

Cap and floor regime for regulation of project NEMO and future subsea interconnectors

Consultation

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Overview:

This joint consultation by GB energy regulator, Ofgem and Belgian regulator, CREG seeks views on the principles and design parameters of a new cap and floor regime for regulation of new interconnector investment, using project NEMO, proposed interconnector between Great Britain and Belgium as a pilot project.

For Belgium, the cap and floor regime is envisaged only for the NEMO cable at this stage. For GB, there is potential for further interconnection, so Ofgem will be evaluating the options of opening this regulated approach to future interconnector investments to develop a regulated regime that will co-exist alongside the merchant-exempt route.

Ofgem and CREG will consider all consultation responses and publish conclusions on the applicability and design of the cap and floor regime by the end of the year.

Context

The Energy Infrastructure Package¹ identified the need for further interconnection investment in Europe to support the integration of renewable energy, contribute to security of supply and allow the completion of the internal energy market. Also, the North Sea Countries Offshore Grid Initiative to which both the UK and Belgian Governments have committed, aims to develop an integrated offshore energy grid across the North Seas of Europe, with interconnection playing a vital role for the delivery of this vision. For CREG and Ofgem, the proposed cap and floor regime for regulated interconnector investment and the realisation of an interconnector between the two countries (Project NEMO) is a major step towards that direction.

In addition, Ofgem envisages that this regime will develop into an enduring regime, co-exist alongside the merchant-exempt route and facilitate further interconnector investment in Great Britain, which currently has limited interconnection capacity with other markets. This work has links with several projects currently being conducted by Ofgem including RIIO, the Offshore Transmission Owner (OFTO) regime, Projects Transmit and Liquidity, as well as regulated Third Party Access (rTPA) for LNG storage.

This consultation seeks stakeholders' views on the proposed regulated cap and floor regime for project NEMO. From a GB perspective, Ofgem also seeks views on the intention to develop this into an enduring regime for interconnector investment and on the process and requirements for evaluation of future projects.

Associated documents

Electricity Interconnector Policy Consultation, January 2010:

<http://www.ofgem.gov.uk/Europe/Documents1/Interconnector%20policy%20consultation.pdf>

Open Letter on next steps from Ofgem's consultation on electricity interconnector policy, September 2010:

<http://www.ofgem.gov.uk/Europe/Documents1/Ofgem%20next%20steps%20letter.pdf>

Ofgem's summary of responses to the consultation on electricity interconnector policy, September 2010:

<http://www.ofgem.gov.uk/Europe/Documents1/Summary%20of%20Responses%20from%20Electricity%20Interconnector%20policy.pdf>

Energy Infrastructure Package, January 2011:

[http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=SPLIT_COM:2010:0677\(01\):FIN:EN:PDF](http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=SPLIT_COM:2010:0677(01):FIN:EN:PDF)

National Grid, Rte, Elia consultation, Interconnection in North West Europe:

<http://www.nationalgrid.com/uk/Interconnectors/France/consultations/>

¹ [http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=SPLIT_COM:2010:0677\(01\):FIN:EN:PDF](http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=SPLIT_COM:2010:0677(01):FIN:EN:PDF)

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Executive Summary

This is a joint consultation from Ofgem and CREG. We are consulting on proposals for a new cap and floor regime for regulation of new interconnector investment using project NEMO, a proposed interconnector between GB and Belgium, as a pilot project. For Belgium, the cap and floor regime is envisaged only for the NEMO cable at this stage. For GB, there is the commercial potential for further interconnection, given the current limited interconnection capacity to France (IFA), Northern Ireland (Moyle) and the recently added interconnection to the Netherlands (BritNed). Therefore, Ofgem is consulting on options for developing the cap and floor regime into an enduring regime to regulate future interconnector investment that would co-exist alongside the merchant-exempt route.

In most European Member States, it is common for interconnection to be built by the national transmission company with revenues underwritten by consumers. This is also the typical approach implied under European legislation, which requires offering full third party access (TPA) and compliance with the congestion management guidelines and also includes specific conditions for the use of revenues. To date, this is the approach applied in Belgium, where Elia, the National Transmission System Owner (TSO), delivers all new interconnection as part of the Regulated Asset Base and investment is paid through the transmission tariffs.

By contrast, in GB, until recently, developments have focused on the merchant route for investing in interconnectors, where developers do not receive any regulated returns on their investment and are exposed to the full upside and downside of their investment. Typically, interconnector owners would apply for an exemption from the relevant requirements of European legislation (use of revenues, TPA etc). The case of BritNed's exemption decision, where the European Commission imposed a cap on returns, revealed a level of uncertainty in the regulatory process. Following this, several investors signalled that they were now unwilling to go through this process, given the increased regulatory risk of the exemption process.

The differences between two default national regimes on both sides of the interconnector may result in asymmetric interests for the investors involved in the shared interconnector project. Therefore, there is a clear need to develop a regime that will overcome these barriers and develop a predictable and stable framework that will facilitate interconnector investment.

The need to deliver more cross border infrastructure to support the integration of renewable energy sources, contribute to security of supply across Europe and allow the completion of the internal energy market has been highlighted by the European Commission's Energy Infrastructure Package. To enable timely delivery of new cross border infrastructure, any investment barriers need to be tackled and a co-ordinated approach amongst National Regulatory Authorities (NRAs) is needed.

Ofgem conducted a consultation in January 2010² seeking views on alternative approaches for regulating new investment in interconnection. It set out four options for consideration: i) the merchant-exempt regime, ii) a revenue cap, iii) a revenue cap and floor, and iv) fully regulated returns. Ofgem evaluated the responses which gave a clear message that the cap and floor regime allows for symmetric risk sharing that can facilitate more efficient risk management for developers, and brings down cost of capital while protecting consumers from exposure to high level of risks. Ofgem's subsequent publication in September 2010³, announced that Ofgem and CREG with the assistance of National Grid and Elia will explore in more detail, the cap and floor option, using project NEMO, the proposed interconnector between GB and Belgium as a pilot project.

This joint consultation by Ofgem and CREG sets out the rationale for seeking a coordinated solution and the key drivers that have led us to consider a change in the existing regimes in GB and Belgium for project NEMO. For Ofgem, the key driver has been to develop an alternative route to the merchant-exempt regime to overcome the risks associated with the exemption process and also to develop a regulated regime which is closer to the model to interconnector investment preferred in other European countries. For CREG, the main driver is to find an adequate relationship between the risk supported and the return expected by Elia.

This consultation sets out the high-level principles for an alternative regulated regime which are based on the need to maintain commercial incentives, protect consumers from the cost implications of excess returns for the interconnector owners, while offering some level of protection to developers from the risks associated with the regime (eg introduction of a cap or changes in relevant European legislation). The proposed approach is a 'cap and floor' model, where returns are set within the bounds of a pre-set cap and floor. Returns above the cap would be passed back to the national Transmission System Operator (TSO) and will be offset against national transmission tariffs. In times where returns are below the floor level, interconnector owners will be compensated by the TSOs, who will recover the cost through national transmission tariffs.

The consultation proposes and evaluates a range of design parameters for the cap and floor mechanism, eg options for measurement of the investment performance to duration of the regime and the assessment periods. It also discusses the implications of some additional design options, for example a narrow versus wide cap and floor, and seeks views on the need to introduce additional incentives to mitigate some of the risks associated with the regime (eg availability incentives).

After consultation responses have been considered, Ofgem and CREG expect to publish their conclusions on the applicability and design of the cap and floor regime by the end of the year.

²<http://www.ofgem.gov.uk/Europe/Documents1/Interconnector%20policy%20consultation.pdf>

³<http://www.ofgem.gov.uk/Europe/Documents1/Ofgem%20next%20steps%20letter.pdf>

1. Drivers for change

Chapter Summary

Sets out the drivers for change in regulation of new interconnector investment for GB and Belgium. It outlines that Project Nemo⁴ is a pilot project for developing a new regime for interconnector investment and Ofgem's intention to develop this into an enduring regime.

Introduction

1.1. The Energy Infrastructure Package identified the need for more cross border infrastructure to support the integration of renewable energy, contribute to security of supply across Europe and to allow completion of the internal energy market. Timely delivery of new infrastructure is critical, so bottlenecks in investment need to be addressed. For GB and Belgium, this is the realisation of the NEMO connection.

1.2. Under European Union (EU) legislation, the typical approach to interconnection is a regulated investment, in line with the requirements of the use of revenues conditions, congestion management guidelines and offering full third party access (TPA). Under this approach it is common for interconnection to be developed by the national transmission companies, with revenues underwritten by consumers. Exemptions, although permitted in certain circumstances, are the exception to this rule and may become more difficult to apply in practice. To date in GB, developments have focused on the merchant route for investing in interconnectors, where developers do not receive any regulated returns on their investment and are exposed to the full upside and downside of their investment. Typically, interconnector owners would apply for an exemption from the relevant requirements of EU legislation (use of revenues, TPA etc). On the other hand, in Belgium, Elia delivers all new interconnection as part of the regulated asset base and investment is paid through the transmission tariffs, with CREG determining the return Elia can receive on investment.

⁴ Project NEMO is a proposed 1000MW (approx) electricity interconnector between Zeebrugge in Belgium and Richborough, Kent in Great Britain. National Grid International Limited (NGIL) and Elia (Belgian TSO) are the project developers and future owners of the interconnector. The project has made significant progress. Marine and Onshore Environmental Consultants have been actively engaged since early 2010 and a Seabed Survey spanning UK, French and Belgian waters is largely completed. The results of the seabed survey will be used to inform the marine consenting activities and subsea cable design. Converter sites are currently being prepared. In Belgium, consent for a major new line to extend the 380kV transmission network to Zeebrugge is already well advanced. The developers have sought to adopt a flexible attitude to the corporate structure so far in order help facilitate consideration of the proposed new regulatory regime for interconnectors. The proposed investment is used as a pilot project to explore the cap and floor regime for regulating new subsea interconnector investment. Following consultation, the aim will be to implement the new regime to regulate NEMO interconnector which is expected to become operational in 2016-2018.

However, both regulators are now considering revisions to their existing approaches, for project NEMO.

The drivers for change in regulation of new interconnector investment in GB and Belgium

1.3. The approach to regulation of any cross border infrastructure will involve regulators on both sides of the border. Many counterpart NRAs do not allow national TSOs to embark on exempt interconnector projects, but equally the fully regulated regime may not always be in line with the need for commercially viable investments. The differences between two “default” national regimes on both sides of the interconnector may result in asymmetric interests for the investors involved in the shared interconnector project. There is a clear need for a co-ordinated approach, which may not be identical in each case, but must be consistent and coherent. It is important for NRAs to be able to reach a common position and to set out a clear and predictable framework within which investment can be made.

1.4. In addition to the common objective of both national regulatory authorities (NRAs) to develop a coordinated regime that will deliver timely realisation of an interconnection between GB and Belgium, there are also some “country-specific” drivers for considering a new approach for interconnector investment. These drivers are more dominant in GB due to the need to deliver more interconnection capacity with neighbouring markets, overcome the challenges with the merchant approach and exemptions and develop a coordinated approach to regulation of interconnectors. For Belgium, as the application of the regime is specific for NEMO, the key driver is to find a reasonable risk/return sharing between consumers and investors.

Great Britain

Lack of clear rules for regime hampers investment

1.5. The natural route for a merchant interconnector investor is to seek exemptions from aspects of EU legislation⁵. However, this route seems increasingly difficult. In the case of BritNed, the European Commission imposed additional conditions on the exemption decision at the end of the process which involved a cap on returns. We understand that one of the main concerns of the European Commission was that merchant investment will be under-sized⁶ as the

⁵ Article 17 of Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 (the Electricity Regulation) allows interconnectors to apply for an exemption from Article 16(6) of the Electricity Regulation (use of revenues), and the following Articles of Directive 2009/72/ EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2004/54/EC (Electricity Directive) Article 9 (relating to unbundling), Article 32 (relating to third party access) and Articles 37(6) and (10) (relating to approval of charging methodologies).

⁶ If interconnector capacity is small relative to the size of the markets, it is more likely that the interconnector will be congested, preventing price convergence and increasing interconnector revenues.

incentives on developers do not include wider social welfare benefits. This revealed a level of uncertainty into the exemption process to interconnector developers and indicated that the European Commission is reluctant to grant exemptions, making it likely that conditions could be imposed by the European Commission which could damage the viability of the project.

EU's preferred regulated approach and exemptions as exceptions

1.6. Under EU legislation, the typical approach to interconnectors is a regulated investment, offering full third party access in line with the requirements of the congestion management guidelines, for example. Exemptions, although permitted in certain circumstances, are the exception to this rule. In many European countries, the regulated approach involves a mandate for the national transmission system operator (TSO) to build interconnection underwritten by national transmission customers. From a GB perspective, given that the preferred EU approach is a regulated model to interconnector investment, there is a need to consider a regulated investment regime for non-exempt interconnectors.

Belgium

1.7. Taking into account the importance of the project regarding Elia's current regulated asset base level, the main driver for Belgium is to find a reasonable risk/return sharing between consumers and investors. The higher the level of risk supported by Elia, the higher should be its expected return (and vice versa).

Progress to date and next steps

1.8. Ofgem conducted a consultation in January 2010⁷ seeking views on alternative approaches for regulating new investment in interconnection. The consultation aimed to address the general issue of moving from reliance on a merchant approach to develop a regulated model. It set out four options for consideration: i) the merchant-exempt regime, ii) a revenue cap, iii) a revenue cap and floor, and iv) fully regulated returns. (See Appendix 3 for a detailed description of the four options).

1.9. Ofgem evaluated the options based on stakeholders' views. Although some support remains for the merchant option, most developers feel that this is not tenable when combined with the exemption process. Whilst this approach means consumers are not committed to underwriting significant levels of investment, it does not protect consumers against excessive returns accruing to commercial developers. Furthermore, as many TSOs in mainland Europe cannot embark on merchant projects, this option restricts the project partners that could participate in projects identified as beneficial. The cap option, although

⁷ <http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=2&refer=Europe>

providing protection to consumers, does not provide any sharing of risk between developers and consumers. As developers have a capped upside but no capped downside, this pushes up the required case return on capital (equivalent to higher cost of capital) and is generally seen as a barrier to investment.

1.10. This leaves the cap and floor and the regulated regime. The regulated regime, although it would bring GB closer to the preferred EU approach, it would be a significant departure from the current regime and would require changes to primary legislation which would take more time to implement. The cap and floor regime has clear benefits in terms of retaining incentives for both capital and operating efficiency and availability. In the case of NEMO, Elia and NG have both expressed a preference for this approach – indeed the original interest from the Belgian side was because Elia stated that it was unwilling to invest for a standard regulated return with no upside.

1.11. As outlined in Ofgem’s subsequent publication in September 2010⁸, Ofgem and CREG, with the assistance of NG and Elia, will explore in more detail, the cap and floor regulated option, using project NEMO as a pilot project. Since September, the four parties have been working together to establish the drivers, high level principles and the design parameters of the cap and floor approach. This consultation seeks stakeholders’ views on the high level principles and design parameters. From a GB perspective, Ofgem also seeks views on the proposed process for evaluating new interconnector investment projects, as Ofgem envisages the cap and floor regime will evolve into an enduring regime for regulated interconnector investment and co-exist with the merchant-exempt approach. After consultation responses have been considered, Ofgem and CREG will publish their conclusions on the cap and floor regime. This is expected to take place by the end of the year.

⁸ <http://www.ofgem.gov.uk/Europe/Documents1/Ofgem%20next%20steps%20letter.pdf>

2. Core requirements of a regulated approach

Chapter Summary

Sets out the existing and future requirements of European legislation that the cap and floor regulated regime for interconnector investment will need to comply with (eg use of revenues requirements, requirements for interconnector operation).

Introduction

2.1. The proposed cap and floor regime for regulating interconnector investment will be a regulated approach. Accordingly, the owners of the NEMO cable, as well as any other future project developed under this regime in GB, will have to ensure full compliance with the Regulation the European Directive 2009/72/EC. In particular, the provisions related to the use of revenues requirements (Article 16(6) of Regulation), requirement for the charging methodologies of TSOs to be approved by the NRA (Article 37(6) and 37(10) of the Directive) Third Party Access (Article 32 of the Directive) and compliance with Congestion Management Guidelines (Annex A of the Regulation) as well as unbundling requirements (Article 9 of the Directive). This section outlines the core requirements of European legislation relating to the use of revenues requirements as well as provisions related to the operation of the link.

Use of revenues requirements

2.2. One of the key requirements of a regulated regime and the provision that most developers would seek exemption from under a merchant approach is the use of revenues requirements.

Article 16(6) of the Electricity Regulation provides the following:

Any revenues resulting from the allocation of interconnection shall be used for the following purposes:

- (a) guaranteeing the actual availability of the allocated capacity; and/or*
- (b) maintaining or increasing interconnection capacities through network investments, in particular in new interconnectors.*

If the revenues cannot be efficiently used for the purposes set out in points (a) and/or (b) of the first subparagraph, they may be used, subject to approval by the regulatory authorities of the Member States concerned, up to a maximum amount to be decided by those regulatory authorities, as income to be taken into

account by the regulatory authorities when approving the methodology for calculating network tariffs and/or fixing network tariffs.

The rest of the revenues shall be placed on a separate internal account line until such time as it can be spent on the purposes set out in points (a) and/or (b) of the first subparagraph. The Agency shall be informed of the approval decision of the regulatory authority referred to in the second subparagraph.”

2.3. The general terms used in Article 16(6) are open to a number of interpretations, but it is our view that, in regulatory accounting terms, part (a) could be seen as broadly equivalent to operational expenditure (opex) and part (b), equivalent to capital expenditure (capex). In particular, assuming that cost of equity and interest costs remunerate capex, which is a legitimate expenditure, then a reasonable return on investment is implicitly allowed as a legitimate use of revenue through this mechanism. In other words, TSOs are allowed to earn a return on investments.

2.4. Beyond the first two categories, there is the potential for capacity revenues to be offset against transmission tariffs (up to a maximum amount). The application of this provision appears to be straightforward where the interconnector forms part of the transmission system of the national TSO. However, there is no explicit provision in Article 16(6) for use of revenue and interaction with tariffs in the case of a third party developer. Therefore, under the current GB arrangements this may be more complicated by the separation between the interconnector licensee and the transmission licensee, but could be seen as analogous to arrangements between the GBSO (GB System Operator) and TOs (and OFTOs) and we believe that the imposition of a cap is in line with the fundamental purpose and objectives of this aspect of the Electricity Regulation.

2.5. Both CREG and Ofgem are working on the potential changes that will need to be implemented to apply a new regulated approach in Belgium and GB. From a GB perspective, it would require changes in the current framework, in particular transmission and interconnector licenses as well as National Grid Electricity Transmission (NGET's) charging methodology. Compliance with 16(6) requires a mechanism to allow the recycling of money to and from consumers via the national transmission tariffs. Given the different entities and licenses involved, a link between NGET's and interconnector licenses is needed. From a Belgian perspective, there is also ongoing work on the changes needed in the legislation to allow the application of a specific regulated investment regime for project NEMO.

Requirements for interconnector operation

2.6. The interconnector owner will also have to comply with a number of aspects of the existing and future European legislation, related to the operation of the cable. Some of the most important aspects are listed below:

Target models for long term, day ahead, intraday trading

2.7. Regulated interconnection will need to meet the relevant requirements for operating the cross-border infrastructure. Under the Third Package⁹, the Agency for the Cooperation of Energy Regulators (ACER), with the assistance of European Energy NRAs will be producing the framework guidelines on capacity allocation and congestion management which are expected to lead to legally binding network codes, developed by ENTSO-E. Looking at the different timeframes, the arrangements which are likely to be included are:

- Forward Market: explicit longer-term auctions of capacity on interconnectors for physical or financial transmission rights (possibly through single platform), with secondary markets to trade between capacity holders; physical transmission rights, if used, would be complemented by a UIOSI mechanism.
- Day-ahead Market: implicit allocation of all (remaining) capacity through price coupling between power exchanges, growing from the initial regional models to a single price coupling with one matching algorithm encompassing the entire EU;
- Intra-day Market: implicit continuous trading with reliable pricing of intraday transmission capacity reflecting congestion (i.e. in case of scarce capacity) through a pan-European intraday platform. This should include automatic matching and appropriate block bids and sophisticated products where needed.


Cross border balancing

2.8. By the time the first regulated link delivered under a cap and floor regime will be built, there will be a European network code on cross border balancing arrangements. ACER is about to start work on the framework guideline that will be used as a basis for the legally binding code produced by ENTSO-E. IFA's SO-SO balancing model which provides reciprocal access to balancing markets in GB and France and increases the range of balancing providers available to each TSO, is one of the first models of cross border balancing applied in Europe and is likely to play an important role in the development of the framework guideline. We would therefore expect any future interconnector to be compliant with the cross border balancing provisions of the network code.

Ownership Unbundling

2.9. The Electricity Directive places requirements for the separation of electricity networks from generation and/or supply activities (ownership

⁹ For the purposes of this document, the term Third Package is used to refer to the Electricity Regulation, the Electricity Directive and to Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators.



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unbundling) and Article 9(1) of the Electricity Directive sets out the framework for the unbundling of transmission assets. Interconnectors fall within the definition of a TSO and therefore interconnector operators will be required to conform with this Article. Article 10 of the Electricity Directive requires TSOs to be certified as compliant with the unbundling requirements by the NRA. Therefore, we would expect each interconnector owner under the cap and floor regime to be certified as compliant with the requirements of Article 9 of the Electricity Directive prior to starting operation.

3. High level principles

Chapter Summary

Sets out the high level principles of the new regulated investment regime. These principles will also be used as criteria against which we evaluate the design options of the design.

Question box

Question 3.1: Do you agree with principles of the regulated regime we have identified?

Question 3.2: Are there any other principles that should underpin the new regime?

Introduction

3.1. To guide the development and design of the regulated regime for interconnectors, we have identified a set of high level principles that will underpin it. The principles will be used as criteria against which we expect to evaluate the specific design options for the regulatory approach. The principles are common for both CREG and Ofgem. There is however, an additional principle (principle 5) which applies only to GB. This reflects the fact that Ofgem envisages that this new regulated approach for interconnector investment will become an enduring regime and should encourage investment in optimal levels of new interconnection, improving net welfare to European consumers by bringing economic and/or competition benefits, in line with national and European legislative requirements.

1. Developers should be exposed to the market's valuation of interconnector capacity,
2. Consumers should be protected from the cost implications of excessive returns or market power that might accrue to interconnector owners,
3. Developers should be able to earn returns that are commensurate with the levels of risk they are exposed to under the regulatory framework,
4. Regulatory treatment of developers should be coordinated between NRAs at either end of the shared asset and
5. (For GB and new interconnector developments) Regulatory treatment should allow third party developers and should be impartial and unbiased between TSOs and non-TSO developers, existing and future developers

1. Developers should be exposed to the market's valuation of interconnector capacity

Why and what does this imply?

3.2. Studies from NG, RTE and Elia have shown that there is significant potential for commercial interconnection between GB and the markets in the Central Western Europe region¹⁰. Whilst this commercial potential remains, the need for consumers to underwrite this investment should be limited and regulatory intervention in terms of dictating interconnector locations and size is not necessary. With this principle, the regulated regime aims to maintain one of the strengths of the merchant approach, which is to leave interconnector developers to choose the appropriate size, timing, location and technology for the interconnector and managing the construction and operational risks arising, whilst providing a regulatory framework that includes strong incentives for capital efficiency. This has desirable cost allocation and economic efficiency properties and ensures that investors are incentivized to make the best choices.

2. Consumers should be protected from the cost implications of excessive returns or market power that might accrue to interconnector owners

Why should consumers be protected in this way? And what does this imply?

3.3. Developers may have a perverse incentive to inflate congestion revenues either through restricting the use of existing capacity or under-investing in new capacity. It is the NRA's primary duty to protect consumers from such an eventuality, required by both European and national legislation. European legislation sets out clear terms for use of revenues from cross border interconnection, designed to mitigate against this. This implies that there should be a mechanism in place to safeguard consumers against excessive congestion rents which may arise from, for example, hoarding of established interconnector capacity or systematic under investment due to market power. This could be some form of revenue cap that could also be supported with additional incentives to ensure maximisation of cable availability.

3. Developers should be able to earn returns that are commensurate with the levels of risk they are exposed to under the regulatory framework

Why should developers have some protection? What does this imply?

3.4. The purpose of the cap and floor framework is to protect consumers from excessive returns, while protecting investors from downside risks. The levels at which the cap and floor are set should be such that the reduction in risk to investors provided by the floor compensates for the limit on returns that is

¹⁰ <http://www.nationalgrid.com/uk/Interconnectors/France/consultations/>

created by the cap. Additionally, the existence of a floor would provide protection to investors against the risk that potential changes in the national or European legislation (eg changes in the congestion management guidelines) could affect the business case of the project.

3.5. Governments see these investments in interconnectors as strategically important for meeting long term goals (security of supply, environmental sustainability, completing the internal energy market, etc). A symmetric approach to risk sharing, where consumers benefit from a cap, and developers from a floor, will allow investors to take a longer term view. This should reduce cost of capital, and ultimately deliver a more economically efficient resource.

4. Regulatory treatment of developers should be coordinated between NRAs at either end of the shared asset


Why and what does this imply?

3.6. The regulatory approach of any cross border infrastructure will involve the NRAs on either side of the border. Experience so far has shown that uncoordinated approaches to the regulation of interconnectors may cause delays in the investment project. There is a clear need for a coordinated approach between NRAs, which may not be identical in each case, but at least is coherent and consistent. This implies, NRAs working together to establish a clear, stable and predictable framework within which investment in new interconnection can be made.

5. (For GB only and new interconnector developments) Regulatory treatment should allow third party developers and should be impartial and unbiased between TSOs and non-TSO developers, existing and future developers

Why and what does this imply?

3.7. Appropriate incentives will be put in place to ensure that investment in new interconnection infrastructure is taken by the most suitable parties. The regulated investment regime will allow third party developers to participate in the establishment and operation of interconnectors. Risk sharing arrangements with consumers (via the TSO transmission customer base) will be available to all potential developers on an equivalent basis. The regime will be designed to ensure unbiased and non-discriminatory treatment between existing interconnector owners and future developers, so that there is no advantage for certain developers. The process of evaluation of future projects will be designed



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to be objective, transparent and non-discriminatory and such that it will be aimed at ensuring consumers are protected from the cost implications of excessive returns in each project. This does not imply that the cap and floor levels would be the same for all projects, but rather that the risks borne by customers would be proportionate to the benefits.

Conclusions

3.8. Given our drivers, and the options that we have available for regulating interconnector investment in both GB and Belgium, we see that the most appropriate way forward for regulating project NEMO is a regime which allows us to retain commercial incentives for building and operating the line, and minimise the amount that consumers have to pay. A cap and floor regime, explained in detail in the following section, includes strong commercial incentives for capital efficiency, leaving key decisions that will dictate the performance of the line in the hands of the developers. It allows for symmetric risk sharing that can facilitate more efficient risk management for developers, and bring down cost of capital while protecting consumers from the cost implications of super-normal profits or market power of interconnector owners. Finally, the cap and floor vehicle will allow both Ofgem and CREG to work together on a common high level approach, resulting in a coordinated approach to the regulation of the NEMO link.

4. The Cap and Floor Approach

Chapter Summary

Outlines how we envisage the cap and floor regime to work and some potential risks associated with the regime which we aim to address.

Question box

Question 4.1: Is the cap and floor model the right approach to meet the principles of the new regulated investment regime for sub-sea interconnection? Are there any alternative approaches that we should be considering?

Question 4.2: Do you see benefits in introducing a cap and floor regime with profit sharing arrangements? Do you have views on how a profit sharing approach could work?

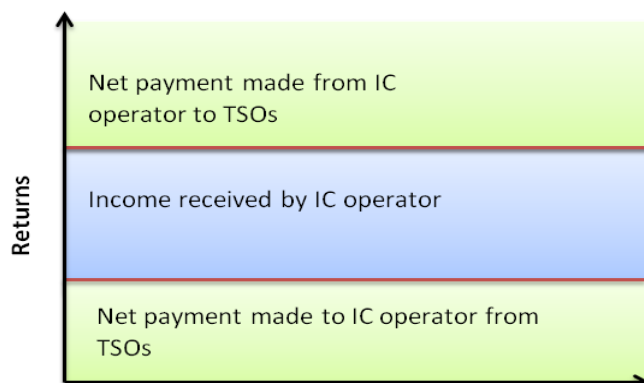
Question 4.3: Do you agree with the potential risks of the new regime identified? Are there any other risks or issues we should be taking into account?

Introduction

4.1. The proposed cap and floor approach will be a regulated regime for new interconnector investment. This section outlines how we envisage the cap and floor regime to work, some potential risks associated with the regime and seeks stakeholders' views on these issues.

The cap and floor mechanism

Figure 4.1 Cap and Floor mechanism



4.2. This approach involves the introduction of a cap and a floor on interconnector returns derived from auctioning of interconnector capacity in auctions taking place in different timeframes. This allows interconnector owners to earn returns within the bounds of a pre-set cap and floor. As illustrated in figure 4.1, returns above the cap would be passed back to the national TSO and will be offset against national transmission tariffs. In times where returns are below the floor level, interconnector owners will be compensated by the TSOs, who will recover the cost through national transmission tariffs.

4.3. There is also an alternative option of introducing profit sharing arrangements between consumers and developers within the cap and floor range. We are interested in stakeholders' views on this alternative treatment of returns in the cap and floor approach. Instead of letting all profits between the cap and floor flow entirely to the interconnector owners, they could be shared between the developer and consumers. This has potential advantages, as consumers will benefit from the congestion incomes when profits are higher than the floor, but a minimum return is still guaranteed for project developers.

4.4. It is worth noting that the cap and floor levels in the "standard design with no profit sharing arrangement" do not have to be equal to those in the alternative design. This would be taken into account when setting the cap and floor level.

4.5. Whichever approach is taken, the proposed cap and floor approach is focused on commercially viable interconnection and providing incentives to investors to maximize operational efficiencies. Accordingly, we would envisage setting the cap and floor at such levels that either the cap or the floor are triggered in exceptional circumstances, i.e. when interconnector revenues significantly diverge from the scenarios based on which the cap and floors were set.

4.6. Setting the cap and floor levels needs to strike a balance between protecting consumer interests and providing investors with sufficient incentives to proceed with the investment. If the cap and floor range is very narrow, this approach would look like a regulated returns model, whereas if it is very wide it would retain a strong element of the merchant approach.

4.7. In particular, the floor is critical for the extent to which customers make up for any lost revenue in case stranding¹¹. The higher the floor, the less downside risk investors are exposed to, and so, the lower the developer's cost of debt. However, a very low floor, below the cost of debt, could still provide sufficient certainty to allow developers to access cheaper debt, without being material enough to trigger regular cost recovery from consumers under normal

¹¹ i.e. revenues from auctioning interconnector capacity are not enough to cover the costs of the project, leaving consumers to pay the difference.

operational conditions. In any case, we would still need to assess the project risks, which implies understanding the business case of the project.

Potential risks associated with the regime

4.8. We consider it is important that interconnector projects are realized efficiently (in terms of capex) and operated efficiently (both in term of opex and high availability). In the proposed cap and floor regime, the main risks arise when the cap or the floor is activated, or close to activation. We have identified two main and complementary types of perverse incentives that may influence the interconnector developer and may result in (1) a willful reduction of the interconnector availability and (2) an inconsistent allocation of costs.

Lack of incentives to keep availability at a high level


4.9. The first category of perverse incentives may be observed under all types of performance output measurement for the cap and floor (revenues, profits or internal rate of return). Once the cap has been reached during one assessment period, the interconnector developer may have limited incentives to increase the revenues generated by auctioning interconnector capacity, as it will not lead to extra returns during that assessment period. As a result:

- in case of a failure, the developer may have limited incentive to quickly repair and restore availability before the first day of the next assessment period;
- even if there is no cable failure, the developer may be incentivized to shut down the operation of the cable prematurely during the given period, for example, in order to complete some maintenance works initially planned for the next period.

4.10. The same undesirable behaviours could be observed when the interconnector developer expects that he will not be able to perform better than the floor during a given assessment period, for example due to a severe and costly outage occurring at the beginning of an assessment period. Those undesirable behaviours are critical, as they may result in increased deficits during the assessment period which will have to be covered by a tariff increase charged to the grid users.

Incentives to allocate costs inconsistently

4.11. Another type of perverse incentives may occur when the cap and floor is levied on parameters related to costs (profit or Internal Rate of Return). Distorted cost reporting could be observed when either the cap or the floor is (or is expected to be) activated. For example:



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- An interconnector developer which also owns onshore transmission may (if for instance there are price caps applied to onshore grid activities) be incentivized to report costs related to onshore activities as costs of the interconnector business in order to maximize the total return of its onshore and interconnector activities. This is particularly true for some categories of costs whose selective allocation is not easily monitored by the regulator (e.g. labour costs).
- There may be inconsistent cost allocation by the interconnector owner between the different assessment periods to either avoid hitting the cap or, during poor performance periods, ensuring the floor is triggered. Also, as mentioned previously, once the cap or the floor is triggered the operator may decide to shut the cable down prematurely, during a given assessment period, in order to complete some maintenance work initially planned for the next assessment period.

4.12. These perverse incentives may decrease line availability and have a negative impact on the tariffs charged to grid users. The design parameters discussed in the next section should be carefully chosen in order to mitigate these risks.

5. Design of the cap and floor

Chapter Summary

The cap and floor approach can be designed in a number of ways. This chapter discusses a number of key design parameters that will shape the design of the regime and will ensure it complies with the drivers and principles we highlighted in previous chapters.

Question 5.1: Do you agree with the proposed design parameters of the cap and floor mechanism? Are there any other parameters we should be taking into account when designing the cap and floor mechanism?

Question 5.2: Do you have a preference for the options presented under each parameter? Do you have a preferred combination or straw man proposal for a cap and floor design?

Question 5.3: Do you think additional incentives should be introduced to encourage desirable outcomes under the regime?

Parameters of the regime

Introduction

5.1. There are some critical design parameters that need to be agreed to ensure that the cap and floor approach meets the drivers and principles of the new regime. We have identified the following parameters for the cap and floor design (see table 5.1) and in the following text we have taken each parameter in turn and evaluated the implication of each design choice. We are interested in stakeholders' views on the factors considered and on whether there are any other parameters that we should take into account when designing the mechanism.

Design parameters

Table 5.1 Design Parameters

How long does the cap and floor regime persist for?	<i>lifetime of financing or lifetime of interconnector asset</i>
What is the cap and floor levied on?	<i>Revenues or profits or internal rate of return</i>
How often is performance assessed against the cap and floor?	<i>One off or yearly or periodic (i.e. >1year)</i>
How is the assessment for each period treated?	<i>Cumulative or discrete</i>
Are the caps and floors re-set?	<i>Yes, periodically or No, set one-off</i>
Does the cap and floor level change over time or remains constant?	<i>Constant or variable</i>
If the IRR approach is used, how is the project value determined?	<i>Depreciated asset or Expected value asset</i>
Distance between the cap and floor?	<i>Narrow or wide</i>
Approach to symmetry for the cap and floor?	<i>Symmetric or asymmetric</i>
Treatment of revenues within the cap and floor?	<i>Returned to interconnector owner or shared between developers and consumers</i>
Any additional incentives?	<i>Yes, e.g. availability incentives or no incentives</i>

How long does the cap and floor regime persist for?

5.2. The duration of the cap and floor regime defines how long this assessment approach will be used for with relation to the interconnector asset. This parameter can define the overarching approach taken by the regime. The options identified for duration of the regime are:

- (a) the lifetime of financing – this defines the cap and floor in relation to the (predefined) investment lifetime and capital payback period – e.g. 20 years. After the defined period has elapsed, a new regime (perhaps a revised cap and floor) should be applied

- (b) lifetime of the interconnector asset – the cap and floor is set and assessed for the lifetime of the interconnector asset. Project revenues are continually assessed against the cap and floor

5.3. Applying the cap and floor regime to the lifetime of financing is in line with the investment decision making process and likely to decrease the investment risk. This is especially true if it is linked to a cumulative approach to cap and floor evaluation or reconciliation process at the end of the investment period. Both these approaches provide more certainty on the outcome for developers. However, the use of revenues requirements in Article 16 (6) of the Electricity Regulation persists beyond the lifetime of financing, so a regime will need to be established beyond the investment period to ensure that the asset remains compliant. Some possible solutions are to return the asset to the TSOs or develop a new regime. We are interested in stakeholders' views on how the project could be treated beyond the investment lifetime.

5.4. Retaining the cap and floor regime for the lifetime of the interconnector asset has the benefit of being compliant with the use of revenues requirements of Article 16(6) of the Electricity Regulation. It also allows for a continuous evaluation of returns over the interconnector lifetime, while providing certainty on returns within the cap and floor range. But, in the case of the floor, an important question that would need to be answered is whether it should persist once all capital costs have been repaid. A key motivation for introducing a floor is to reduce the cost of capital. Once capital costs are repaid, it would be difficult to justify why consumers should continue underwriting parts of the investment.

What is the cap and floor levied on?

5.5. The level of the cap and floor must be set with reference to a particular project output that provides a measure of the performance of the investment. The outputs identified for consideration are:

- a) Revenues - the congestion revenues resulting from auctioning interconnector capacity in either explicit or implicit auctions.
- b) Profits – congestion revenues (as above) less (eligible) costs¹², or
- c) Internal rate of return (IRR)¹³

¹² it will be important to decide on eligible costs. These could include costs related to: provision of ancillary services; provision of goods and services (related to operation and maintenance costs); personal costs; related taxes, including corporate tax; depreciation; interest rates; cost reductions related to transfers between balance and profits and losses (this provision will be applied when needed as result of the cap and floor)

¹³ The discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero. Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake the project



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5.6. A cap and floor on revenues may be simpler to implement and monitor ex-post than the other options. Revenue is a straightforward metric; measurements that include consideration of operational costs are less transparent, require greater regulatory scrutiny as a consequence, and can be more open to manipulation. However, a revenue-based trigger for the floor will not help in the event of for example, policy interventions increase costs for developers. In this case, there is a risk of capping high returns, whilst higher than expected costs actually leave the project with negative overall returns.

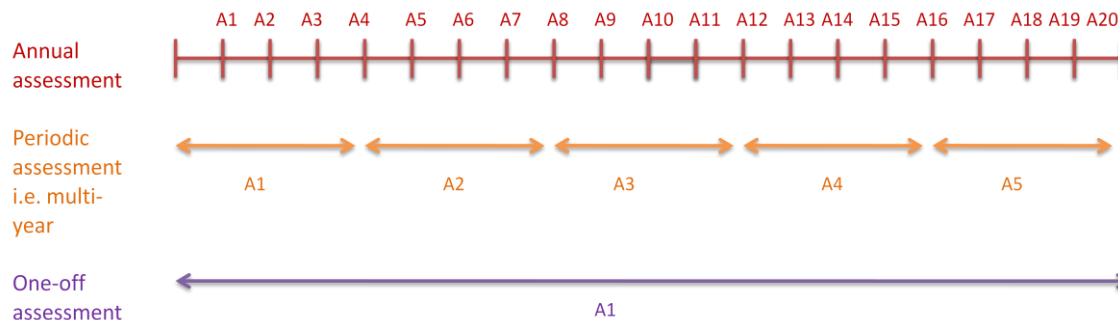
5.7. Both the profit and IRR approach avoid these risks, by linking costs and revenues in a single indicator. The profit approach does not include consideration of whole project value and reflects revenue and operational costs. But is still a relatively simple metric, reasonably straightforward to define and calculate ex-post.


5.8. The IRR is more complex but offers a measure of return which is consistent with the original investment decision, while maintaining the same comprehensive cover of cost and revenue aspects as a profit based measure. It offers a basis for determining caps and floors which can be related to lifetime project returns showing the return on the original money invested. It is worth noting that the IRR approach was also used in the European Commission’s exemption decision to impose a cap on BritNed returns, which indicates that it is an approach that has been used in the past for interconnector projects. Both the IRR and profit approach are more complex to implement than the revenue approach and would require NRA’s to agree and scrutinise operational costs. In the case of IRR, this also requires consideration of additional parameters to determine project value over the investment lifetime, which again adds to the complexity of the regime.

How often is performance assessed against the cap and floor?

5.9. There are a number of options relating to when to evaluate project progress and performance, and when to make or take payments to or from the interconnector owners. Options for how often the assessment is made include:

Figure 5.1 Options for performance assessment frequency





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- a) one-off – the revenues, profits or IRR are evaluated once at the end of a – pre-agreed period, to see whether overall the cap or floor has been triggered.
- b) year by year evaluation – each year an assessment is made to determine whether the cap or floor has been triggered.
- c) periodic evaluation – the assessment is made on a multi-year basis, similar to a price control process

5.10. A one-off assessment reduces the administrative burden of assessments for the NRA and the interconnector owner and mitigates against unnecessary triggering of the cap and floor that may happen in the volatile early years of the project. However, if intervention is delayed until the end of the investment period, the interconnector could already have stopped operating, or could default before any caps are applied. In addition, it increases the risk that the developer would be exposed to financial difficulties or, conversely, be earning excessive returns during the period.

5.11. A year by year and a multi-year evaluation avoid these drawbacks, and it will be easier to ensure that revenues are used to meet the requirements of Article 16(6) of the Electricity Regulation¹⁴. It is also worth highlighting that Ofgem, within the upcoming periodic price controls of onshore networks (price control period will be 8 years), will be carrying out annual reviews. For example, during the year t+1 Ofgem will review performance of year t, and then, if needed, an adjustment will be applied in the company's allowed revenues of year t+2. Therefore, there is a trade-off between the regulatory burden in terms of monitoring and reporting needed for and the length of time during which the developer could potentially be either exposed to financial difficulties or allowed to make excessive returns.

5.12. A multi-year approach could be seen as a compromise between the above options and could be more aligned with the national TSO price control (although exact alignment on both sides of the border is difficult as for example, under RIIO¹⁵, the price control period in GB for RIIO-T1 and RIIO-GD1¹⁶ will be 8 years, in Belgium is 4 years). However, there may be different reporting cycle to that instated for use of revenues by the Article 16(6) of the Electricity Regulation.

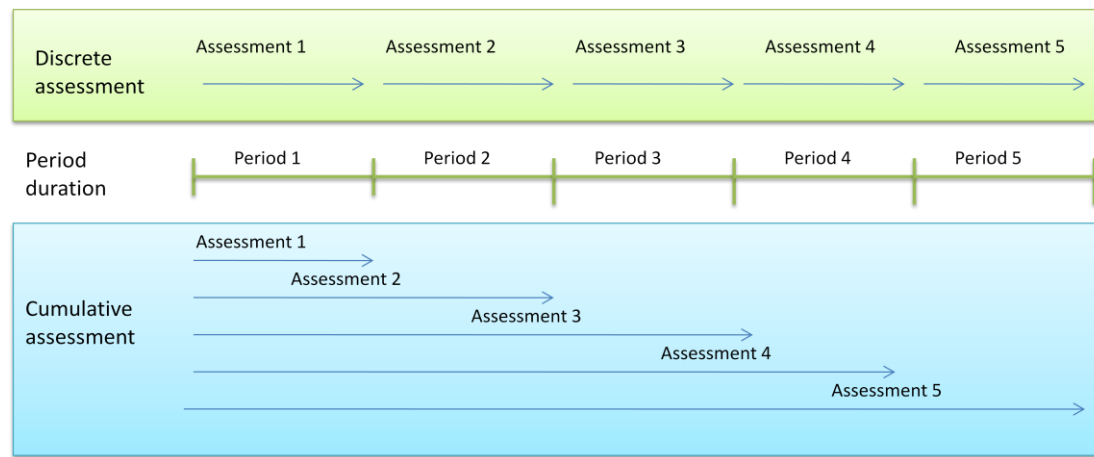
¹⁴ Under the Third Package requirements, NRAs must already report annually to the European Commission on use of interconnector revenues and compliance with Article 16(6) of the Electricity Regulation.

¹⁵ New regulatory framework based on Revenues=Incentives +Innovation +Output (RIIO)

¹⁶ The first transmission and gas distribution price controls under the new RIIO framework

Is the assessment for the defined period done on a discrete or cumulative basis?

Figure 5.2 Discrete versus cumulative assessment



5.13. Assuming that the performance is not assessed only at the end of the project, there is the option to introduce either a discrete or a cumulative period approach. Under a discrete approach, each assessment period is treated independently and the profit/revenue/IRR of each period is decided. If the cap and floor is breached, a payment is made either to or from the interconnector operator. Under a cumulative periodic evaluation at the end of each assessment period the project is evaluated based on all the previous periods and not just on the basis of the most recent period. This means that the final assessment represents the overall project performance. In addition, the cumulative evaluation could mitigate against unnecessary triggering of the cap or floor as it would take into account volatile costs and revenues in the early years of an investment.

Are the levels re-set? Does the cap and floor level change over time or remains constant?

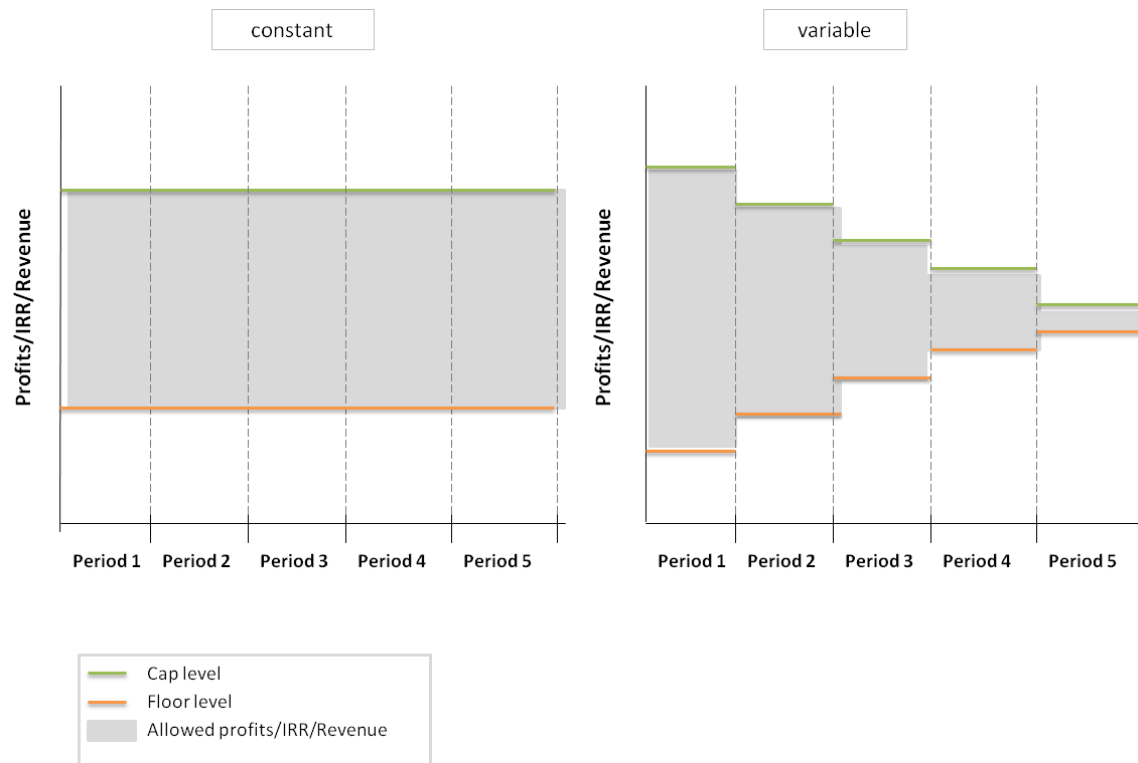
5.14. An important parameter is whether the cap and floor levels are re-set periodically or just set on a one-off basis in the ex-ante evaluation process. To the extent that cap and floor levels are re-set, we would need to ensure that this does not confer advantage on certain developers. Under the second option the levels would be fixed ex-ante based on an evaluation of the developer's business model and for the lifetime of the regime, which provides greater levels of investor certainty. However, it will be based only on forecasted revenues and costs and it will be inflexible to unexpected external developments, as it remains fixed at the pre-determined level agreed at the start of the project.

5.15. On the other hand, re-setting the cap and floor periodically (be it annually or less frequently) allows greater flexibility to address unexpected issues such as

cost overruns or policy changes, although it is not necessarily the case that the levels of cap and floor will change from one periodic review to another. However, this approach may be more onerous on the developer and the regulator, as well potentially introducing additional volatility in returns.

5.16. If the cap and floor levels are set on a one-off basis in the ex-ante evaluation process, there are two main options for the nature of the cap and floor level:

Figure 5.3 Constant versus variable cap and floor



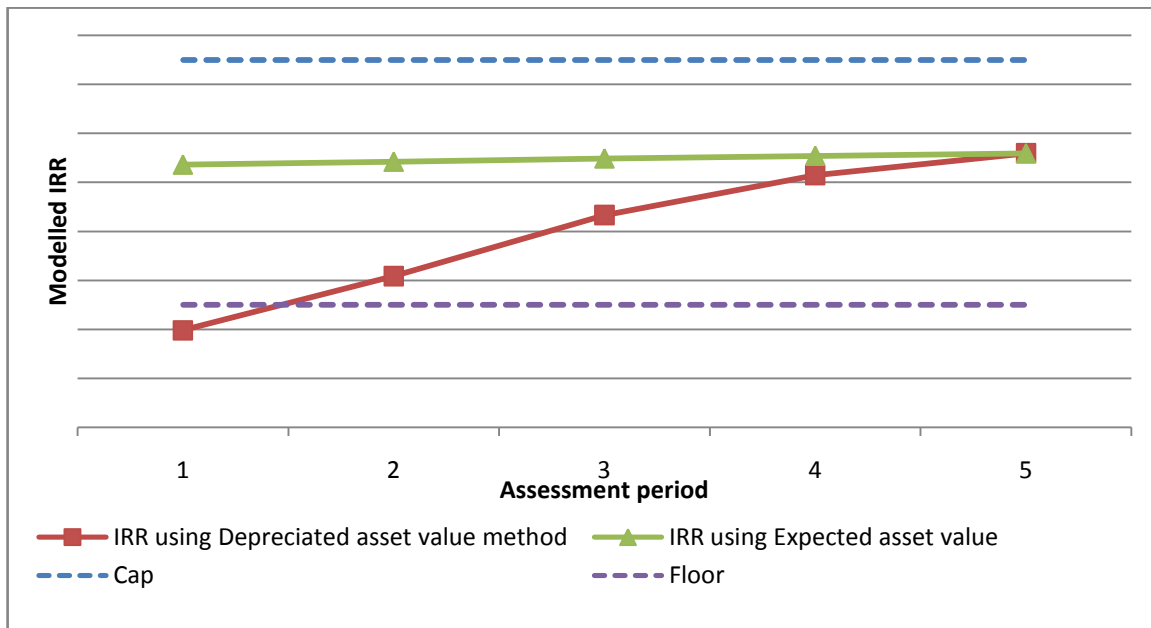
- a) Constant cap and floor - the levels are set ex-ante and are fixed, each at a single specific point. This is maintained for every evaluation period throughout the duration of the regime (e.g. €10million cap and €2million floor on profits, with a 5 year evaluation period for 25 years – profit is assessed every 5 years, to see if they have exceeded €10million or dropped below €2million)
- b) Variable cap and floor – the levels are set ex-ante, but the exact level of the cap or floor varies from one evaluation period to the next for the duration of the regime (e.g. period 1 evaluation: €10million cap, period 2: €8million cap, period 3: €6million etc.)

5.17. The constant cap and floor option is relatively simple to implement. It may also reduce the risk of potential discrimination between projects. Variable caps and floors will mean that the cap and the floor levels could be set at different levels during different periods. For instance, as illustrated in the right graph above, a wide cap and floor that gradually decreases after each period could be used in order to mitigate the risk of unnecessary triggering during the early periods.

If the IRR is used, how is the project value determined?

5.18. If the IRR approach is used, then a method for the assessment of project value is required. In this case, in order to assess the performance of an investment at points during the project lifetime, an ex ante assessment is required, to forecast project value at predefined points. This assessment of project value can then be used as a comparator against ex-post values, to determine whether cap or floor payments are necessary. Two approaches that could be used to determine project value are:

Figure 5.4, Determining the project value in an IRR approach



- (a) depreciated asset method - the project value in each defined evaluation period is calculated as the original cost minus accumulated yearly depreciation
- (b) the expected value of asset – the project value is determined based on modelled discounted cash flows

5.19. The depreciated asset method is relatively simpler as the project value is equal to the original cost minus accumulated depreciation (a fixed percentage

each year). However, this is just a linear depreciation and it does not include actual distribution of revenue and costs over the project lifetime when determining the project value. Therefore, it is more difficult to take into account, for example, back-loaded revenues or revenue volatility in the early years of the project. The expected value method calculates the project value by calculating the net present value of expected future cash flows at the project's expected rate of return, taking modelling outputs/forecasts as its basis for these calculations.

5.20. As can be seen in figure 5.4, the expected asset value approach produces a modelled IRR in each assessment period which is more constant than the depreciated asset method, although the end result in the final period is the same. Minimising the volatility of the modelled IRR is useful as it will help reduce the probability that either the cap or floor is breached in any assessment period. However, whilst the expected value method does this in the hypothetical situation where the revenues used are as expected, if the actual revenues received vary significantly from the predicted ones the expected value approach may not give such a constant result in each assessment period.

Additional design options

5.21. In addition to the design parameters, there are other options around the development of the cap and floor mechanism, for example a wide or narrow range, a symmetric or an asymmetric approach or the introduction of additional incentives. All these options could be a useful tool to address some of the risks associated with the proposed regime discussed previously. They can also determine whether the regime will be closer to a merchant or a regulated returns approach.

Narrow vs. wide range

5.22. A narrow cap and floor range would bring the regime closer to a regulated returns model. It implies that consumers will underwrite a higher proportion of costs and at the same time a higher proportion of interconnector returns will be used to offset against national transmission tariffs. This approach increases the likelihood of hitting the cap and floor and reduces the commercial incentives that expose developers to the market's valuation of interconnector capacity.

5.23. A wide cap and floor allows the retention of a strong element of the merchant approach and therefore meeting the principles of the regime, incentivising commercially viable projects. It also decreases the probability of hitting the cap and floor and could also help address some of the unintended consequences of the regime, discussed in the following section (eg lack of incentives to maximize cable availability).

Symmetrical vs. asymmetrical

5.24. There is also the option to apply a symmetrical or an asymmetrical cap and floor. A symmetrical application would mean that, for example, if X is the expected returns of the project within the cap and floor range, then a cap at X+3% and a floor at X-3% would be introduced. An asymmetrical approach would imply a cap at X+3% and a floor at X-5%. The decision on symmetry is likely to depend on the business case of the project.

5.25. An asymmetric approach could help to limit consumers' exposure to unnecessary risk. The introduction of a floor (even a low one) introduces a regulated element to a project, decreasing the cost of capital (as risks are reduced) and increasing the value of a project as regulated returns are typically lower but more certain as some of the project risk is underwritten by consumers. An asymmetric cap and floor (eg floor greater than cap) could be used to ensure commercial incentives are maintained and that the cost of capital is reduced, while ensuring customers get a good deal and are not exposed to an unacceptable level of risk.

Profit sharing within the cap and floor range

5.26. As discussed previously, another option is instead of letting all profits between the cap and floor flowing entirely to the interconnector operator, allowing them to be shared between the interconnector owner and returned back to consumers. Introducing a wide cap and floor with profit sharing arrangements within the cap and floor range, will make it less likely that the cap or floor will be reached and could help address some of the risks associated with the regime (eg inconsistent cost allocation, lack of incentives to keep availability high once the cap or the floor is expected to be activated), as it will make it less likely that the cap or the floor will be triggered.

Availability incentives

5.27. If the cap (or the floor) is (or expected to be) reached in an assessment period the interconnector operator has limited incentives to increase the revenues generated by auctioning interconnector capacity, as it will not lead to extra returns during that assessment period. This was identified as a potential risk associated with the regime in the previous section. To counteract these perverse incentives we could consider introducing a performance or availability incentive for the interconnector operator alongside the cap and floor regime.

5.28. In general there are two main approaches for designing performance incentives: "one-way" or "asymmetrical" regimes, i.e. penalty payments which result in rebates to affected users or "two-way" or "symmetrical" regimes where target performance or availability levels are set and there are rewards for higher than expected performance and penalties for lower than expected performance. The table below outlines some examples of both approaches.

Table 5.1 Examples of performance or availability incentives

One-way or asymmetrical regimes	Two-way or symmetrical regimes
<p><u>GB electricity transmission</u></p> <ul style="list-style-type: none"> Generators can receive compensation from TSO for being disconnected due to unplanned outages on the transmission system 	<p><u>UK offshore transmission regime</u></p> <ul style="list-style-type: none"> The availability incentive penalises offshore transmission owners (OFTO's) by up to 10% of annual revenue when availability falls below the target of 98% For good performance (>98%) credits are received and banked to either offset poor performance in subsequent years or are paid out after 5years¹⁷.
	<p><u>NorNed Inteconnector¹⁸</u></p> <ul style="list-style-type: none"> The incentive assumes the cable will be available 95.62% of the time and 400,000 EUR per 1% availability is available as a penalty or reward, with a maximum of 1.2m EUR per calendar year to be retained or compensated¹⁹

5.29. For the purposes of the cap and floor regime, the availability incentive could either be set independently of the cap and floor levels, or it could be directly linked with the cap and floor range. For example, when the interconnector operator is exceeding the target availability this could result in a higher cap level (and/or higher floor) and whenever the availability falls below the target, this will lead to a lower floor (and/or lower cap). In either case we would need to determine the appropriate parameters for the incentive, including the appropriate target availability²⁰ and the interconnector revenue that could be at risk for poor performance.

Conclusions


5.30. There are several parameters relating to the cap and floor design that need to be assessed to ensure that the choices made lead to a cap and floor mechanism which is transparent and non-discriminatory between existing and future projects, maintains commercial incentives, allows for symmetric risk

¹⁷ For the second transitional tender round Ofgem are consulting on simplifying the credit mechanism so that credits will be paid out annually rather than after a five year banking period.

¹⁸ Electricity interconnector between the Netherlands and Norway

¹⁹ http://www.energiekamer.nl/images/NorNed%20decision%20UK%20version%20PUBLIC_tcm7-14639.pdf

²⁰ This could be based the expected performance of sub-sea DC interconnectors which is typically 96-98%



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sharing that can facilitate more efficient risk management for developers, and brings down cost of capital while protecting consumers from excessive returns accruing to interconnector owners. An important decision driver will be the choice between simplicity versus complexity of the regime. For example, the IRR approach or a cumulative assessment takes a more holistic perspective and may be more consistent with the original investment decision, but is more complex to implement and monitor by NRAs than for example the revenue approach or a periodic assessment. The choice relating to the design, for example, wide versus narrow or a symmetric versus asymmetric approach, are also important decisions that need to be made to ensure the mechanism meets the principles of the regime. Finally, availability incentives may mitigate some of the risks with the regime identified previously, could ensure that cable availability is maintained at desirable levels, but may add an additional level of complexity to the regime. We are interested in stakeholders' views on the design parameters, on any preferred combination for the cap and floor design which meets the drivers and principles of the proposed regime and also on whether additional incentives are needed.

6. Process for evaluation of new interconnector investment projects in GB

Chapter Summary

Ofgem is intending to develop the cap and floor regime for interconnector investment into an enduring regime and co-exist alongside the merchant-exempt route. Ofgem is therefore seeking views on how we could evaluate future projects on a non-discriminatory basis.

Question box

Question 6.1: Do you agree with Ofgem's intention to use the cap and floor regime for future sub-sea DC interconnection in GB?


Question 6.2: Are there any key issues Ofgem should be taking into account when developing the process for evaluating new projects?

Introduction

6.1. In GB, there is commercial potential for more interconnection from GB shores which can bring benefits for GB consumers such as increased competition and lower average energy prices. It can help reduce the costs associated with integration of wind generation, bring benefits in terms of security of supply and assist in completion of the internal energy market in Europe. Since Ofgem's public commitment to explore further the regulated cap and floor regime using NEMO as the pilot project, several project proposals for interconnectors between GB and the neighbouring markets have been developed. Ofgem envisages that the cap and floor regime will evolve into an enduring regime for regulated interconnector investment and co-exist with the merchant-exempt approach. Ofgem seeks views on its intention to use this regime for other sub-sea interconnection in GB and on the key issues we should be taking into account when developing the process and requirements for project evaluation.

Evaluating new interconnector investments projects in GB

6.2. From a GB perspective, Ofgem would envisage that once the cap and floor regime is finalised, we would use similar non-discriminatory principles and pre-determined design for all project proposals and discuss the cap and floor levels on a case by case basis, in order to ensure that the specifics of each project are taken into account. In setting the level of cap and floor, Ofgem would need to ensure that the arrangements are non-discriminatory between projects. Our aim is to facilitate the delivery of commercially viable interconnection and a



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consistent level of risk in each project. For example, if we had two projects competing on delivering the same size and route link, our aim would be to ensure that consumers are protected from the cost implications of excessive returns under both projects and vary the cap and floor levels offered to developers accordingly. If one project was significantly more expensive for example, it would not get a higher absolute cap (unless other benefits justified this). As the extent of interconnection increases between GB and other markets, prices may converge and it may be appropriate to evolve towards a fully regulated approach, the cap and floor may converge on regulated returns in the future.

6.3. Ofgem aims to develop a list of requirements for an application for a cap and floor regime. Ofgem would expect that the list will be similar, but not limited, to the list of requirements for an exemption application from parts of European legislation (Article 17 of the Electricity Regulation). Ofgem does recognise that the timing of the decision as to whether a cap and floor regime will be applied and what will be the levels offered is crucial for developers in order to proceed with the investment. Ofgem aims to develop a clear step by step process for applying a cap and floor regime along with the design of the regime.

7. Next Steps

7.1. The main purpose of the joint consultation by CREG and Ofgem, as already set out, is to seek stakeholders' views on the high level principles and design parameters of the proposed cap and floor regulated regime for interconnector investment, where we have used project NEMO, the proposed interconnector between GB and Belgium, as a pilot project.

7.2. For Belgium, subsea interconnection is likely to be limited to this cable, so the cap and floor regime is envisaged to be used only for the NEMO cable. From a GB perspective, Ofgem envisages that the cap and floor regime will evolve into an enduring regime for regulated interconnector investment and co-exist with the merchant-exempt approach. Therefore, Ofgem also seeks views on our proposed process for evaluating future interconnector investment projects.

7.3. Ofgem and CREG would therefore welcome input from stakeholders on any of the issues raised in the document, but specifically on the questions raised in the consultation. In addition, we would be interested in meeting stakeholders and possible interconnector project developers bilaterally.

7.4. Following closure of the consultation on 2 September 2011, Ofgem and CREG will consider responses and publish conclusions on the cap and floor design by the end of the year.

Appendices

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Appendix 1 - Consultation Response and Questions

- 1.1 Ofgem and CREG would like to hear the views of interested parties in relation to any of the issues set out in this document.
- 1.2 We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.
- 1.3 Responses should be received by 2 September 2011 and should be sent to:

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- 1.4 Unless marked confidential, all responses will be published by placing them in Ofgem's and CREG's library and on their websites www.ofgem.gov.uk and www.creg.be. Respondents may request that their response is kept confidential. Ofgem and CREG shall respect this request, subject to any obligations to disclose information²¹.
- 1.5 Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

²¹ for example for GB under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004

- 1.6 Next steps: Having considered the responses to this consultation, Ofgem and CREG intend to publish their conclusions on the applicability and design of the cap and floor regime by the end of the year. Any questions on this document should, in the first instance, be directed to:

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CHAPTER: Three

Question 3.1: Do you agree with principles of the regulated regime we have identified?

Question 3.2: Are there any other principles that should underpin the new regime?

CHAPTER: Four

Question 4.1: Is the cap and floor model the right approach to meet the principles of the new regulated investment regime for sub-sea interconnection? Are there any alternative approaches that we should be considering?

Question 4.2: Do you see benefits in introducing a cap and floor regime with profit sharing arrangements? Do you have views on how a profit sharing approach could work?

Question 4.3: Do you agree with the potential risks of the new regime identified? Are there any other risks or issues we should be taking into account?

CHAPTER: Five

Question 5.1: Do you agree with the proposed design parameters of the cap and floor mechanism? Are there any other parameters we should be taking into account when designing the cap and floor mechanism?

Question 5.2: Do you have a preference for the options presented under each parameter? Do you have a preferred combination or straw man proposal for a cap and floor design?

Question 5.3: Do you think additional incentives should be introduced to encourage desirable outcomes under the regime?

CHAPTER: Six

Question 6.1: Do you agree with Ofgem's intention to use the cap and floor regime for future sub-sea DC interconnection in GB?

Question 6.2: Are there any key issues we should be taking into account when developing the process for evaluating new projects?

Appendix 2 – Current regulatory regime

Current regulatory regime for onshore, offshore and interconnector investments

Europe

Legal Framework

- 2.1 At European level, the regulation of interconnections is governed primarily by the Electricity Directive²² and by the Electricity Regulation²³. A TSO is defined in the Electricity Directive as a “natural or legal person responsible for operating, ensuring the maintenance of and, if necessary, developing the transmission system in a given area and, where applicable its interconnections with other systems”. Since interconnection between transmission systems is expressly included within the definition of a TSO, interconnector operators have to comply with all of the relevant TSO obligations set out in the Electricity Directive. The most relevant TSO obligations in the Electricity Directive, which also apply to interconnectors are those setting out rules relating to TPA to transmission systems (Article 32²⁴ of the Electricity Directive), the requirement for the charging methodologies of TSOs to be approved by the national regulatory authorities (NRAs) (Article 37(6) and 37(10) of the Electricity Directive) and the ownership unbundling rules relating to TSOs (Article 9 of the Electricity Directive).
- 2.2 The Electricity Regulation contains provisions relating to cross-border exchange in electricity, and includes provisions for the way an interconnector operator may charge for interconnector access (Article 13), and the manner in which congestion management is required to take place (Article 16). Article 17 of the Electricity Regulation contains an “exemption mechanism”, allowing the operator(s) of a new interconnector to be exempted, for a specified period of time, from certain rules contained in the Electricity Directive (Article 9 - ownership unbundling, Article 32 - TPA, and Article 37(6) and 37 (10) -

²² repealing Directive 2003/54/EC

²³ repealing Regulation (EC) No 1228/2003

²⁴ Article 32 of the Electricity Directive provides the following: “Member States shall ensure the implementation of a system of third party access to the transmission and distribution systems based on published tariffs, applicable to all eligible customers and applied objectively and without discrimination. [...]” Transmission system operator may refuse access to its system only when it lacks the necessary capacity”.

approval of charging methodologies by the NRA), and from Article 16(6) of the Electricity Regulation which sets out the manner in which congestion revenues of the interconnector have to be allocated. Article 17 of the Electricity Regulation prescribes the conditions the project has to comply with, as well as the procedure to be followed by the NRAs in order to be able to grant the exemption to the interconnector operator. The exemption decision has to be transmitted ACER. ACER has to take the exemption decision where the NRAs have not been able to reach agreement within six months from the date the exemption was requested or upon a joint request from the NRAs. The exemption decision has to be notified to the European Commission, which has the right to approve, amend or withdraw the exemption decision.

EU approach to new interconnector investment

- 2.3 To date, the approach applied in most countries in mainland Europe is a regulated approach for interconnector investment, offering full TPA in line with the use of revenues and congestion management guidelines requirements as prescribed in Electricity Regulation. The revenue entitlement of the interconnector project is set independently of the revenues received from auctioning capacity on the interconnectors and an assessment is made of required revenues (including incentive mechanisms where applicable). Any auction revenues above or below this amount is returned or supplemented from customers. This is equivalent to including interconnection in the normal transmission tariff mechanism and requires the NRA to approve the project and use customer's money to underwrite costs.

GB

Interconnector Investment

- 2.4 In GB, investment in interconnector assets is made on a merchant basis, interconnector investments are not part of the national TSO price control, and interconnector owners do not receive any regulated returns on their investment²⁵. Under this model, interconnector owners can be exposed to the full upside, or downside of their investment. Consumers do not underwrite any part of the costs, the decisions of when and how to invest are left in the hands of developers. Typically, new merchant interconnector investors have tended to apply for an exemption from the relevant Electricity Directive and Regulation requirements, relating to use of revenues, TPA and approval of charging methodologies requirements. Those that do not hold an exemption are expected to comply with all relevant parts of the TPA.

Onshore Investment

²⁵ In GB, interconnector owners are required to hold an interconnector licence, and to be functionally separate from the National Transmission System.

Cap and floor regime for regulation of project NEMO and future subsea interconnectors

- 2.5 In GB, there are three regional electricity Transmission Owners (TO) National Grid Electricity Transmission (NGET), Scottish Power Transmission Limited (SPTL) and Scottish Hydro Electricity Transmission Limited (SHETL). NGET also acts as the overall system operator. The TSO and TO's are subject to regular price controls and the next price control will commence in 2013. It will reflect the new RIIO (Revenues = Incentives + Innovation + Outputs)²⁶ regulatory framework which replaces the RPI-X framework currently in place. Every eight years²⁷ the NRA will set the potential revenues the TO's can earn from consumers based on their well-justified business plans. Their revenues can then be adjusted for performance based on a set of output rewards and penalties. By placing a greater emphasis on incentives and output measures the framework will ensure the network companies can deliver the investment needed in the transmission network at best value for consumers.

Offshore Investment

- 2.6 In GB, investment in offshore transmission assets is determined following a competitive tender process run by the NRA. Therefore it is not part of the national TSO price control. The purpose of the regime is to:
- Build fit for purpose transmission infrastructure to facilitate the connection of offshore generation and facilitate the realisation of significant carbon savings;
 - Provide certainty and best value for consumers; and
 - Attract new entrants.
- 2.7 The transitional offshore regime applies to all assets that have been or will be constructed by the offshore developer before being transferred to the OFTO on completion. A potential OFTO will therefore bid a 20 year revenue stream²⁸ based on its required return on investment on the transfer value of the offshore transmission asset and the ongoing costs of financing and operating the asset. The revenue stream is paid to the OFTO by the TSO (NGET) and the revenue stream is not subject to a price control review in this period. The payments NGET are required to make to the OFTO are passed through to system users and ultimately consumers as is the case with onshore transmission²⁹.

Belgium

²⁶ <http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/Pages/RIIO-T1.aspx>

²⁷ Before RIIO, price controls lasted for a five year period

²⁸ After the 20 year period the OFTO licence may be extended, revoked or re-tendered

²⁹ The competitive tender process has introduced competition into offshore transmission and by doing so has resulted in estimated savings of £350 million on the first £1.1 billion of offshore investment compared to if the same approach as onshore was taken. This translates to significant savings for consumers and protection from excess returns that might have otherwise accrued to OFTO's.

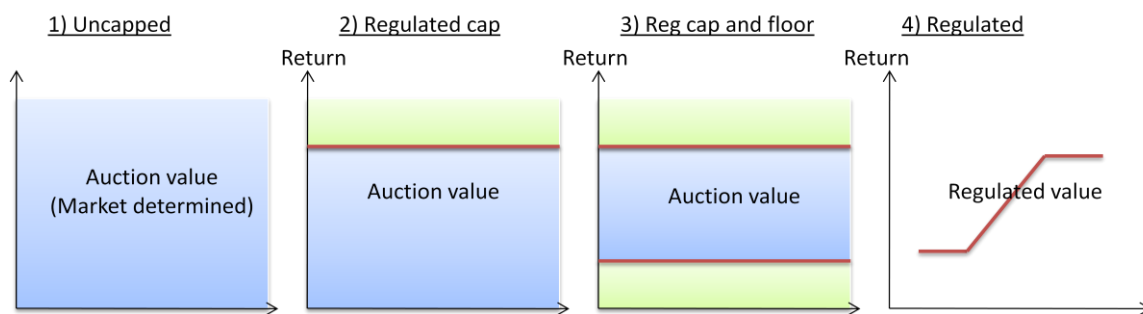
- 2.8 In Belgium, interconnectors are currently considered part of the national transmission system and form part of the Regulated Asset Base (RAB) of the national TSO (Elia). Article 8 of the Electricity Act³⁰ states that “the operating of the transmission system is ensured by a single operator [...]”. Therefore, any investment in an interconnection is treated in the same way as every other investment in the transmission system; it is integrated into the TSO’s total revenue allowance. The investment is paid through the [transmission] tariffs, and the Belgian Regulator determines the fair rate of return the TSO can receive on the investment³¹. Any additional revenues above the “fair” rate of return are returned back to consumers through the [transmission] tariffs.
- 2.9 The remuneration of an interconnector investment in Belgium is independent from (1) the level of revenues received from auctioning interconnector capacity and (2) the level of costs related to the interconnector.

³⁰ Law of 29 April 1999 related to the organization of the electricity market.

³¹The Belgium regulation provides for a fair margin, fixed yearly, to the advantage of the TSO’s shareholders (1/3 of the RAB multiplied by a cost of equity based on the CAPM formula). No other form of investment remuneration is foreseen within the Belgian tariff mechanism

Appendix 3 – Options for regulating new interconnector investment (Ofgem consultation January 2010³²)

- 3.1 The figure below includes the four main options discussed in Ofgem consultation on electricity interconnector policy (January 2010), ranging from merchant to revenue controlled approaches. We recognise that other options may exist, and we asked participants to propose alternative solutions:



- 3.2 **Option 1** is the merchant approach, where revenues are exclusively determined by auction proceeds. It is considered as requiring an exemption from the European Regulation to protect against the risk of subsequent changes to market rules damaging the business case of the project. As specified by the Commission these exemptions can only be granted in exceptional cases. Experience from BritNed suggests that one of the conditions could be a cap on returns which would be a move to Option 2.
- 3.3 **Option 2** puts a cap on returns or revenues from auctions. Any excess revenues must be invested in increased capacity or returned to customers. The developer still has all the downside risk but a capped upside, so lower expected returns.
- 3.4 **Option 3** is a generalisation of the other options. Returns are set within a range, above or below which they are returned or supplemented from customers. If the range between the cap and floor is very wide it would look like option 1 and if it is narrow like option 4. The purpose of the floor would be to offset the risks associated with having a cap, the risk of future regulated interconnectors damaging returns (risk for exempt interconnectors) and with changes to legal requirements as to how they can sell capacity.

³²<http://www.ofgem.gov.uk/Europe/Documents1/Interconnector%20policy%20consultation.pdf>

- 3.5 **Option 4** is a regulated approach. It is equivalent to including interconnectors in the transmission tariff mechanism. It involves setting the revenue entitlement of the interconnector project independently of the revenues received from capacity auctioning. There is a need to set the allowed revenue level and then for a true-up mechanism of some sort. This would require the regulator to approve the project and to use customer's money to underwrite costs. The major risk is stranding³³, although there is an upside where customers could profit.

³³ Values recovered from capacity sales not being sufficient to cover costs, leaving customers to pick up the difference

Appendix 4 - Glossary

A

ACER

Agency for the Cooperation of Energy Regulators

B

BritNed

Electricity interconnector between Great Britain and the Netherlands

C

CREG

Commission de Régulation de l' Electricité et du Gaz, Belgian Energy Regulator

D

Day ahead

A form of a spot market, typically around the middle of the day prior to real time (e.g. 12 noon on Monday for electricity to be generated and used on Tuesday), where bids and offers are made and prices set. The timing allows for decisions to start or stop additional generators (unit commitment)

E

Elia

Belgian Transmission System Operator

ENTSO-E

European network of transmission system operators for Electricity – Body representing all European TSOs

Explicit allocation/auctions

Allocation/auction in which transmission capacity is allocated separately from the trading of electricity

G

GB

Great Britain

I

IRR

Internal rate of return - The discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero

ICO

Interconnector operator

IFA

Electricity interconnector between France and GB

Implicit allocation

Allocation in which both transmission capacity and electric energy are allocated together, typically used at the day-ahead stage and potentially intra-day.

Interconnector

Equipment used to link electricity systems, in particular between two Member States

Intra-day

Purchase and sale of a product within a given trading day (any time after the day-ahead stage)

M

MW

Mega Watt

N

NEMO

Proposed interconnector between Belgium and Great Britain

NG

National Grid plc, international electricity and gas company which owns the transmission system operator in GB and NGIL



Cap and floor regime for regulation of project NEMO and future subsea interconnectors

NGIL

National Grid Interconnector Limited, wholly owned subsidiary of NG and holder of an interconnector licence. NGIL jointly own and operate the IFA with RTE

NRA

National Regulatory Authority

O

P

Profit Sharing

Profits are split in a pre-defined fraction between the investor and consumers

R

RTE

Gestionnaire du Reseau de Transport d'Electricite. Transmission System Operator in France

S

SO

System Operator

T

TSO

Transmission System Operator, entity in charge of operating transmission facilities either for electricity or gas

U

UIOLI

Use-It-Or-Lose-It, a contractual term referring to a capacity or rights holder who has the choice to use their capacity/rights or to give them up (without compensation) to be resold on the open market

UIOSI

Use-it-or-sell-it, a contractual term referring to a capacity or rights holder who has the choice to use their capacity/rights or to give them up to be resold, and to receive the price at which they are resold (also known as UIOGPFI: use-it-or-get-paid-for-it)

Unbundling

Separation of transmission interests from generation, production and supply

Appendix 5 - Feedback Questionnaire

5.1 Ofgem and CREG consider that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

Please send your comments to:

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