIs, would be a means of directly reflecting the reality that the cable element of an MPI project acts as both an offshore transmission cable and a point-to-point interconnector, depending on the extent to which the OWF is generating electricity. In this regime, the magnitudes of the actual flows of power in these two modes would be measured and the revenues calculated based on the respective amounts allocated to "transmission" or "interconnector" modes. The cable would earn a fixed regulatory return scaled to the share of its capacity used as offshore transmission with the remainder treated under cap and floor regime. The cap and floor levels could be set either by the existing approach for cost of capital or using an actual project IRR-based approach.

Narrow Cap and Floor

3.34 The Narrow Cap and Floor is an adjustment of the existing cap and floor regime as used for point-to-point interconnectors. The wide band of exposure between the cap and floor levels would be symmetrically reduced to account for the higher risks and increased revenue uncertainty of an OHA. The regime could be adjusted around the mid-point between the cap and the floor, reducing the cap revenue level and increasing the floor level by corresponding amounts using a specific methodology as illustrated in **Figure 12**. One approach to achieve this would be an adjustment factor requested by the OHA developer and decided by Ofgem, as with the current cap and floor regime variations. Depending on the adjustment factor used, this regime will tend towards more similarity to the single return level of a pure RAB regime as the gap between the cap and floor levels reduces.

Figure 12: Visualisation of narrow cap and floor



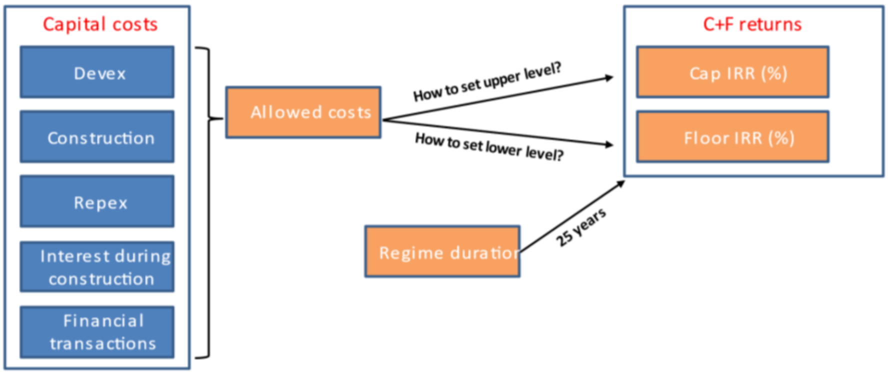
<u>Cap and Floor with IRR</u>

3.35 An IRR approach could be used to replace the existing cost of finance concepts of the cap and floor with measurement of equity returns using an equity IRR calculation. The cap and floor with IRR regime would use similar cost input information as the standard cap and floor regime, but the two revenue levels (for the cap and the floor) would be set by reference to allowed IRR levels over the regime and construction periods of the OHA project. The particular OHA project's financial model with actual (rather than assumed notional) cost of debt and cost of equity would be used as the basis of determination of maximum permitted revenues.

3.36 An IRR based approach is closer to what the projects themselves will be using for investment decisions and avoids the need to rely on benchmarks that can have limited relevance to the project's cost of finance. The cap and floor could be set as follows:

- **Cap:** set as the target IRR achieving the business' own internal hurdle rate + an allowed % return over and above
- **Floor**: set to enable the project to be bankable. This could be the IRR that enables debt and debt interest recovery.

Figure 13: Cap and floor levels based on IRR values



Question(s)

Q9: Which of our proposed regime concepts - Pure RAB, Narrow Cap and Floor, Partial RAB or Cap and Floor with IRR, do you consider most appropriate and why?

Proposed Regulatory Regime Packages

3.37 Using the regime approaches described in the previous sections, it is possible to combine regime approaches to cover the different infrastructure components of an MPI in GB. Appendix B shows five shortlisted regime design options that are being considered for MPI pilot projects and two options for NSIs. It should be noted that these options are not exhaustive and we appreciate feedback both on these shortlisted options and on any combinations / options that we might not have shortlisted, but which stakeholders think are worth considering in more detail.

3.38 Each physical component of the MPI (offshore converter platform, cable and onshore converter) could in theory have a specific regulatory approach. In addition, the OWF has its own regulatory arrangement. Our starting approach has been to apply the cap and floor regime that already exists for point-to-point interconnectors, and then modifying it to adjust for the specific market setup (Home Market - HM or Offshore Bidding Zone - OBZ) or support scheme that would apply to the wind farm.

3.39 For regime design options 1-4 (see Appendix B for further detail of these options) we are considering certain features of a RAB regime for the offshore converter platform element of the MPI project. The offshore converter platform does not generate congestion revenues, however, the MPI developers need to recover the costs of the offshore converter platform. The quantum of congestion revenue available to MPI projects is generally not expected to be sufficient to remunerate the investment and operating costs of the offshore converter platform (see option 5). If the offshore converter platform costs were included in the existing form of the interconnector cap and floor regime, in addition to the cable and onshore converter infrastructure, then this would increase the required cap and floor levels but the congestion revenue would stay the same. Therefore, in any given revenue period the MPI revenue would be more likely to fall below the floor, causing the floor top-up payments from consumer transmission charges to be activated more often and limit the returns the developer can achieve from the investment, which would reflect only a debt rather than equity rate of return. For MPI projects, there is therefore a need to structure an additional revenue stream attributable to the offshore converter platform with sufficiently stable characteristics and with suitable incentives for high availability. This additional revenue stream would be funded from Transmission Network Use of System (TNUoS) charges.

A means of achieving the stable additional revenue stream for the offshore converter platform could be to narrow the range between the cap and floor levels for this element of the revenue of the MPI project. The incentive and availability requirements (see

3.40 **Appendix Table 8**) of the interconnector cap and floor regime would remain applicable, subject to any appropriate adjustments for the nature of the offshore converter platform and its use.

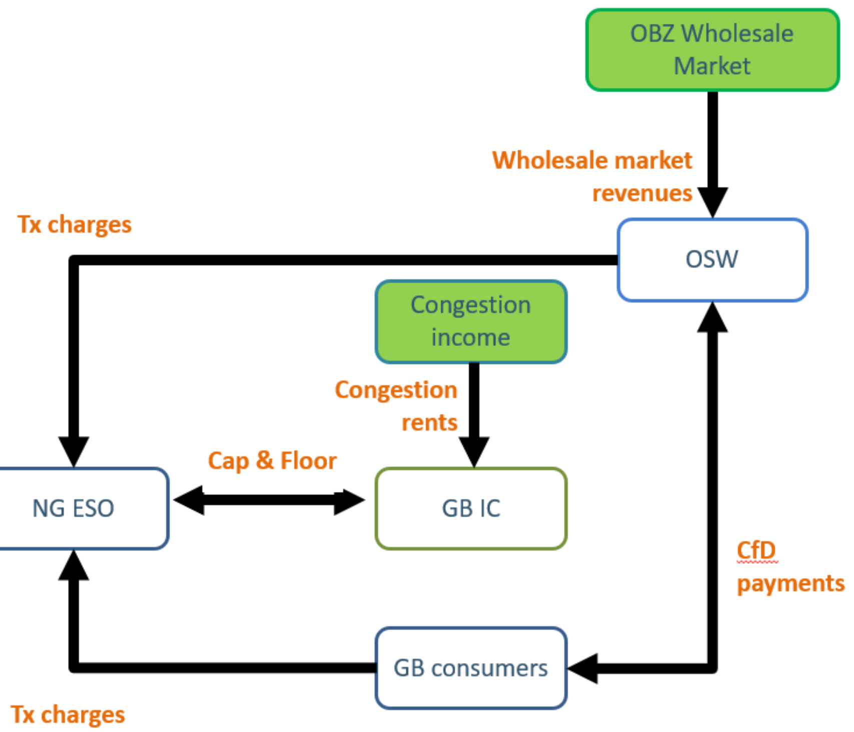
Question(s)

Q10: Do you agree with applying the features of a RAB regime to the offshore platform element of an MPI project? Is there a better form of regime for the offshore platform element and, if so, what would be the rationale for it?

3.41 OWFs and MPIs have two main sources of revenue: wholesale market revenues and congestion revenue respectively. Additionally, GB consumers can top up or receive payments through transmission charges which also transfer revenues between the relevant parties as shown in **Figure 14** below. To create an investable business model for the OWF and for the MPI asset owners, both need to achieve alignment between costs and revenues to ensure a fair and proportionate risk and reward balance (see the principles in **Table 1**). Given the two main sources of income, when an MPI regime is being implemented, if revenue from either the wholesale market or congestion revenue reduces or is redirected (relative to separate OWF and interconnector assets) then an increase in revenue or reduction in costs is likely required to partially or fully compensate – otherwise, the investment signal for OHAs is undermined.

Figure 14: Revenue flows for existing offshore wind farms and interconnectors

(excludes Capacity Market, balancing contracts and ancillary services revenues)



3.42 The market arrangements consultation published alongside this consultation covers support schemes for the OWF that could apply together with each of the proposed regime package options. The choice of appropriate MPI regulatory regime is affected by how the offshore platform is categorised, either by Home Market (HM) or Offshore Bidding Zone (OBZ) market arrangements. This categorisation affects the revenue stream and incentives of the connected OWF. Although OWFs are not part of the MPI asset, we have taken these considerations into the design of an MPI regulatory regime.

3.43 Some form of financial support would likely be required for the OWF to compensate for a loss in revenue that they would be likely to sustain under the OBZ market design compared to the status quo. In an OBZ model and in a two-country connection, the OWF will always earn the lower price of the two connected onshore markets for its output. This also means that if they were eligible for, and successful in winning a CfD, their revenues would remain lower than other GB OWFs. To incentivise OWFs to connect to an MPI voluntarily and to ensure an OWF is not materially disadvantaged by connecting to an MPI, we consider that financial support may be required.

3.44 Therefore, in the regime package options below we consider either the option of the existing CfD regime applying to OWFs connected to an MPI (either in its standard format or amended to account for OBZ reference price), or a new concept of Wind-Adjusted Financial Transmission Rights (WAFTRs) that would see congestion revenue earned by the MPI shared with the OWF.

3.45 We caveat that both of these options have strong external dependencies in order to be implemented successfully. A WAFTR model requires legislative change to allow interconnectors to share congestion revenue with OWFs. Additionally, as outlined in the Department for Energy Security and Net Zero's consultation 'Considerations for future CfD rounds[27]', the question of MPI-connected OWFs being eligible to apply for a CfD is still under consideration. Any references to CfDs (whether standard or amended) in this consultation are subject to the outcome of ongoing policy development in the Department for Energy Security and Net Zero and is only used as an assumption (based on existing OWF financing) to present the regime package options in Appendix B.

3.46 Ofgem considers that a direct form of financial support could be a more effective method to manage the commercial impact of lower OWF revenues compared to a form of congestion revenue sharing, as this would be less complex to implement to achieve the same outcomes. We welcome feedback from stakeholders if there is an alternative option to ensure commercial incentives to invest in OHAs that has not yet been considered.

3.47 More detail on WAFTRs and CfDs can be found in the market arrangements consultation.

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[27] https://www.gov.uk/government/consultations/considerations-for-future-contracts-for-difference-cfd-rounds

3.48 Appendix B considers five potential models for a regulatory regime for MPIs (ie hybrid assets connected to offshore generators in GB) and two potential options for NSIs. The options for MPIs vary from RAB for all elements to narrow cap and floor for all elements and are as follows:

Option 1 – RAB for the combined assets of the MPI;
Option 2 - HM with narrow cap and floor;
Option 3 - OBZ with partial RAB / cap and floor and WAFTR;
Option 4 - OBZ with narrow cap and Floor and amended CfD; and
Option 5 - Narrow cap and floor and amended CfD.

3.49 The options for NSIs are as follows:

Option - 6 NSI with narrow cap and floor; and
Option - 7 NSI with a RAB.

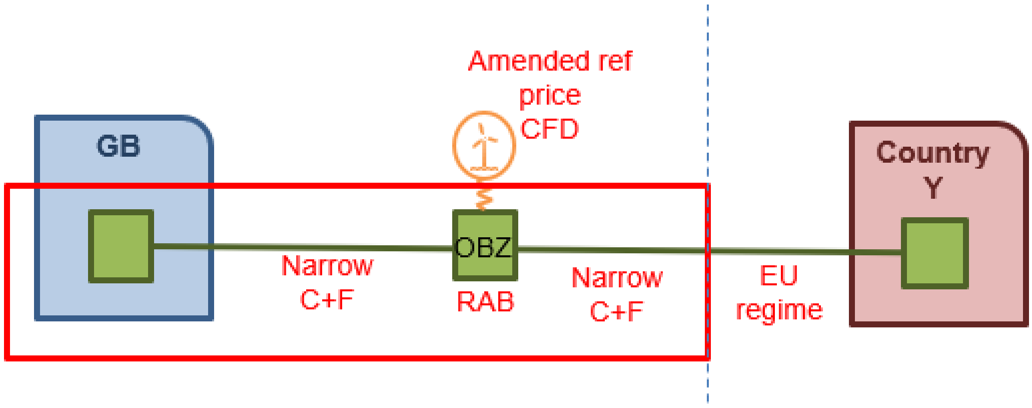
3.50 Two options could cover both HM and OBZ market arrangements (Options 1 and 5), one is unique to HM (Option 2) and two are unique to OBZ (Options 3 and 4). All MPI options would include a CfD for the connected OWF as its main support scheme, aside from Option 3 which applies the WAFTR congestion revenue sharing mechanism. In addition, if the connecting wind farm was successful in receiving a CfD, some options assume that amendments to the standard CfD regime would be applied to the OWF connected to the MPI, to ensure the CfD is adaptable to OBZ market arrangements. As noted above, this is our simplifying assumption based on existing support mechanisms for renewables – we note that Government policy regarding CfDs and MPI-connected offshore wind remains under consideration.

Regime package recommendations for MPIs and NSIs

3.51 Ofgem developed the five potential package options for MPIs (see Appendix B) collaboratively with industry stakeholders through the MFDG, and after careful consideration of these options, Ofgem's preferred route for MPIs is Option 4 - OBZ with narrow cap and floor and amended CfD.

3.52 Option 4 is based on an OBZ model. The offshore converter platform would be remunerated with a form of RAB regulatory regime and the onshore converters and cable would receive a narrow cap and floor. The OWF would receive an adjusted CfD (to reference the OBZ price rather than the GB price) to avoid potentially lower revenue versus the HM model. Option 4 is summarised in the diagram below:

Figure 15: OBZ with narrow cap and floor and amended CfD



3.53 We welcome feedback from all stakeholders on the merits and disadvantages of the options presented in Appendix B and for stakeholders to state any alternative models or preferences. Ofgem's preference for Option 4 for MPIs is based on the following reasons:

- An OBZ market arrangement is inherently more efficient than HM.
- This option compensates the OWF for the loss in revenue associated with the change in price from HM to OBZ.
- The revenue stream and related incentives are aligned to the nature of the assets comprising the MPI project and can be integrated into a single licence and reflect the single business of the MPI project
- This option limits the use of RAB features to the element where they are justified (offshore converter platform), mitigating the risk taken by consumers in comparison to a RAB for all elements option
- Revenue support mechanisms for OWFs are well-established and understood in the offshore wind sector in GB.

3.1 The disadvantages of this approach might be:

- This option will depend on modifications to the Government's existing support regime for OWFs to enable a bespoke arrangement for MPI connected wind, which would need thorough assessment and consideration. This would be an assessment and decision for Government.
- The adjusted CfD could require an increased consumer subsidy to remedy the lower expected revenue from an OBZ versus HM and the bespoke nature of

the CfD may limit the benefits of competitive auctions that come with the existing CfD.

3.54 Option 4 would be packaged within a single MPI regime so that parameters can be aligned where possible. The returns from the RAB portion could define the fixed portion of the allowed revenues, while the narrow cap and floor would define the variable allowed cross border portion.

3.55 Appendix B also includes two options for NSIs, one with a narrow cap and floor and one with a RAB for the whole asset. Ofgem's preference is for a narrow cap and floor model to apply to NSIs (Option 6 in Appendix B).

Question(s)

Q11: Which of our proposed offshore hybrid asset package options is most appropriate for MPIs and NSIs in your view and why? We invite you to consider if there are other viable options not shortlisted here, if we can disregard any options entirely, and which options best reflect the draft principles.

Design parameters of the regimes for OHAs

3.56 The regulatory regime that will be applied to offshore hybrid assets in GB can be designed in multiple ways as outlined in the preceding sections. The selection of appropriate regime design parameters will shape the chosen regime itself and support the principles underpinning the OHA Pilot Regulatory Framework.

3.57 For options that include an element of the cap and floor regime, we are proposing to align the MPI and NSI regulatory regime design parameters with the regime design parameters used for point-to-point interconnectors in Window 3, but with certain divergences where appropriate to reflect different balances of revenue and cost and different levels of risk while protecting consumers' interests. Appendix C outlines the regime parameters and we invite feedback on their appropriateness for the OHA pilot scheme, outlined in the tables which are focused on our proposal of regime Option 4 for MPIs and Option 6 for NSIs (described in Appendix B). The regime parameters would apply to any version of the cap and floor regime described earlier in this chapter and Appendix B. The regime needs to be transparent and robust in its administration and will be developed with these objectives in mind.

Question(s)

Q12: Do you agree that these regime parameters would be applicable for MPI and NSI pilot projects as described above? If not, what changes should be considered?

Q13: Should the offshore converter platform be treated differently?

Q14: What would be an appropriate availability target for MPIs and NSIs? Could a similar methodology as used for interconnectors be applied?

Q15: What would be an appropriate regime length for the cost recovery of the offshore platform? Would it be appropriate to align the regime length to the one for the cable or can it differ?

4. Other Issues

Chapter summary

The purpose of this chapter is to set out our proposals for areas relevant to the regulatory regime that fall outside the scope of regime design and parameters. In this chapter we cover MPIs that could be developed by OWF owners, anticipatory investment, unbundling, and regulatory safeguards.

MPIs developed by OWF developers

4.1 The potential regulatory regimes discussed in this consultation, assumes that the developer of an MPI is a party separate to the developer of an OWF seeking to connect to this MPI.

4.2 It might be possible for an OWF developer to put together a consortium that will finance and build the MPI and offshore converter platform assets in addition to the assets of the connecting OWF. Then, in line with unbundling rules (see section 4.45), the developer's consortium would be required to divest itself from the MPI assets once the MPI assets are delivered and commissioned.

4.3 The OHA pilot scheme does not include projects proposed by OWF developers but the possibility of future hybrid projects, including MPIs, being proposed by OWF developers is not excluded.

4.4 We note that divestment of offshore transmission assets under the OFTO regime is subject to a competitive tender process. Further policy analysis and further engagement with stakeholders would be required to understand in what circumstances a competitive tender process would be appropriate in the context of divestment of MPI offshore transmission and / or interconnection assets by an OWF developer who had constructed and commissioned them.

Anticipatory Investment

4.5 Anticipatory Investment (AI) refers to expenditure in offshore infrastructure by an initial user, to efficiently enable the connection of a later development or developments. AI refers to the investment which goes beyond the needs of the immediate offshore development or developments. The user connecting later to the deliberately oversized infrastructure benefits from the AI made by the initial user and the consumer benefits from cost savings due to the increased efficiency of coordination.

4.6 Within the Early Opportunities and Pathway to 2030 (PT2030) workstreams of the Offshore Transmission Network Review (OTNR), we have used the term AI to refer to investment in offshore transmission assets to support the later connection of specific offshore developments.

4.7 AI policy in the Early Opportunities and PT2030 workstreams has focused on OWF connections specifically. For the purpose of this workstream, we are extending AI policy to offshore transmission within the context of an MPI.

4.8 In this context, we have used the following terms to define our AI policy options which are set out in the following paragraphs:

- We refer to the developer making the investment in the shared asset as the **initial user**. We refer to the developer or developers that will use the shared asset in the future as the **potential later user** until such time as they connect, and the **later user** once connected.
- We consider the investment by the initial user in the shared infrastructure comprises an **AI element** and a **non-AI element**. We expect that these elements would be determined on a case-by-case basis based on the proportional usage of the shared infrastructure.
- We refer to the gap in the cost of the AI made by the initial user for the period between the completion of the initial user's development and the later user connecting to the shared infrastructure as the **AI cost gap**. The AI cost gap refers to the cost that, in the absence of AI policy, is not recovered by the initial user in the absence of the later user.

AI policy in the OTNR

4.9 Prior to our October 2022 decision on AI in the Early Opportunities workstream[28], existing arrangements meant that the initial user would underwrite the AI until the later user(s) connected to shared infrastructure. This was identified as a significant barrier to developers opting to build coordinated offshore infrastructure.

4.10 To remove this barrier, we introduced new policy meaning that the consumer should underwrite the cost of the AI for the period between the shared asset transfer to the OFTO and the point that the later user(s) connects to shared

[28] Decision on Anticipatory Investment and Implementation of Policy Changes | Ofgem

infrastructure. At this point the later user(s) would pay for the cost of the AI via TNUoS charges.

4.11 In our March 2023 decision on PT2030 delivery models[29], we also confirmed our intention to extend the AI policy to projects in scope of the PT2030 workstream. Feedback to our minded-to consultations highlighted the importance of expanding the delivery options available for PT2030 projects. Furthermore, the outcome of the Holistic Network Design (HND) and asset classification process indicated that there would be assets which a generator could opt to construct partly for the benefit of other users, and therefore our AI policy could apply to provide an alternative route to asset delivery.

4.12 Our AI policy within the Early Opportunities and PT2030 workstreams also includes the following key features to minimise the risk to consumers:

- An early-stage assessment process[30] to provide Ofgem with early visibility of projects pursuing AI and to provide developers and investors with the comfort needed to make AI.
- The extension of User Commitment arrangements in Section 15 of the Connection Use of System Code (CUSC) to new offshore transmission assets which provide capacity for more than a single user, to minimise the liability that would fall to consumers should the later user fail to connect or reduce the capacity of its project.

Anticipatory Investment for NSIs

4.13 Our minded-to position is that AI policy would not extend to NSIs to account for AI made for the requirements of an OWF connecting in the neighbouring jurisdiction (i.e., not in GB). It is our view that since an OWF connected in a neighbouring jurisdiction falls within the regulatory regime of that state, AI policy for NSIs would be outside of our remit.

4.14 We see a potential scenario in which an NSI developer invests in oversized infrastructure in GB waters to accommodate the needs of an OWF in the neighbouring jurisdiction, connecting at a later stage (i.e., there is an AI element to the investment made in the infrastructure in GB waters). In this instance, we have no jurisdiction over the potential later user benefitting from the AI. It is our

[29] Decision on Pathway to 2030 | Ofgem
[30] Consultation on the Early-Stage Assessment for Anticipatory Investment | Ofgem

initial view that in this scenario any AI will not be considered, as there will be no route to recover the AI from the OWF in the neighbouring jurisdiction.

4.15 Should an NSI developer invest in oversized infrastructure in GB to accommodate the needs of an OWF in the neighbouring jurisdiction, connecting simultaneously (i.e., there is no anticipatory nature to the investment), this cost could be recoverable under the cost assessment provided it is economic and efficient.

4.16 We welcome stakeholder views on our minded-to position to not extend our AI policy to NSIs.

Anticipatory Investment for MPIs

4.17 Within the potential build permutations an MPI project could opt for, there are scenarios in which AI policy may be appropriate for MPIs, in particular, in scenarios where an AI cost gap is generated. In these instances, AI policy has the potential to reduce an MPI developer's exposure to risk and therefore alleviate barriers to the progression of MPI projects.

4.18 In the following paragraphs we present the potential build permutations for MPI projects and explore if and how we think AI policy could apply. The simultaneous build scenario acts as our counterfactual, in which no AI cost gap is generated.

4.19 As per our AI policy within the Early Opportunities and PT2030 workstreams we also anticipate that in all these scenarios an early-stage assessment (or analogous) process will be implemented to provide developers and investors with the comfort needed to make AI.

Simultaneous build

4.20 We consider a simultaneous build MPI to be a project where all the assets that constitute the MPI are built at the same time. All such assets would be operational at broadly the same time and the MPI would be performing the dual activity of interconnection and offshore transmission from the beginning of the project's operational life.

4.21 For simultaneous build, there is no AI element to the investment and no cost is generated for a later user to pay. This is because no investment is made in anticipation of a later user connecting to the infrastructure. We have therefore ruled out simultaneous build projects from being considered for AI policy.

Sequential build

4.22 We consider a sequential build MPI to be a project where the assets that constitute the MPI are built at different times. As such, certain components of the MPI may become operational at different times. In these cases, it is likely that investment is made in the earlier stage of the project in anticipation of the needs of the later stage of the project. In these instances, there could be an AI element to the investment made during the earlier stage of the project, and therefore AI policy could apply.

4.23 We have considered two distinct sequential build MPI scenarios and have set out their potential suitability for AI policy.

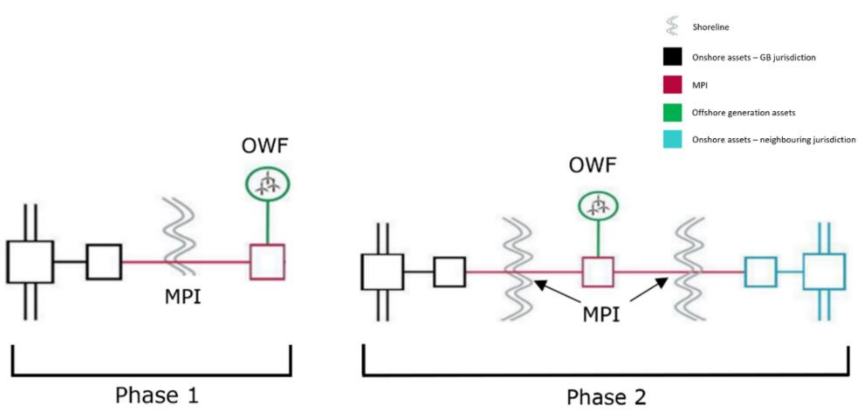
Scenario 1: Offshore transmission first

4.24 In this scenario, there are two distinct phases to the sequential build MPI. In Phase 1, the MPI developer builds the cable from the offshore converter platform to shore and the activity of offshore transmission of the electricity generated by the OWF connected to the MPI's offshore converter platform can commence.

4.25 In Phase 1, the MPI developer is investing in the cable from the offshore converter platform to the shore, in anticipation that the other cross-border part of the cable is connected to the neighbouring jurisdiction to perform interconnection at a later stage. In Phase 1, the MPI developer may oversize the infrastructure beyond the needs of the OWF to eventually accommodate the full scope of MPI assets. For example, the MPI developer may oversize the cable and/or platform in anticipation of the later user.

4.26 In Phase 2, the MPI developer builds the interconnector cable connecting the MPI to the neighbouring jurisdiction and completes the project.

Figure 16: **Sequential build MPI with offshore transmission first**



4.27 In this scenario, the MPI developer is both the initial user and later user. Therefore, the cost of the AI and the gap associated with this cost is contained by one party (i.e., there is no requirement for the cost of AI to be paid back between multiple parties).

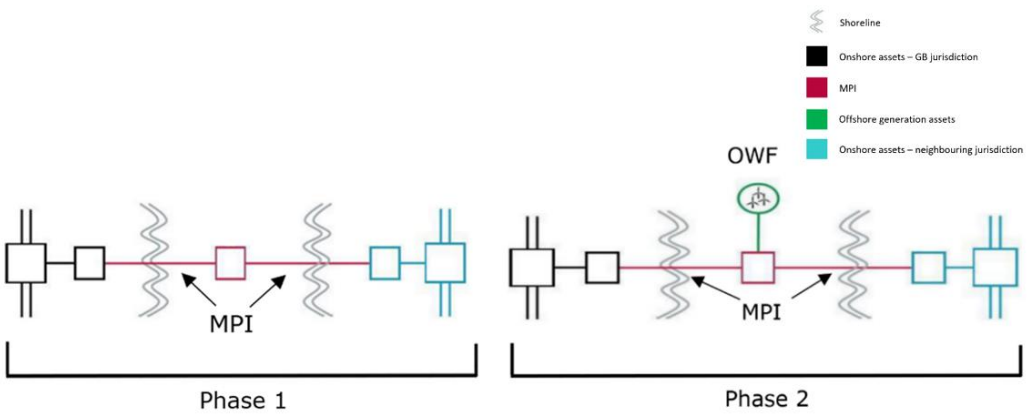
4.28 Given that in this scenario the initial and later user are both the MPI developer, there is no need for a cost recovery mechanism from the later user via AI policy.

Scenario 2: Interconnection first

4.29 In this scenario, in Phase 1, the MPI developer builds the full scope of MPI assets, including any AI in infrastructure over and above the needs of the MPI developer, such as oversizing of MPI assets required to accommodate the connection of the OWF in Phase 2. The MPI will perform only interconnection activity during Phase 1, until the OWF developer builds and connects the OWF to the MPI offshore converter platform and offshore transmission cable that have already been constructed by the MPI developer.

4.30 When the OWF connects in Phase 2, the MPI will then perform both interconnection and offshore transmission activities.

Figure 17: Sequential build MPI with interconnection first



4.31 In this scenario, the initial user is the MPI developer and the later user is the OWF developer. Should AI policy apply, the investment in the AI element of the shared infrastructure (i.e., in the oversizing of assets by the MPI developer to accommodate the later connection of the OWF, over and above what would be required for the activity of interconnection) would be recovered from the OWF developer by the MPI developer over a period of time once connected in Phase 2.

4.32 If there are multiple OWFs becoming the later users, the intention would be that the AI element is shared proportionally, depending on the infrastructure requirement(s).

4.33 We expect there would be an assessment process to approve any AI spend. We welcome stakeholder feedback on any other scenarios for which AI policy could apply to MPIs.

User Commitment

4.34 The extension of User Commitment arrangements under Section 15 of the CUSC, to the later user(s) of shared offshore infrastructure subject to AI, is a key part of our AI policy as it applies to the Early Opportunities and Pathway to 2030 workstreams of the OTNR.

4.35 User Commitment requires that the later user(s) of shared infrastructure secures liabilities in respect to the AI being undertaken on their behalf. It demonstrates seriousness of intent and goes some way to mitigate the consumer's exposure to AI risk.

4.36 Given the risk associated with the AI cost gap being borne by consumers, it is our view that User Commitment (or analogous) arrangements should likewise form part of our AI policy for MPIs. Upon confirmation in our final decision, we would expect ESO to take forward any modifications needed to the CUSC to do so.

Cost recovery

4.37 In the absence of an established regulatory regime and certainty on market arrangements for MPIs, it is difficult to set out the specifics of the mechanism for AI cost recovery from the later user upon its connection to the initial user's MPI assets and from consumers in the instance where the later user's OWF fails to connect or reduces the capacity of its project.

4.38 We expect that under HM arrangements, the usual AI policy could apply and the AI cost gap could be recovered from the OWF via their TNUoS charges upon their connection to the MPI assets.

4.39 In the instance where the OWF fails to connect or reduces the capacity of its project, TNUoS charges may not be charged to the later user in respect of the unutilised AI and therefore, save for amounts recovered via User Commitment (or

4.40 analogous) arrangements, economic and efficient AI costs could be absorbed by consumers through the Transmission Demand Residual.

4.41 Under an OBZ arrangement, we consider that consumers could underwrite the AI cost gap through the cap and floor regime. In principle, the cap and floor levels could be adjusted to reflect AI capital cost in the absence of transmission returns from which to recover the AI cost gap from the later user, prior to the OWF connecting to the MPI. Once the OWF connects, the cap and floor levels could then be adjusted to reflect the OWFs ability to pay for the AI via transmission returns.

4.42 In the instance where the later user fails to connect or reduces the capacity of its project, the cap and floor levels would not be readjusted, and AI cost deemed economic and efficient, save for amounts recovered via User Commitment (or analogous) arrangements, would be recovered from consumers via the cap and floor.

4.43 In the instance where the later user fails to connect or reduces the capacity of its project, in order for the MPI owner to use any additional capacity associated with the AI, we envision some sort of repayment by the initial user will need to take place. This would be to ensure that consumers are not covering the cost of AI that the initial user is utilising in spite of the later user failing to connect. We welcome stakeholder views on how this incremental capacity could be treated.

4.44 Alternatively, or in combination with a cap and floor mechanism, a RAB arrangement could cover some or all of the of the AI capital costs for specific assets. We welcome feedback in this area.

Question(s)

Q16: Do you support, in principle, the extension of AI policy to MPIs?

Q17: Do you support our minded-to position that AI policy should not apply to NSIs?

Q18: Do you agree with the set of scenarios set out for simultaneous and sequential build projects, and our conclusions on where AI policy could/could not apply?

Q19: Do you agree with our suggestions surrounding AI risk mitigation and assurance for MPI developers, namely extending User Commitment (or analogous) arrangements to the later user and developing a process analogous to the Early-Stage Assessment?

Q20: Do you agree with our suggested high-level mechanisms for the recovery of AI cost from the later user, and from the consumer in the instance where the later user fails to connect or reduces the capacity of its project?

Q21: If the RAB model applies, would AI policy still be required for the assets covered by the RAB, given that the consumer would in theory cover these costs?

Ownership unbundling requirements for MPI and NSI operators

4.45 The Energy Bill, when enacted, is expected to introduce to the Electricity Act the requirement for the MPI licence holders to be certified under the ownership unbundling rules. These rules already apply to the electricity interconnector and the offshore transmission licence holders. Therefore, the existing rules will apply to NSI operators (who will hold an interconnector licence).

4.46 Consequently, category 1 asset operators (holding an interconnector licence) and category 2 asset operators (holding an MPI licence) have to be certified under the ownership unbundling rules.

Question(s)

Q22: Do you have any views on how the ownership unbundling requirements applicable to MPI and NSI operators may influence the delivery of these assets (and/or delivery of offshore generators connected to MPI assets?

Regulatory safeguards and compliance requirements for MPIs and NSIs

4.47 One of Ofgem's principal roles is to regulate and monitor the electricity market to ensure fair treatment of consumers and proper functioning of the market (including appropriate regulation and oversight of the natural monopolies forming part of the market).

4.48 The OFTO licence contains explicit provisions on business separation which do not appear in the electricity interconnector licence. However, we note that interconnector licence holders (as much as OFTO licence holders) are required to comply with licence provisions related to prohibition of discrimination and cross-subsidies as well as with general provisions on disclosure of information.

4.49 We are in the process of establishing the appropriate level of regulatory safeguards and compliance requirements that should apply to MPI and NSI operators and which should be reflected in their respective licences.

4.50 As part of this process, we are reviewing regulatory safeguards and compliance requirements contained in various licensing regimes administered by Ofgem.

4.51 In addition, while conducting our analysis, we take into account that operators of MPIs and NSIs may constitute subsidiary companies within various corporate structures.

4.52 Further, we are also mindful of safeguards that already exist, and which will apply to MPI and NSI operators. For instance, the ownership unbundling rules that already apply to the electricity interconnector and the offshore transmission licence holders will also apply to MPI and NSI operators and will require these licensed operators to be certified as independent.

4.53 In addition, the GB REMIT Regulation[31] prohibits market manipulation and insider trading and requires wholesale energy market participants to publicly disclose inside information. The related enforcement regulations provide the enforcement framework that deals with relevant non-compliance and offences.

4.54 Nevertheless, we recognise that MPIs are a new type of assets that will conduct a dual activity of interconnection and offshore transmission in GB and for this reason the appropriate level of regulatory safeguards and compliance

[31] Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency – as amended, retained and applicable in GB.

requirements for the MPI licence holders might need to be higher than for interconnector licence holders operating non-standard interconnectors and those operating standard interconnectors.

4.55 We are in the process of establishing whether the dual nature of the MPI asset activity and / or any implications resulting from the physical connection of an MPI asset to an offshore generator in GB are the factors that would necessitate a higher level of regulatory safeguards and compliance requirements for an MPI licence holder. We welcome continued stakeholder engagement in this area.

4.56 Further, we note that Chapter 4 of this consultation document sets out a number of regulatory regimes under which MPIs could be regulated. Some of these options include the proposal of a Regulated Asset Base (RAB) revenue stream for the whole or part of the MPI asset base (ie at least for the offshore converter platform).

4.57 We consider that inclusion of the RAB revenue stream as part of the regulatory regime for MPIs may result in a need for additional regulatory safeguards and compliance requirements.

4.58 Consequently, we are of a view that the regulatory safeguards and compliance requirements for NSI operators could be lower than for MPI operators because they will not conduct offshore transmission activities in GB and will not require RAB arrangements for an offshore converter platform in GB. Nonetheless, we would be interested in stakeholders’ views as to whether the connection to the offshore generator in the connecting state and related offshore transmission activities conducted by an NSI in that state would require additional regulatory safeguards and compliance requirements in GB, as part of the licensing arrangements for NSIs.

4.59 With reference to questions already directed to us by the relevant stakeholders, we confirm that our minded-to position is that entities holding MPI licences and entities holding interconnector licences for operation of standard interconnectors or non-standard interconnectors may all constitute subsidiary companies under a single parent company.

4.60 However, we are in the process of identifying the appropriate level of regulatory safeguards and compliance requirements that should apply, in such a corporate structure, between the licensed entities (taking into account that entities operating MPI assets and performing the dual activity of interconnection and offshore transmission would be part of the corporate structure).

4.61 In particular, we are seeking to establish to what extent the compliance and independence arrangements already applicable to standard interconnector licence holders constituting subsidiary companies under a single parent company could already provide the necessary safeguards.

4.62 Based on feedback that we have received from stakeholders so far, we recognise that excessive regulatory safeguards and compliance requirements may create disincentives for development of MPIs and NSIs.

4.63 Overall, the appropriate regulatory safeguards and compliance requirements applicable to MPIs and NSIs will be determined by Ofgem and implemented through licence provisions. We are minded not to impose stricter or higher regulatory safeguards and compliance requirements than are necessary for regulatory purposes.

Question(s)

Q23: Do you have any views as to the regulatory safeguards and compliance requirements that should apply to MPI licence holders, taking into account the dual activity (interconnection and transmission) that they will perform?

Q24: Do you agree that the inclusion of a RAB as part of the regulatory regime for MPIs should be subject to appropriate safeguards, including appropriate compliance requirements? If no, please explain why. If yes, do you have any specific suggestions?

Q25: Would the regulatory safeguards as well as compliance and independence arrangements already applicable to standard interconnector licence holders constituting subsidiary companies under a single parent company be sufficient if MPI licence holders were added, as subsidiary companies, to this corporate structure? If yes, please explain why. If not, what additional safeguards should be implemented?

5. Charging

Chapter summary

The purpose of this chapter is to set out high level principles relating to network charging arrangements for offshore generators connecting to OHAs and reflects our current thinking in respect of any future offshore hybrid projects. We expect that such charging arrangements will be created subject to our standard consultation and policy development process and framework.

Unless otherwise indicated, none of the below constitutes or should be considered to reflect formal or finalised positions of the Authority.

Connection charges

5.1 Currently, offshore windfarms pay local charges in respect of the assets used to transmit their power to the Main Integrated Transmission System. These assets are distinct of 'connection' assets, and the charges for these assets falls under the TNUoS regime. In principle, we consider that ongoing charges could be payable to the MPI owner for any assets used to connect the wind farm to the platform, and potentially for the platform itself, but this may be dependent on the need for additional investment by the MPI in order to facilitate connection, as well as whether the OWF will be participating in HM or OBZ.

5.2 The electricity interconnector licence provides a charging methodology setting out how users of an interconnector should be charged for access to (and use of) the interconnector's assets. We consider that the relevant provisions of this licence document could potentially set the basis for the local charges for connection to, and use of, the MPI asset rather than falling under the current Connection and Use of System Code, or any other discrete document.

5.3 For NSIs, we consider that these local charges for connection to, and use of the NSI asset in the connecting jurisdiction will be dealt with under a commercial agreement between the OWF and NSI owners. Ofgem does not have jurisdiction over connected generators in foreign jurisdictions.

Onshore charges

5.4 If the offshore generator has obtained Transmission Entry Capacity (**TEC**) in order to have enduring access to the GB wholesale market, the existing TNUoS methodology would apply to that offshore generator, given that they would have the same degree of access right to the GB onshore transmission system as any other generator.

5.5 We recognise that the market arrangements and charges should be considered alongside each other when attempting to devise an overall regulatory and commercial framework for charging offshore generators connecting to MPIs.

5.6 We consider it to be appropriate that TNUoS charges in respect of the onshore Main Integrated Transmission System should only be applicable where the GB connected offshore generator is entitled to priority access to the GB wholesale market and there is a known or likely impact on the GB onshore transmission network. Offshore generators operating under OBZ arrangements do not have dedicated access to sell their power in GB markets, as their power may be sold to connecting countries, nor do they have ongoing access to the onshore transmission system, therefore should not necessarily be liable for TNUoS. Furthermore, offshore generators operating under an OBZ model would have the same entitlement to access the MPI as other users of cross border capacity (eg traders acquiring capacity), and therefore, like other users of the MPI (cross-border cable), should be exempt from TNUoS charges.

Question:

Q26: Do you agree with the above principles relating to connection and onshore charges for offshore generators connecting to an MPI and NSI?

6. Next steps

6.1 The OHA projects that have met the eligibility criteria for our pilot framework will undergo an Initial Project Assessment in summer 2023. Following this, we plan to publish our decision on an appropriate regulatory regime for the OHA pilots and then to consult on our IPA decisions. Subject to our IPA consultation we expect to award a regulatory regime to successful projects in late 2023. Our next consultation will cover financial parameters for the cap and floor regime as applied to third window interconnectors, which may be also of interest to OHA developers.

Appendix A– 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. ie a consultation.

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

Your personal data will be held for 3-5 years after the consultation is closed.

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:

1. know how we use your personal data
2. access your personal data
3. have personal data corrected if it is inaccurate or incomplete
4. ask us to delete personal data when we no longer need it
5. ask us to restrict how we process your data
6. get your data from us and re-use it across other services

7. object to certain ways we use your data
8. be safeguarded against risks where decisions based on your data are taken entirely automatically
9. tell us if we can share your information with 3rd parties
10. tell us your preferred frequency, content and format of our communications with you
11. 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

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.

9. More information For more information on how Ofgem processes your data, click on the link to our "ofgem privacy promise".

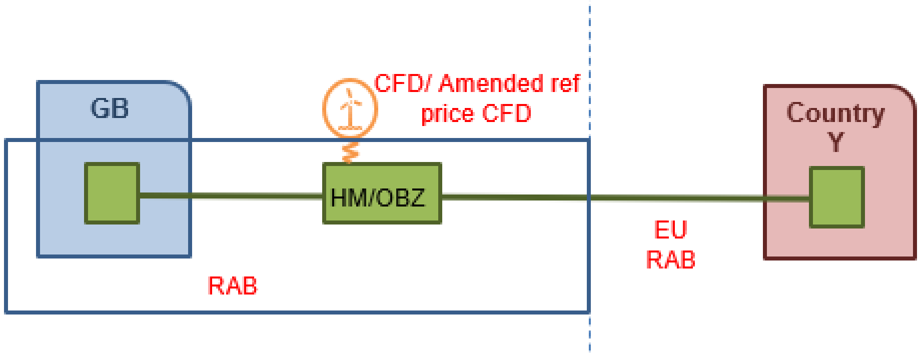
Appendix B– Regulatory Regime Options

In this appendix we consider five regulatory regime options for MPIs and two for NSIs. This appendix should be read in conjunction with chapter 3 of the document.

Option 1 – RAB for the combined assets of the MPI

A RAB model could be applied to cover the onshore converters, cables and offshore converter platform. It could be used for both a HM and OBZ market arrangement. In the case of the OBZ, the OWF's CfD would need to be amended to refer to the reference price at the OBZ rather than the GB market. Option 1 can be summarised by the features below:

Appendix Figure 1: RAB for the combined assets



Appendix Table 13: Regulatory approach to option 1

Asset	Regulation	Reasoning
Onshore converters and cable	RAB across the whole asset	RAB features would be a way of providing a stable revenue stream with a relatively high level of investor protection.
Offshore converter platform		
Offshore wind generator (not part of the MPI asset)	Revenue support mechanism	Offshore wind farm earns GB electricity price in a HM, revenue could be stabilised through a mechanism such as the CfD., If OBZ - the current CfD model would need to be amended

The advantages of this approach are:

- Simple with one regime covering the whole asset.
- Investment case is fully separated from congestion revenue and therefore future changes to congestion revenue, eg further meshing or interconnection of MPI to other countries or changes in market arrangements, do not erode the business case of the investor.

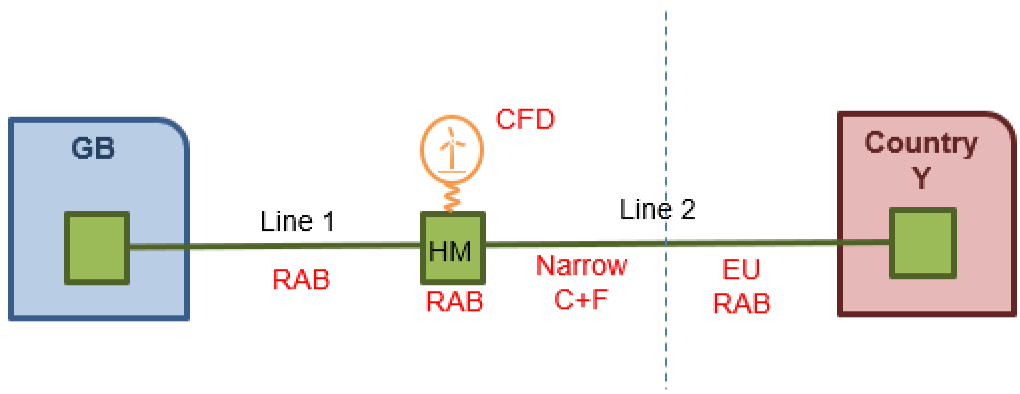
The disadvantages of this approach might be:

- The costs of the whole asset are borne by consumers.
- No inherent incentive to site interconnectors on borders where welfare gains might be largest, or to maximise utilisation of the asset as the revenue stream is pre-defined.
- Higher risks and rewards to consumers due to the typically smaller reductions in revenues to the asset owner when availability is lower than expected and greater ability to adjust revenues periodically (albeit subject to criteria) in comparison with other models.
- Potentially lower price discovery during setting of the RAB and the resulting revenue stream leading to risk of consumers over-paying for the assets.

<u>Option 2 – HM with narrow cap and floor</u>

This is exclusively a HM option. Option 2 can be summarised by the below features:

Appendix Figure 2: HM with narrow cap and floor



Appendix Table 2: Regulatory approach to option 2

Onshore converters and line 1 (non-cross border) cable	RAB features including an approved maximum equity return subject to incentives and excluding charges to transmission users during construction	In a HM, there is no congestion revenue on line 1 and therefore it should receive a fixed return in the same way that onshore networks do through price controls, or an OFTO would do via a tender revenue stream.
Line 2 (cross border cable)	Narrow Cap and Floor: The standard cap and floor levels are symmetrically narrowed. The cap and floor could either refer to Cost of Debt and Cost of Equity from market measures or project-specific approved IRR levels.	Due to the higher risks involved in MPI development, it may be appropriate to offer more revenue certainty than is needed for point-to-point interconnectors.
Offshore converter platform	RAB, in particular features including an approved maximum equity return subject to incentives and excluding charges to transmission users during construction	The offshore converter platform is potentially too expensive to recover costs from congestion revenues available to the MPI pilot project. The features of a RAB would be a way of providing an additional stable revenue stream with a relatively high level of investor protection.
Offshore wind generator (not part of the MPI asset)	Revenue support mechanism	Offshore wind farm earns GB electricity price in the HM,revenue could be stabilised through a mechanism such as the CfD

The advantages of this approach are:

- Relatively simple and close to the existing regimes
- Regime is matched to the asset activity providing some market signals

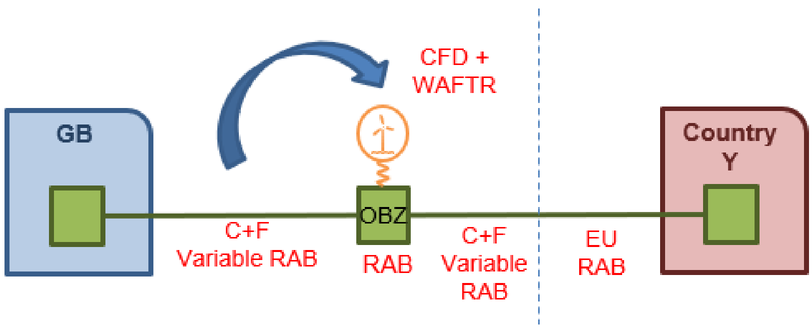
The disadvantages of this approach might be:

- HM is less efficient at allocating capacity as it is not a market-based allocation. As such it may also lead to additional curtailment of wind generation and a reliance on forecasting for capacity allocation (see Market Arrangements consultation for more detail)
- Different regimes within the MPI asset ownership add some complexity
- Line 2 revenues could be eroded by future connections to the offshore converter platforms (in GB or the connecting country) thereby modifying the original investment case for the cross-border cable.

<u>Option 3 - OBZ with partial RAB / cap and floor and WAFTR</u>

Option 3 is based on an OBZ model. The proposals are adjusted to account for the potentially lower earnings of the OWF in the OBZ in comparison to a HM arrangement. Option 3 can be summarised by the below features:

Appendix Figure 318: OBZ with partial RAB / cap and floor and WAFTR



Appendix Table 3: Regulatory approach to option 3

Asset	Regulation	Reasoning
Onshore converters and cable	Partial RAB: Revenue pro-rated from two methodologies based on the proportions of time the cable:	This allows the MPI pilot project developer to earn a return based on how the asset

	(i) acts as offshore transmission; and (ii) an interconnector. This is a new concept.	is actually being used as either interconnection or offshore transmission.
Offshore converter platform	RAB, in particular features including an approved maximum equity return subject to incentives and excluding charges to transmission users during construction	The offshore converter platform is potentially too expensive to recover costs from congestion revenues available to the MPI pilot project. RAB features would be a way of providing an additional stable revenue stream with a relatively high level of investor protection.
Offshore wind generator (not part of the MPI asset)	Standard revenue support mechanism and Wind Adjusted Financial Transmission Right (WAFTR)	Offshore wind farm pricing set in the lower of the two connected markets. Congestion revenue is transferred from the interconnector to the wind farm to level-up back to what the wind farm would have earned if it was in the HM configuration, and recipient of revenue support

The advantages of this approach are:

- OBZ is inherently more efficient than HM[32]
- The option appropriately compensates the OWF for the loss in revenue associated with the change in price from HM to OBZ.

[32] For further justification please see the parallel market arrangements consultation.

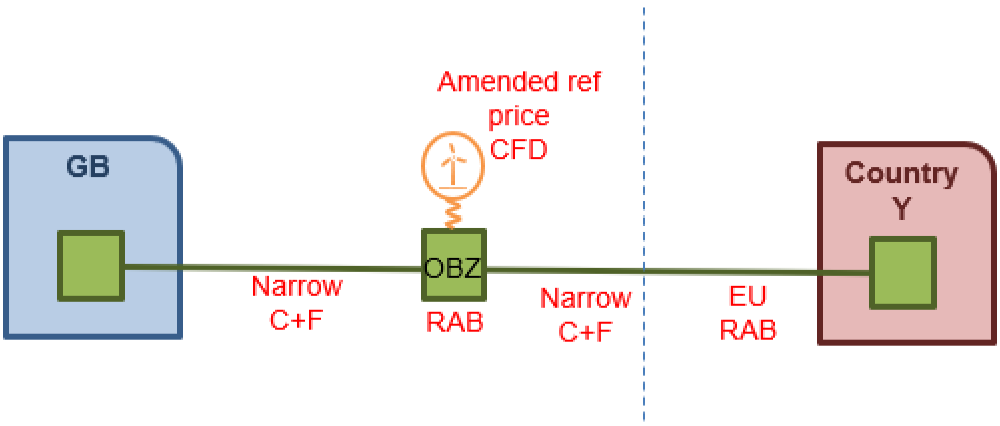
The disadvantages of this approach might be:

- A complex new WAFTR instrument is required (unless an adjusted CfD is available to the OWF – see option 4) along with detailed monitoring of the ongoing load factor.
- The combination of cap and floor, RAB and WAFTR makes this the most complex option.
- Transfer of congestion revenue to wind farms would require a change to the relevant law, as discussed earlier in this chapter.
- Transfer of congestion revenue to wind farms may also require agreement from the connecting country partnering in the project.

Option 4 - OBZ with narrow cap and floor and amended CfD

Option 4 is based on an OBZ model. The OWF farm receives an adjusted CfD to avoid potentially lower revenue. Option 4 can be summarised with the following features:

Appendix Figure 4: OBZ with narrow cap and floor and amended CfD



Appendix Table 4: Regulatory approach to option 4

Asset	Regulation	Reasoning
Onshore converters and cable	Narrow Cap and Floor: The standard cap and floor levels are symmetrically narrowed.	Due to the higher risks involved in MPI development, it may be appropriate to offer more revenue certainty than is

	The cap and floor could either refer to Cost of Debt and Cost of Equity from market measures or project-specific approved IRR levels.	needed for point-to-point interconnectors.
Offshore converter platform	RAB features including an approved maximum equity return subject to incentives and excluding charges to transmission users during construction. These features would be aligned as much as possible to the Narrow Cap and Floor regime so that the MPI can function as a single business under a single licence and avoid distortions in incentives arising from undue differences in regime between the two main elements of the MPI project.	The offshore converter platform is likely too expensive to recover costs from congestion revenues available to the MPI pilot project. RAB features would be a way of providing an additional stable revenue stream with a relatively high level of investor protection.
Offshore wind generator (not part of the MPI asset)	Bespoke revenue support mechanism with reference price set in OBZ market	Even if the OWF is made eligible for a CfD, they may struggle to be competitive in this model, due to lower revenues from the OBZ. Therefore, MPI connected wind farms may need an adjusted revenue support mechanism which would bring its earnings up to the level it would have received in the HM model.

The advantages of this approach are:

- OBZ is inherently more efficient than HM

- The option compensates the OWF for the loss in revenue associated with the change in price from HM to OBZ
- Revenue support mechanisms for OWFs are already well-established in GB.

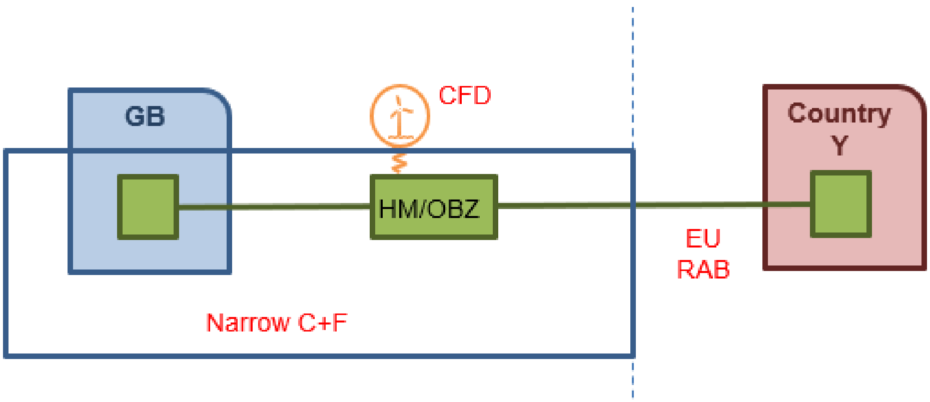
The disadvantages of this approach might be:

- The option will depend on modifications to the Government's existing support regime for OWFs to enable a bespoke arrangement for MPI connected wind, which would need thorough assessment and consideration. This would be an assessment and decision for government.
- The adjusted CfD could require an increased consumer subsidy to remedy the lower expected revenue from an OBZ versus HM and the bespoke nature of the CfD may limit the benefits of competitive auctions that come with the existing CfD.

Option 5 – Narrow cap and floor for the combined assets of the MPI

We have also considered a single regime approach in which a narrow cap and floor would cover the onshore converters, cables and offshore converter platform. It could be used for both a HM and OBZ. In the case of the OBZ the standard CfD for the OWF would need to be amended. Option 5 can be summarised with the following features.

Appendix Figure 5: Narrow Cap and Floor for the combined assets



Appendix Table 54: Regulatory approach to option 5

<table>
<tr><th>Asset</th><th>Regulation</th><th>Reasoning</th></tr>
<tr><td>Onshore converters and cable</td><td rowspan="2">Narrow Cap and Floor across the whole asset: The standard cap and floor levels are symmetrically narrowed.

The cap and floor could either refer to Cost of Debt and Cost of Equity from market measures or project-specific approved IRR levels.</td><td rowspan="2">The floor would need to be higher to accommodate the large costs of the offshore converter platform, without an additional uplift in congestion revenues.</td></tr>
<tr><td>Offshore converter platform</td></tr>
<tr><td>Offshore wind generator (not part of the MPI asset)</td><td>Revenue support mechanism</td><td>Offshore wind farm earns GB electricity price in a HM, revenue could be stabilised through a mechanism such as the CfD.</td></tr>
</table>

The advantages of this approach are:

- Simplicity with one regime covering the whole asset
- Consumer taking less risk than RAB based approaches.

Disadvantages might be:

- Potential to operate at the floor for a significant proportion of the regime, which may provide insufficient returns to MPI developers or require an abnormally high floor funded by a combination of congestion revenue and transmission charges.
- Changes to congestion revenue eg. further meshing or interconnection of MPI to other countries or changes in market arrangements may change the original business case of the investor.

The five options above seek to find a balance between the risks and rewards for consumers, the MPI developer and the offshore wind farm connected to the MPI.

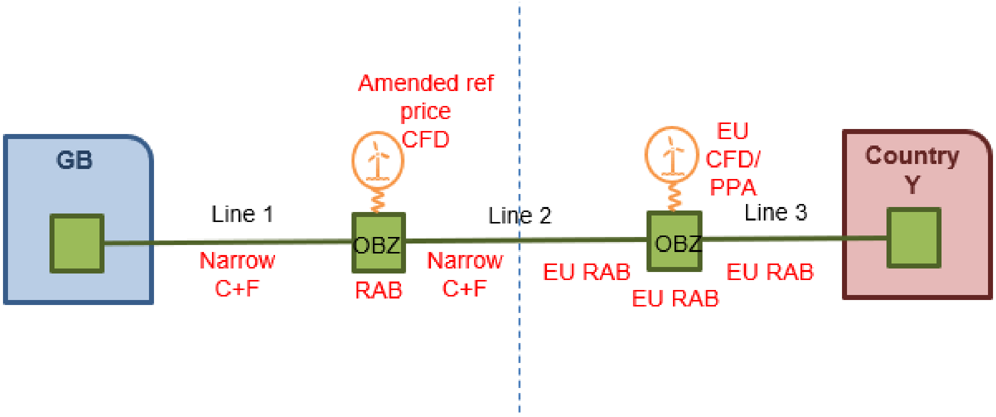
For MPI permutations connecting both GB and overseas wind (2-node MPIs) options 1-5 above could also apply and can coexist alongside the overseas regime.

Regulatory regime for MPIs connected to offshore generators in GB and overseas

If an MPI is connected to offshore generation both in GB and overseas, then further types of multi-nodal and intermeshed MPIs are possible with both HM and OBZ market models.

For these combinations, the GB assets of the MPI would then be regulated as per the preferred regime package which Ofgem would implement for MPIs connected only to GB offshore generation (Option 4). Line 2 falling across two jurisdictions would therefore be subject to both the GB and connecting state's regime.

Appendix Figure 6: MPIs connected to offshore generators in GB and overseas



Regulatory regime options for NSIs

Non-standard interconnectors (NSIs) do not include an offshore converter platform or a connecting OWF in GB- this case is considerably simpler.

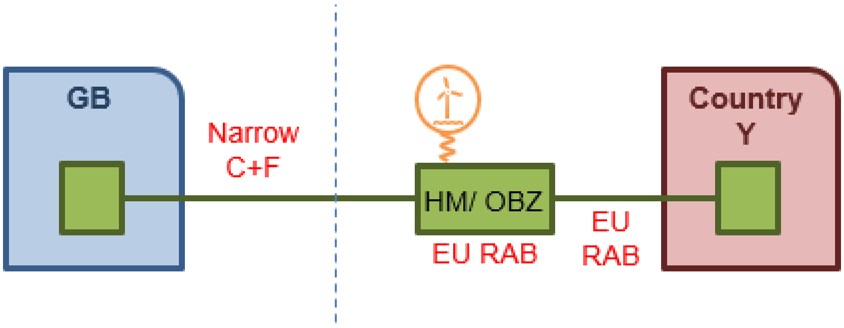
To satisfy the level playing field principle, it is highly likely that the regime selected for an NSI would need to be closely related to the regime selected for the MPIs (but with necessary adjustments reflecting lack of the offshore converter platform in GB). Two possible options are described below: Option 6 and Option 7.

<u>Option 6 – NSI with narrow cap and floor</u>

This option could apply irrespective of whether the offshore converter platform or energy island in the connecting state operates through a HM or an OBZ market model. In the case of a HM, there would be little difference to a traditional point-to-point interconnector and the cap and floor levels would be similar. In the case of connecting to an overseas OBZ, congestion revenues will fall on either line 1 or line 2 depending on the flow direction. This would need to be accounted for in how the cap and floor levels are set.

Ofgem will decide the overall risk levels for financing purposes and the degree to which the cap and floor levels should be narrowed.

Appendix Figure 7: NSI with Narrow Cap and Floor



The advantage of this approach is:

- Consumer taking less risk than in RAB based approaches.

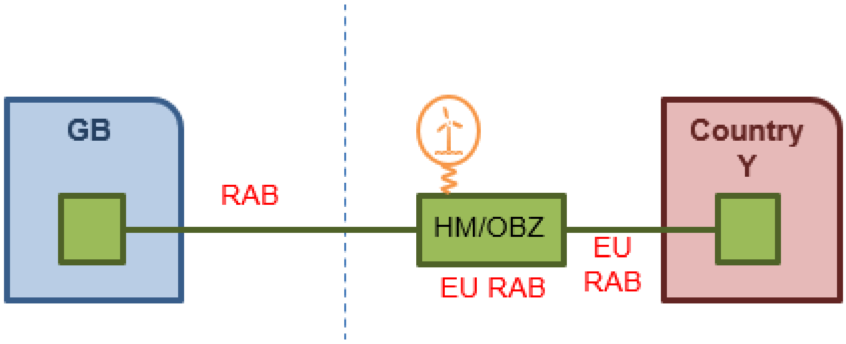
A disadvantage to this approach is:

- Changes to congestion revenue, eg. further meshing or interconnection of the NSI to other countries or changes in market arrangements may change the original business case of the investor.

<u>Option 7 – NSI with a RAB</u>

This option could apply irrespectively of whether the offshore converter platform or energy island in the connecting state was operating under a HM or an OBZ. The congestion revenue accrued in either HM or OBZ would be detached from the investment case for the developer. In in the connecting state's home market, the congestion revenue would be similar to a traditional point-to-point interconnector but would be absorbed by the consumer. In the case of an OBZ in the connecting state, congestion revenues will fall on either line 1 or line 2, depending on the flow direction. Again, the congestion revenue accrued would be detached from the investment case for the developer.

Appendix Figure 8: NSI with RAB



The advantages of this approach are:

- Investment case is fully separated from congestion revenue and therefore future changes to congestion revenue, eg. further meshing or interconnection of MPI to other countries or changes in market arrangements, do not erode the business case of the investor.

The disadvantages to this approach might be:

- The costs of the whole asset are borne by consumers
- No inherent incentive to maximise utilisation of the asset as the revenue stream is pre-defined
- Higher risks to consumers due to the typically smaller reductions in revenues to the asset owner when availability is lower than expected and greater ability to adjust revenues periodically (albeit subject to criteria) in comparison with other models
- Lower price discovery during setting of the RAB leading to risk of consumers over-paying for the assets.

Appendix C – Regime Parameters

In this appendix we describe at high level the regulatory regime parameters for MPIs and NSIs based on the respective preferred options. This appendix should be read in conjunction with chapter 3 of the document.

Appendix Table 6: Proposed regime parameters specific to the MPI/NSI cable and onshore converter element of and OHA pilot project

Form of revenue stream attributable	Narrow cap and floor based on existing point-to-point interconnector cap and floor methodology. Ofgem will decide the overall risk levels for financing purposes and the degree to which the cap and floor levels should be narrowed.
Profile	The cap and floor would be flat in real terms over the regime duration. The separate cap and floor returns would be used to calculate the annuities for the cap and floor levels.
Regulatory reporting	Developers would be required to report annually during the operational phase on revenues, availability, and costs. Developers would also be required to report during the construction phase on progress and costs development. This reporting must be in line with the 'regulatory instructions and guidance' (RIGs) issued by Ofgem.

Appendix Table 7: Proposed regime parameters specific to the GB offshore converter platform of an MPI pilot project

Form of revenue stream attributable	Availability-based, using an Ofgem approved asset value, with characteristics to be developed to suit the asset type and its use, and with incentive for higher availability.
Profile	This revenue stream element would be flat in real terms over the regime duration. The permitted returns would be used to calculate the annuity for this revenue stream.
Regulatory reporting	Relevant regulatory instructions and guidance would require a developer to provide information regarding the offshore converter platform business on an annual basis. This would allow us to monitor various financial and other indicators.

Appendix Table 8: Proposed regime parameters applicable to the MPI/NSI cable, onshore converter and offshore converter platform for the MPI project

Regime duration and regime start date	The regime duration would be set for 25 years. We propose to align with the timelines and incentives changes proposed for Window 3 interconnectors[33]. This means that the 25-year regime should be maintained and that project-specific connection dates are accommodated to maximise project delivery by the end of 2032. If a reasonable delay event or a pre-operational force majeure event occurs that leads to project delivery delays, then we would update the regime start date accordingly as set out in Ofgem's Window 3 proposals.
Cost-related regime parameters	
Additions to the asset value used in the annuitisation	Approved capital expenditure (capex) would be remunerated through annuitised depreciation and return allowances generated from a Regulatory Asset Value (RAV). These additions would be attributed to the cable/onshore converter assets or the offshore converter platform asset, as appropriate, and thus contribute to the relevant portion of the revenue stream of an MPI pilot project. There would be a review of all approved capex elements before construction, and a final, post-construction review of some capex elements to consider changes in costs and remaining cost items not yet assessed. Other costs also feed into the revenue streams through the RAV annuitisation process.
Interest During Construction (IDC)	IDC will be treated as a cost incurred in the construction period which is capitalised and feeds into the revenue streams of the MPI assets. IDC will be attributed to the cable/onshore converter and the offshore converter platform assets as appropriate, based on the actual

[33] Consultation on Timelines and Incentives changes for the Third Cap and Floor Window for Interconnectors | Ofgem

	approved costs, and thus contribute to the relevant portion of the revenue stream of an MPI pilot project.
Operating costs (opex)	An ex-ante assessment of opex would be undertaken ahead of operation – and this will be set for the length of the regime with a possible re-assessment and re-set 10 years into the regime duration. In terms of non-controllable costs (defined as Crown Estate Lease Fees, GB Property Rates; and GB Licence Fees), we would set a baseline allowance as part of the opex assessment. Any changes in the economic and efficient costs of non-controllable opex relative to the baseline allowance would be passed through as a revenue adjustment at the end of an assessment period.
Tax	Tax would be treated on an actual tax paid rather than notional basis. There is no tax-trigger mechanism for tax changes (ie the tax will be set for the length of the regime). This approach aligns with the approach taken for Window 3 point-to-point interconnectors.[34]
Financial transaction costs (ie costs of raising finance)	The approach will seek to make greater use of actual project information, subject to protecting consumers' interests. If using an assumed capital structure an allowance will be made for financial transaction costs of debt and, to the extent applicable, equity. We may either assume 50% notional gearing during operation with the gearing assumption from the IDC calculation used during construction, or actual gearing of the specific MPI or NSI project.
Revenue-related regime parameters	
Indexation	Indexation would use the CPIH index but we will keep under consideration issues around liquidity raised by stakeholders. We aim to retain the option to change to CPI if necessary and justifiable, as proposed for Window 3 point-to-point interconnectors.
Assessment periods	Assessments would be carried out either on a 1 year, or on a 5-yearly, discrete basis (each 5-year period is considered in isolation). At the end of the five-year period, cumulative revenue would be

[34] Application Guidance for the Third Cap and Floor Window for Electricity Interconnectors \| Ofgem, p. 20

	assessed against the cap and floor levels on a net present value neutral basis. It would be possible to request within-period adjustments within an assessment period. This adjustment is subject to a decision by us based on justification from the project developer (and providing revenue is below the floor/above the cap). It will be considered on a cumulative basis. If at the end of the assessment period the cap and floor are not breached, then any such within-period payment would need to be returned on an NPV-neutral basis. There would also be the option of a regime variation in which assessments are carried out on a 1 yearly basis and within-period adjustments could not be raised.
Availability incentives	An adjustment of up to +/-2% of the cap level would be available, if availability exceeds or falls short of a target availability. The target availability would be set by us on a project-by-project basis according to the established methodology used for point-to point interconnectors. Developers will lose automatic eligibility for floor payments for each individual year if availability is below 80% in that year. We will retain eligibility for floor payments if the outage that caused availability to fall below 80% is approved by us as caused by an 'exceptional event'. Developers with an approved regime variation request could, similar to Window 3 point-to-point interconnectors, receive a temporary top up payment loan equal to a maximum of four times the annual floor, where availability falls below the 80% minimum for reasons other than force majeure and where merchant revenues are insufficient for developers to repay annual debt obligations to lenders. Such outstanding loans would be required to be paid back in full before developers can recover their equity investment and dividends.

	A differing target availability percentage and incentives, particularly for lower availability, approach may be more appropriate for the offshore converter platform.
Financial assistance and refinancing	Any grants would be netted off the relevant investment value incorporated into the revenue stream levels. Refinancing gains would be retained by the developer.
Income adjusting events during operation	Should the developer experience an income adjusting event during the regime ie an event of force majeure nature, it may claim efficient costs caused by that event. Where a claim is made, we would carry out an assessment of the efficiency of the costs. Should we accept the claim, the costs would be netted off the relevant asset's revenue stream for the purposes of the periodic revenue assessments.

Appendix D- Master Questions List

Licensing Arrangements

Q1: Do you have any views on our proposal to use, when appropriate, a wider common term of an offshore hybrid asset that could apply to both: category 1 assets (non-standard interconnectors) and category 2 assets (MPIs)?

Q2: Do you have any views on our proposal to use the term of non-standard interconnectors (NSIs) for category 1 assets?

Q3: Taking into account the relevance of the provisions of the Electricity Act for the type of the licence that can be granted to an applicant, do you have any views on how we propose to license the operators of category 1 assets (non-standard interconnectors) and category 2 assets (MPIs)?

Regulatory Regime for MPIs and NSIs

Principles

Q4: Do our proposed principles capture the basis upon which the OHA Pilot Regulatory Framework should be designed and developed?

Cross-border sharing of costs and revenues

Q5: How should the cost and revenue sharing boundaries of an MPI or NSI be defined?

Q6: How should costs and benefits of MPIs and NSIs be shared with connecting countries?

Costs, revenues and risks

Q7: Do you agree that the Reasonable Delay Event mechanism should also apply to MPIs and NSIs?

Q8: Are there any additional risks faced by MPIs and NSIs relative to point-to-point interconnectors?

Proposed regulatory regime packages

Q9: Which of our proposed regime concepts- Pure RAB, Narrow Cap and Floor, Partial RAB or Cap and Floor with IRR, do you consider most appropriate and why?

Q10: Do you agree with applying the features of a RAB regime to the offshore converter platform element of an MPI project? Is there a better form of regime for the offshore converter platform element and, if so, what would be the rationale for it?

Q11: Which of our proposed offshore hybrid asset package options is most appropriate in your view and why? Within your response consider if there are other viable options not considered here, if we can disregard any options entirely, and which options best reflect the draft principles.

Design parameters of the regime

Q12: Do you agree that these regime parameters would be applicable for MPI and NSI pilot projects as described above? If not, what changes should be considered?

Q13: Should the offshore converter platform be treated differently?

Q14: What would be an appropriate availability target for MPIs and NSIs? Could a similar methodology as used for interconnectors be applied?

Q15: What would be an appropriate regime length for the cost recovery of the offshore converter platform? Would it be appropriate to align the regime length to the one for the cable or can it differ?

Other Issues

Anticipatory Investment

Q16: Do you support, in principle, the extension of AI policy to MPIs?

Q17: Do you support our minded-to position that AI policy should not apply to NSIs?

Q18: Do you agree with the set of scenarios set out for simultaneous and sequential build projects, and our conclusions on where AI policy could/could not apply?

Q19: Do you agree with our suggestions surrounding AI risk mitigation and assurance for MPI developers, namely extending User Commitment (or analogous) arrangements to the later user and developing a process analogous to the Early-Stage Assessment?

Q20: Do you agree with our suggested high-level mechanisms for the recovery of AI cost from the later user, and from the consumer in the instance where the later user fails to connect or reduces the capacity of its project?

Q21: If the RAB model applies, would AI policy still be required for the assets covered by the RAB, given that the consumer would in theory cover these costs?

Ownership unbundling

Q22: Do you have any views on how the ownership unbundling requirements applicable to MPI and NSI operators may influence the delivery of these assets (and/or delivery of offshore generators connected to MPI assets?

Regulatory safeguards and compliance requirements for MPIs and NSIs

Q23: Do you have any views as to the regulatory safeguards and compliance requirements that should apply to MPI licence holders, taking into account the dual activity (interconnection and transmission) that they will perform?

Q24: Do you agree that the inclusion of a RAB as part of the regulatory regime for MPIs should be subject to appropriate safeguards, including appropriate compliance requirements? If no, please explain why. If yes, do you have any specific suggestions?

Q25: Would the regulatory safeguards as well as compliance and independence arrangements already applicable to standard interconnector licence holders constituting subsidiary companies under a single parent company be sufficient if MPI licence holders were added, as subsidiary companies, to this corporate structure? If yes, please explain why. If not, what additional safeguards should be implemented?

Charging

Q26: Do you agree with the above principles relating to connection and onshore charges for offshore generators connecting to an MPI or NSI?