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REGULATORY FINANCING MODELS FOR FUTURE INTERCONNECTION

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Utility Regulator

About the Utility Regulator

The Utility Regulator is the independent non-ministerial government department responsible for regulating Northern Ireland's electricity, gas, water and sewerage industries, to promote the short and long-term interests of consumers.

We are not a policy-making department of government, but we make sure that the energy and water utility industries in Northern Ireland are regulated and developed within ministerial policy as set out in our statutory duties.

We are governed by a Board of Directors and are accountable to the Northern Ireland Assembly through financial and annual reporting obligations.

We are based at Millennium House in the centre of Belfast. The Chief Executive and two Executive Directors lead teams in each of the main functional areas in the organisation: CEO Office; Price Controls; Networks and Energy Futures; and Markets and Consumer Protection and Enforcement. The staff team includes economists, engineers, accountants, utility specialists, legal advisors and administration professionals.

ABSTRACT

This paper provides information on the Utility Regulator's considerations relating to regulated operating revenue regimes for future interconnection projects seeking to connect to Northern Ireland.

AUDIENCE

This information paper is of interest to a range of stakeholders including developers, electricity licensees, government departments and organisations representing consumer interests.

CONSUMER IMPACT

This paper sets out the key considerations informing our assessment of both the need for additional interconnection capacity in Northern Ireland and the potential role of regulated revenue frameworks in supporting its delivery. Any project progressing beyond this stage will need to demonstrate evidence-based net benefits for Northern Ireland consumers.

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Executive Summary

Interconnection can play an important role in supporting affordability by maximising the welfare of electricity consumers across interconnected markets. This welfare is maximised by enabling electricity demand to be met by the cheapest available source, regardless of where that source is located. The island of Ireland remains more reliant on gas generation to meet electricity demand than Great Britian (GB) and many other European countries. As we transition to a more renewable future, we can continue to benefit from electricity produced in other markets with a different fuel mix. Equally, we want to be able to export excess wind generation at times of lower domestic demand. In this way, interconnection capacity has the potential to play an important role in supporting the energy transition taking place in Northern Ireland and as part of the Single Electricity Market (SEM) on the island of Ireland.

However, interconnector projects are inherently challenging to deliver. They are capital intensive, technically complex and typically involve long development timelines alongside material revenue uncertainty. These characteristics can present challenges for project financeability and, if not appropriately addressed, may limit timely delivery.

This information paper sets out the Utility Regulator's considerations in relation to the potential application of regulated operating revenue regimes for future electricity interconnectors seeking to connect to Northern Ireland. It outlines the principal regulated models used to finance strategic infrastructure in Northern Ireland and neighbouring jurisdictions, including the Regulated Asset Base (RAB) model and the Cap and Floor regime.

Experience in GB and Ireland demonstrates that regulated frameworks have supported the majority of recent interconnector investment. In particular the Cap and Floor regime has been used to balance commercial incentives for developers with appropriate protections for consumers.

In the Northern Ireland context, there is precedent for a bespoke mutualised ownership approach through the Moyle Interconnector, which has operated for over two decades.

More recently, the Greenlink Interconnector has been developed under a Cap and Floor regime across Ireland and GB, and Ofgem in GB has granted a Cap and Floor regime in principle to the proposed LirIC interconnector, subject to further regulatory approvals, including on the Northern Ireland side.

The Utility Regulator does not assume that a regulated operating revenue regime will be appropriate for all interconnection projects. Proposals will be assessed on a case-by-case basis. The first consideration will be whether the project delivers clear benefits for Northern Ireland consumers. Where this is demonstrated, the

Regulator will then assess whether the interconnector could operate on a merchant basis or whether regulatory support is necessary and proportionate.

As detailed in our most recent consultation[1], these assessments will take account of project costs, expected revenue streams, the allocation of risks between investors and consumers, and the wider strategic benefits of interconnection.

The paper also considers key design issues for any potential regulated regime, including the sources of revenue (such as congestion income, capacity market payments and system services revenues), the role of availability and performance incentives (where applicable), and the interaction with existing regulatory frameworks in Northern Ireland. Drawing on experience from Ofgem and the Commission for Regulation of Utilities (CRU), it highlights areas where regime design may need to be adapted to reflect Northern Ireland specific circumstances.

[1] Approach Paper Consultation - Regulated Operating Revenue Regime for Future Interconnection.pdf

1. Introduction

Purpose of the Paper

1.1 This paper has been developed in response to feedback received as part of the December 2025 consultation on the Utility Regulator's Approach Paper[2]. It provides an overview of the financing models we are considering in order to assess the impact of future interconnection in Northern Ireland.

Introduction and Background

1.2 Large scale infrastructure projects such as electricity interconnectors face several challenges that significantly impact the ability to secure financing. These include high upfront costs during early development and construction phases, long build periods and operational lifespan and revenue uncertainty.

1.3 Interconnectors primarily earn revenue by facilitating the flow of electricity between markets with differing wholesale prices. When electricity prices are lower in one market and higher in another, power flows from the lower priced exporting market to the higher priced importing market. This can support the export of surplus generation, including renewable output that might otherwise be curtailed, while also allowing imports of lower cost electricity where it is more efficient than domestic alternatives.

1.4 The value created through this process is commonly referred to as congestion revenue. This reflects the price differential between the two markets, multiplied by the volume of electricity transferred. In practical terms, the interconnector captures this value through market arrangements, rather than directly trading electricity itself. The level of revenue available therefore depends on both the scale of price differences and the extent to which the interconnector is utilised.

1.5 Over time, these price differentials are influenced by a range of factors, including changes in generation mix, demand patterns, fuel costs, and the integration of renewable energy. As a result, while congestion revenue remains the primary income stream, its variability can present challenges for financing, as future revenues are uncertain and outside the control of the asset owner.

[2] Approach Paper Consultation - Regulated Operating Revenue Regime for Future Interconnection.pdf

1.6 Ensuring the revenue and cash flow stability of these large-scale projects can be important for interconnector developers, owners and operators to securing financial investment.

1.7 The potential scale of costs associated with increasing interconnection in the Northern Ireland context is substantial. With approximately one million electricity consumers, it is essential that the direct risks and impacts of the available options are carefully assessed to ensure that any proposed approach in respect of a regulated revenue regime is in the best interests of Northern Ireland consumers.

1.8 The inclusion of robust availability and performance incentives (where applicable) will be critical to maintaining technical and commercial effectiveness and to ensuring security of supply, and in the case of any potential regime, value for money for consumers for the operation of any future interconnector.

1.9 This paper provides an overview of the relevant regulatory frameworks in place in Northern Ireland currently, including those applicable to large scale electricity and gas networks alongside an overview of potential approaches to supporting future interconnection projects. The Utility Regulator envisages considering the risks, uncertainties and opportunities facing potential interconnector proposals on a case-by-case basis.

LirIC

1.10 LirIC is a significant infrastructure proposal, comprising a 700 MW HVDC interconnector between Northern Ireland and Scotland with a targeted delivery date of 2032. The Utility Regulator granted an Electricity Transmission Licence in December 2024[3] which authorises TI LirIC to own and operate the interconnector once it has been built.

1.11 The developer, Transmission Investment (TI), has requested the application of a Cap and Floor regulatory regime in both Northern Ireland and GB.

1.12 While a Cap and Floor regime has an established precedent in GB under Ofgem, there is currently no equivalent framework in Northern Ireland. As a result, consideration must be given to the impact of developing a new regulatory approach, drawing on experiences from GB and Ireland.

1.13 In our assessment for the need for regulated operating revenue regime for Northern Ireland we will undertake a structured, evidence-led

[3] Grant of Electricity Transmission Licence to TI LirIC Limited | Utility Regulator

assessment of need, supported by the System Operator for Northern Ireland (SONI).

1.14 The System Impact Assessment, led by SONI, will consider the impact of increased interconnector capacity on the NI electricity system as well as the collective SEM system. The assessment will include elements such as future generation and demand, system and network constraints and interconnector dispatch.

1.15 This will align with market modelling and consumer socio economic welfare (SEW) impacts of increased interconnection on cost to consumer, both short and long term, effects on wholesale prices, impact on interconnector revenue arrangements, decarbonisation and security of supply.

1.16 The analysis will consider uncertainty and key delivery dependencies, for example the sequencing of enabling domestic reinforcements in the SEM such as the second North–South Interconnector.

1.17 Scenario and sensitivity testing will be used to understand how benefits vary under different system conditions, including delays, constrained network operation, and varying renewable penetration.

1.18 A project will only be considered to pass this stage where there is evidence of net benefit to Northern Ireland consumers.

2. Overview of Interconnection Models

2.1 In jurisdictions connected to GB there are generally three principal financing models for electricity interconnectors; Merchant, Regulated Asset Base (RAB) and Cap and Floor Regimes.

2.2 Regulatory arrangements determine how the financial costs, risks and rewards associated with developing, owning and operating an interconnector are allocated between investors and consumers.

2.3 In the Northern Ireland context there is also a distinct mutualised ownership framework as adopted by the Moyle Interconnector. Mutualisation involves socialising both benefits and risks of the asset across electricity consumers.

2.4 An overview of three financing models is provided below with examples:

Financing Model	Key Features	Examples of Interconnectors
Merchant Model	Developer bears 100% of financial risk and reward, with regulatory exemptions. Revenues are entirely dependent on congestion income. No direct consumer risk. Limited number delivered, typically under early market conditions or with strong strategic backing.	IFA (1986) BritNed (2011) ElecLink (2022)
Regulated Asset Base (RAB) Model	Capital and operating costs added to a Regulatory Asset Base (RAB). Investors receive a regulated return set ex-ante. Costs recovered through network tariffs largely independent of market outcomes. Majority of revenue risk (Capex and Opex) borne by consumers, subject to availability requirements.	EWIC (2012) Celtic Interconnector (2028)
Cap and Floor Regime	Hybrid approach between merchant and regulated models. Revenues above the Cap returned to consumers; revenues below the Floor are supported by consumers. Designed by Ofgem and the dominant GB delivery model since 2015.	Nemo Link (2019) IFA2 (2021) Viking Link (2023) Greenlink (2025) NeuConnect (2028)

Merchant Models

2.5 Merchant models represent a market-based approach to the delivery of interconnectors and other large-scale infrastructure, where investment decisions are driven by expected commercial returns rather than regulated revenues. Under this model, developers are responsible for financing, constructing and operating the asset, with revenues derived primarily from market activity. For electricity interconnectors, this typically includes congestion income arising from price differentials between connected markets, alongside participation in capacity or system services markets where available.

2.6 A defining feature of the merchant model is that risk sits predominantly with the developer. This includes exposure to construction costs, future electricity prices, utilisation levels and operational performance. There is no guaranteed revenue support, and project viability depends on confidence in long term market conditions. As a result, merchant delivery provides a strong market test of need, with projects progressing where there is a credible and sustained commercial opportunity.

2.7 This model can support investment signals, encouraging developers to optimise project design, scale and timing in response to market fundamentals. It also limits direct consumer exposure, as costs are not recovered through regulated tariffs. However, the applicability of merchant models is influenced by the characteristics of interconnection and similar infrastructure, including high upfront capital costs, long development timelines and uncertainty in future revenues.

2.8 As markets evolve, increasing integration and renewable penetration can reduce or increase variability in price differentials, making revenues less predictable. This uncertainty can present challenges for financing, particularly where stable, long-term income is required to secure investment.

2.9 Merchant models provide a clear signal of developer confidence and limit consumer risk. However, given market size and revenue uncertainty, their suitability may vary, and alternative models may be considered where appropriate.

Regulated Frameworks

2.10 Regulated frameworks have supported the delivery of almost all recent GB connected interconnectors progressing to financial close and operation.

2.11 Under a fully regulated model, consumers fund a revenue stream determined by the regulator, set at a level intended to enable the interconnector owner to recover efficiently incurred costs and earn an allowed return on investment. In this model, consumers are exposed to approved development, construction and operational cost risks, as well as market revenue risk. Where market revenues are strong, these are returned to consumers through lower system charges; where revenues are weaker, consumers fund the shortfall.

2.12 The RAB model represents a common form of fully regulated approach and is used extensively across Europe, including France, Germany and the Netherlands, to fund large energy infrastructure projects, including interconnection. In most cases these projects are developed and delivered by national Transmission System Operators (TSOs), rather than commercial, market-based entities.

2.13 In practice, financing models often sit between fully merchant and fully regulated approaches, seeking to improve project financeability while limiting consumer exposure to downside risk. One such approach is the Cap and Floor[4] model, which has been the default regulatory model for new interconnection projects in GB since 2014. It is designed to apportion risk between interconnector developers and consumers.

2.14 Ofgem is currently examining a future strategic approach to interconnection exploring opportunities and limitations of applying a RAB model to energy infrastructure projects in GB, including whether the existing framework would permit its use for interconnection projects during the construction phase.

Cap and Floor

2.15 In the case of Cap and Floor projects, the revenue floor has been critical to securing debt finance, while the cap ensures excess returns are shared with consumers.

2.16 The Floor represents a guaranteed minimum amount of revenue that an interconnector can earn. This means that if an interconnector does not earn sufficient revenue, they will be 'topped up' to the Floor level.

2.17 Conversely, the Cap is the maximum revenue entitlement that an electricity interconnector can earn. Should the interconnector revenue exceed the Cap, the additional monies are returned to electricity consumers.

[4] Cap and Floor Regime Handbook 2024 | Ofgem

2.18 The most recent SEM-GB interconnector, Greenlink[5], was the first project to request a Cap and Floor regime from the Regulatory Authority in Ireland, the Commission for Regulation of Utilities (CRU).

2.19 Greenlink was subsequently granted a Cap and Floor regime by both Ofgem and CRU under their established regulatory frameworks. In addition, a fourth subsea interconnector, known as Celtic[6], is currently in construction between Ireland and France. Once operational, it will connect the SEM with European energy markets and is being developed as a joint venture between the transmission system operators (TSOs) in Ireland (EirGrid) and France (RTE).

2.20 Interconnector projects seeking to connect in Northern Ireland are likely to encounter similar revenue uncertainty, market integration challenges and regulatory considerations to those experienced by other GB and Ireland connected projects.

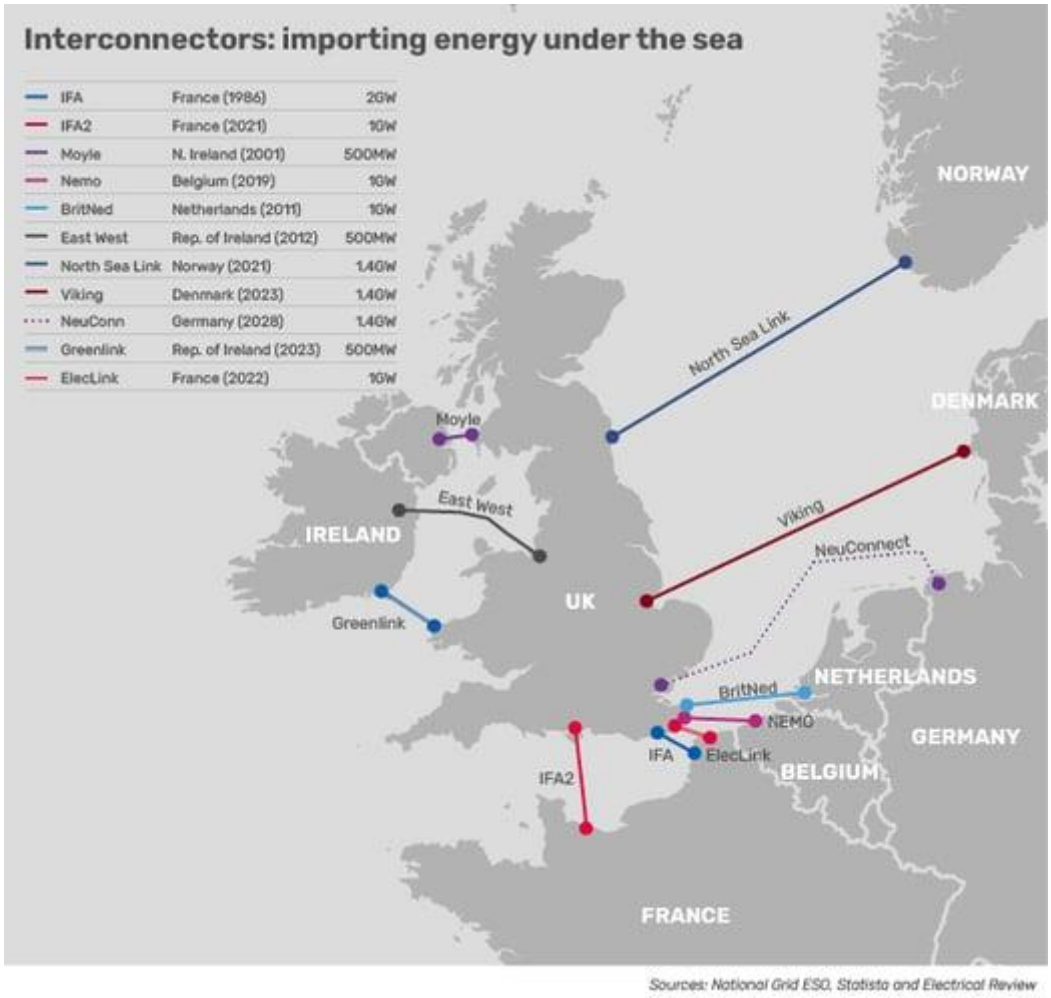

Figure 1 GB Connected Interconnectors

[5] CRU20171-Greenlink-Cap-and-Floor-Regulatory-Treatment-decision.pdf
[6] Celtic Interconnector | Projects | EirGrid

3. Infrastructure Models in Northern Ireland

Regulatory Asset Base (RAB) Regime

Overview

3.1 The RAB model is a type of economic regulation utilised in Northern Ireland and GB for monopoly infrastructure assets such as water, gas and electricity networks. Under the model, companies receive regulated payments from consumers via levies on energy suppliers which help to cover the costs of construction and operation through network tariffs.

3.2 This arrangement provides investors with a predictable return on their investment. Unlike traditional financing models, where consumers only start providing developers with payments when a project is operational, the RAB model allows for consumer payments during the development and construction phase. This approach helps avoid the accumulation of interest on loans, which can lead to lower costs for consumers when the project is completed.

3.3 The model is overseen by the Utility Regulator, who ensures that the funds are used appropriately and that the interests of consumers are protected. The regulator also sets the price controls and issues licences for the projects. By offering stable returns and reducing risk, the RAB model encourages private sector investment in essential infrastructure projects.

3.4 The RAB mechanism means that some potential project risk is transferred early from investors to consumers, and that consumers will pay an additional amount on their bills during construction. However, for very large or novel infrastructure, the standard RAB can expose consumers to material construction, delivery, and early-stage performance risk.

RAB Regime in Northern Ireland

3.5 The RAB regime underpins the economic regulation and financing of electricity network infrastructure in Northern Ireland, including NIE Networks. It is designed to support efficient, long-term investment while protecting consumers through independent oversight by the Utility Regulator. At its core, the RAB represents the value of network assets on which NIE Networks is permitted to earn a return. This includes both historic investment and new capital expenditure that the Utility Regulator assesses as necessary and efficient for delivering network services. The regime provides a structured and predictable revenue stream by allowing recovery of operating costs, depreciation, and a regulated return on the

asset base, typically set with reference to an allowed weighted average cost of capital (WACC).

3.6 Under this framework, NIE Networks operates within defined price control periods, during which the Utility Regulator sets its allowed revenues based on forecasts of efficient expenditure and required outputs. This approach provides a high degree of revenue certainty and significantly reduces exposure to market and volume risks, as revenues are largely decoupled from electricity demand. The regulatory framework also incorporates incentives to promote efficiency and high-quality service delivery, with financial adjustments linked to performance against targets such as network reliability and customer outcomes. From a financing perspective, this stability of cash flows supports access to debt markets on favourable terms, lowering the cost of capital and facilitating large-scale infrastructure investment.

3.7 Regulatory Period 7 (RP7)[7], covering October 2024 to March 2031, represents the latest evolution of this regime for NIE Networks and reflects the scale of investment required to support the energy transition. RP7 provides for a significant increase in capital expenditure relative to previous periods, driven by the need to integrate higher levels of renewable generation, accommodate electrification of heat and transport, and reinforce the network to maintain reliability. The framework places greater emphasis on outputs, focusing on delivery of outcomes such as timely connections, system resilience, and enabling low carbon technologies, rather than solely on expenditure inputs.

3.8 Recognising the inherent uncertainty associated with future demand and the pace of decarbonisation, RP7 incorporates additional flexibility within the RAB framework. This includes mechanisms such as volume drivers and re-openers, which allow adjustments to revenues where there are material changes in activity levels or external conditions. At the same time, the incentive framework has been strengthened to encourage efficient delivery and improved service performance, particularly in areas such as renewable connections and customer service.

3.9 The RAB framework for SONI, the Transmission System Operator (TSO) in Northern Ireland, provides a stable and predictable funding model to support the operation and development of the electricity transmission system. Unlike NIE Networks, SONI does not own physical network assets but is responsible for real time system operation, planning, and facilitating market and network development. Its revenues are set by the Utility Regulator through periodic price controls and are designed to recover efficient operational costs and a return on a defined regulatory

[7] Investing For The Future: Our RP7 Business Plan | Northern Ireland Electricity Networks

asset base, which reflects capitalised investments in systems, IT, and other supporting infrastructure.

3.10 The regime reduces exposure to market and volume risk, with revenues largely decoupled from electricity flows and underpinned by regulatory allowances. This stability supports SONI's financeability and enables continued investment in system operation capabilities, particularly to manage increasing renewable penetration. Overall, the RAB approach is designed to ensure SONI can deliver a secure, reliable, and evolving power system in line with decarbonisation objectives.

Mutualisation

Overview of Mutualisation

3.11 A mutualised business is one that is owned by its members rather than shareholders. While it generates income through the provision of products or services it manages surpluses and deficits in a different way to a standard private business.

3.12 Under a mutualised ownership model, operating costs, such as wages, utilities, insurance and maintenance, are met from the organisation's revenues.

3.13 The allocation of risk within a mutualised model depends on the ownership and financing structure adopted. In a fully mutualised arrangement, the asset is effectively owned on behalf of members. While this can reduce financing costs, it also means that members ultimately bear construction and residual financial risks.

Mutualisation in Northern Ireland

3.14 In Northern Ireland, mutualisation is a regulated ownership framework under which the costs, risks and benefits associated with the development and operation of specific strategic electricity infrastructure are shared across consumers.

3.15 Mutual Energy Limited (MEL) has developed, owns and operates energy infrastructure and has also supported the financing of pre-development activities for strategic projects.

3.16 MEL own the Moyle Interconnector, a 500 MW HVDC link between Northern Ireland and Scotland. Initially constructed under alternative financing arrangements by NIE Networks it was then transitioned into mutual ownership post construction.

3.17 Moyle's transmission licence provides for revenue recovery through two mechanisms: revenues earned from the sale of interconnector capacity, and recovery of any remaining allowed revenues through a regulated tariff mechanism. This tariff element is collected via the Collection Agency Income Requirement (CAIRt), administered by SONI as the appointed collection agent.

3.18 A key feature of the mutual structure is a reduced cost of capital. The absence of equity shareholders and access to lower-cost debt can result in a materially lower weighted average cost of capital compared to conventional corporate structures.

3.19 However, under the mutual structure, consumers may be more directly exposed to both costs and revenues associated with the asset, with implications for risk allocation, funding requirements and longer-term outcomes.

Mutualised Regime for Gas Transmission in Northern Ireland

3.20 In addition to its electricity activities, MEL also owns and operates regulated gas transmission infrastructure in Northern Ireland through Premier Transmission Limited (PTL), Belfast Gas Transmission Limited (BGTL) and West Transmission Limited (WTL)[8]. These licence holders operate under a mutualised regulatory framework.

3.21 Under this model, Northern Ireland gas consumers bear the risk of deviations between forecast and actual operating costs. In return, the businesses operate with no allowance for equity returns, reflecting the mutual structure and the absence of shareholder interests.

3.22 The Utility Regulator determines an efficient forecast level of operating costs as part of the gas transmission price control, which feeds into the Forecast Required Revenue and postalised transmission tariff. Revenues are subsequently adjusted through tariff-setting and reconciliation mechanisms, such that recovered revenues reflect outturn conditions. As a result, operators are not materially exposed to operating expenditure risk, which is largely borne by consumers

3.23 Although operating expenditure risk is fully passed through, the determination of efficient costs is undertaken as though a conventional revenue cap were in place. This arrangement has been described as operating under a "shadow price control", under which the licence holders are subject to reputational incentives to manage costs efficiently and in line with the regulator's assessment.

[8] Gas - Mutual Energy

3.24 The rate of return on capital is excluded from the price control process. The gas transmission assets are fully funded through long-term debt, principally in the form of bonds. The servicing and repayment of this debt, including both principal and interest, follows a predetermined schedule agreed in advance with the Utility Regulator.

3.25 Certain categories of expenditure are treated as uncontrollable costs. These costs are considered to be outside the direct influence of the licence holders and are therefore not subject to incentive mechanisms. No ex-ante allowance is set at the time of the price control, and the associated cost risk is borne entirely by consumers through pass-through arrangements.

3.26 It should be noted that references to “efficient costs” under a mutualised model are not directly equivalent to their treatment under a standard RAB framework. Under a RAB model, efficient costs are set ex-ante by the regulator as part of a binding revenue allowance, with the operator exposed to a degree of cost risk through incentive mechanisms. By contrast, within a mutualised model, the assessment of efficient costs typically operates as a benchmarking or “shadow” exercise. Actual incurred costs are recovered through regulated tariffs, with deviations from forecast largely passed through to consumers.

4. The Cap and Floor model

Overview

4.1 The Cap and Floor regime is one of several regulated operating revenue models that is used to support the delivery of electricity interconnection. It represents a hybrid approach between fully merchant investment and fully regulated frameworks and has been widely applied to GB-connected interconnectors.

4.2 Under the Cap and Floor regime:

(i) A revenue floor guarantees a minimum allowed revenue. If market revenues fall below this level, the shortfall is ultimately recovered from consumers.

(ii) A revenue cap limits upside returns. Revenues above the cap are returned to consumers.

4.3 This mechanism allows interconnectors to remain merchant in operation, while limiting downside and upside risk to levels considered socially efficient.

4.4 In developing the Cap and Floor regime, Ofgem aimed to maintain elements of market exposure to help guide developers on the appropriate location, size, technology and timing of the proposed investment and minimise the exposure of consumers.

Cap and Floor Regime in GB

4.5 The Cap and Floor[9] regime is an established regulated route for electricity interconnector development in GB. It is a market-based approach that aims to incentivise developers to deliver interconnector capacity by limiting developers' exposure to electricity market price risk. Ofgem rolled out the regime to new electricity interconnectors in August 2014 to incentivise the timely delivery of more interconnectors.

4.6 Before the regime was introduced, a limited number of electricity interconnectors had been built. Including IFA (2GW) to France, Moyle (0.5GW) to Northern Ireland, BritNed (1GW) to the Netherlands, and the East West interconnector (0.5GW) to Ireland.

4.7 Ofgem recognised that there was benefit in further interconnection and therefore a need to develop a regulated regime for electricity interconnectors to incentivise further development. It proposed a Cap

[9] Cap and Floor Regime Handbook 2024 | Ofgem

and Floor regime as a pilot project initially for the Nemo Link interconnector (1GW) to Belgium in 2013, and more broadly as an enduring regime in 2014.

4.8 Ofgem has subsequently held two cap and floor Application Windows in 2014 and 2016. These Windows are distinct, time-limited periods set by Ofgem during which interconnector project developers may apply for entry into a Cap and Floor regulatory regime assessment. This approach ensures that the regulatory framework for delivery of further interconnection remains in consumers' interests.

4.9 Ofgem has stated that since its launch in 2014 the regime has delivered circa £200m back to consumers through reduced bills by capping revenues. Floor payments have never needed to be made, thereby ensuring value for money for consumers, as well as demonstrating the commercial viability of interconnectors.

4.10 The third Ofgem application window (Window 3[10]) for electricity interconnector projects opened in September 2022 and closed in January 2023. Seven projects applied for Cap and Floor regulation in Window 3 and were successful in fulfilling the eligibility criteria, consequently progressing to the Initial Project Assessment (IPA) stage. Ofgem's IPA considered the 'needs case' for the prospective projects.

4.11 Of seven projects, three were awarded the cap and floor regime in principle in Ofgem's Decision on the Initial Project Assessment (IPA) in November 2024. These projects include LirIC (to Northern Ireland), MaresConnect (to Ireland) and Tarchon (to Germany).

Table 3: Window 3 projects

Project Name	Developers	Connecting Country	Capacity (MW)	Expected Connection Date	Status
LirIC	Transmission Investment	Northern Ireland	700	2032	Under Development
MaresConnect	MaresConnect Limited	Ireland	750	2030	Under Development
Tarchon	Copenhagen Infrastructure Partners, Volta Partners	Germany	1400	2030	Under Development

[10] https://www.ofgem.gov.uk/decision/initial-project-assessment-window-3-interconnectors-decision

Figure 2 Source – Ofgem Interconnector projects under Cap and Floor 'Window 3'

LirIC Interconnector

4.12 Ofgem has granted a Cap and Floor regime in principle to LirIC in November 2024 following Transmission Investment's Window 3 Initial Project Assessment (IPA) application.

4.13 Ofgem's IPA grant in principle for LirIC remains subject to several conditions, including a requirement to submit detailed cost information for a Final Project Assessment (FPA) within three years of the IPA decision i.e. by the end of 2027 at the latest. Under Ofgem's current framework, provisional Cap and Floor levels are set at the FPA stage. Final levels are set following their Post Construction Review (PCR) stage which assesses a project's final costs after construction.

4.14 The Ofgem Cap and Floor in principle awarded for the LirIC project covers 50% of the costs subject to LirIC securing regulatory support on the Northern Ireland end of the Interconnector. This apportionment of cost, for a cross jurisdictional project, is typically separated between the jurisdictions through a negotiated agreement.

4.15 We will continue to engage with Ofgem during our needs case assessment (system impacts, market modelling, social and economic welfare) to ensure a holistic approach is taken in respect of the separate regulatory approaches in both NI and GB, either side of the LirIC interconnector.

Greenlink Interconnector

4.16 The CRU in Ireland broadly followed the approach previously developed by Ofgem when introducing a Cap and Floor regime for the Greenlink Interconnector. In particular, the CRU adopted a 25-year duration for the regulated revenue regime, consistent with Ofgem's established framework. As is standard practice for both Ofgem and the CRU, the Cap and Floor regime is triggered either from full commissioning of the interconnector or, where commissioning is delayed, 12 months after the target commissioning date.

4.17 Assessment periods are defined intervals at which the Cap and Floor parameters are reviewed to ensure that revenues remain consistent with the principle of maintaining project financeability while protecting consumers. Under Ofgem's framework, assessment periods are set at five-year intervals by default, resulting in a total of five assessment periods over the lifetime of the regime.

4.18 In contrast, when the CRU designed the Cap and Floor regime for Greenlink, it initially adopted individual one-year assessment periods, reflecting a more cautious and incremental regulatory approach during the early years of operation.

4.19 It is also important to note that revenue allowances within each assessment period are set on a stand-alone basis, such that any over-performance above the Cap or under-performance below the Floor is not carried forward into subsequent assessment periods. This approach ensures that revenue outcomes are properly aligned with performance in each period and avoids cross-subsidisation between assessment periods.

Key elements of the Ofgem Cap and Floor regime

4.20 The cap and floor regime in GB sets a yearly maximum (cap) and minimum (floor) level for the revenues that the interconnector can earn over a 25-year period.

4.21 Revenues generated by the interconnector are compared against the cap and floor levels every five years (in Ofgem's default regime) or yearly (where Ofgem has approved regime changes). Top-up payments are made to the licensee if generated revenues are lower than the floor; and similarly, the licensee pays back revenues in excess of the cap.

4.22 In the regime, the cap and floor levels are set based on project costs using an underlying RAB model. Ofgem then applies different notional financial return parameters to set the cap and the floor independently.

4.23 The floor is set to allow a developer with a notional financing structure to recover only its costs and a low rate of return equal to a cost of debt index. To determine returns at the floor, Ofgem applies the cost of debt, which is estimated using the 'iBoxx' index (linking the cost of the debt to bond market indices), to 100% of the Regulatory Asset Value (RAV).

4.24 The cap is designed to reflect the equity returns in assets with a similar risk profile. To determine returns at the cap, Ofgem applies the equity return rate, which is estimated using a Capital Asset Pricing Model (CAPM) approach, to 100% of the RAV.

4.25 Developers may request variations to the default regime design, such as adjustments to the cap and floor setting to facilitate raising finance, provided they can demonstrate that these changes are in the interests of consumers. This is to reflect that certain aspects of the default regime may be less suitable for some types of financing solutions, and therefore it might limit the pool of capital developers can access.

4.26 The cap and floor model maintains a significant degree of market exposure and merchant incentive for developers, encouraging them to invest only in commercially attractive projects whilst keeping costs down. This model, in turn, aims to minimise the risk that consumers will have to provide financial support to developers.

Key Considerations for Cap and Floor

4.27 The four main methodology considerations identified by Ofgem are the following:

(i) Weighted Average Cost of Capital (WACC) calculations for rate of return at the Cap and cost of debt rate of return at the Floor: Different approaches to calculating the rate of returns are followed at the cap and the floor. This allows for the different risks associated with the cap and floor to be better reflected in the applicable return rates.

(ii) Type of approach: A mechanistic approach is followed to provide clarity and certainty to developers and their investors which Ofgem considers may be necessary for attracting new developers to enter the market.

(iii) Timing for locking down the cost of capital parameters: The rate of returns at the cap and floor are locked in at final investment decision or financial close.

(iv) Cross jurisdictional issues (blended or separate calculations for each currency): where the regime covers 100% of the project (i.e. applies in both regulatory jurisdictions), Ofgem follow a blended calculation approach by applying a 50:50 weight to the cost of capitals calculated between the two jurisdictions.

Adjustments to the Cap and Floor regime

4.28 The Cap and Floor regime is not a single, rigid financing model, but rather can be calibrated according to the risk profile of a specific class of asset. It can be developed to be adjusted, by narrowing the gap between the cap and the floor. The exact degree of the narrowing of the Cap and Floor range can be considered and decided upon balancing the risks and rewards of the specific project, with consumers' interests.

4.29 Despite the ability to adjust some elements of the Cap and Floor model, Ofgem state that it does still have some limitations, which may restrict its suitability for the future financing of interconnection. For example, the

Cap and Floor model currently only provides post construction revenue to developers, and there is currently no mechanism to provide pre operation revenues, such as revenue during development or revenue during construction. This may be important for projects with very high capex investment levels and long delivery lead times.

5. Revenue Considerations

5.1 When an interconnection project is seeking to connect into Northern Ireland an assessment will be made by the Utility Regulator to ensure it is in the best interests of Northern Ireland consumers.

5.2 In order to determine this the Utility Regulator will undertake an assessment on a case-by-case basis. This entails comparing the cost building blocks against the potential revenue streams for the interconnector project.

5.3 All revenues will be taken into account when considering the initial maximum and minimum levels of revenue. These revenue streams are considered to be, for example:

(i) Congestion revenue from capacity allocation.

(ii) Capacity market revenues.

(iii) System services market revenues.

5.4 Congestion Income (also known as congestion revenue) is the term used for revenue generated by the difference in electricity prices between interconnected markets and is dependent on capacity flows. It is one of the components that can be used to recover revenue.

5.5 In general congestion income can be generated from different Capacity Allocation timeframes, e.g. forward, day-ahead, intraday, and different capacity allocation mechanisms, i.e. explicit or implicit.

5.6 The revenue earned by the interconnector is the difference between electricity prices, between the two markets linked by the interconnector, multiplied by the volume of electricity transferred via the interconnector.

5.7 For the LirIC interconnector assessment we anticipate a costs submission to provide best estimates for the anticipated congestion revenue commencing from the date of operation in October 2032.

Capacity Market Revenues

5.8 Interconnectors are eligible to participate in the SEM Capacity Market and receive capacity payments.

5.9 Participants earn these payments by successfully bidding in the competitive auction processes to secure a contract, and in return, they commit to delivering energy or reducing demand when required.

5.10 The market pays for the availability of capacity, not its actual use. Participants are paid for being on standby and can face penalties if they fail to meet their commitments. The level of payment is decided through competitive auction processes, including a pre-qualification process, that typically occurs twice per year, one year ahead T-1 and four years ahead T-4 auction.

System Services Revenues

5.11 The current system services arrangements are evolving into a competitive procurement framework from a tariff-based system, to one that will be held via a Day-Ahead System Services Auction (DASSA). This is currently progressing through a workstream known as Future Arrangements for System Services (FASS).

5.12 The new arrangements will go live in May 2027 with a Long Stop Date of September 2027 and therefore will govern how system services revenues are earned for future interconnection. Given this transition to a competitive market, best estimates are expected to be provided to UR for the submission of cost data.

Availability Incentivisation

5.13 Ofgem's Cap and Floor regime includes an availability incentive, a mechanistic incentive that applies to all Cap and Floor interconnector projects. Ofgem advise that "The incentive aims to ensure that the developers maintain technical availability of the cable, even in periods when they could reasonably expect revenues to exceed the cap or fall below the floor. Incentivising good technical availability will help to ensure that consumers realise the full benefits of interconnection between GB and Ireland".

5.14 For the Greenlink Interconnector, Ofgem specifically advised "The availability incentive gives a potential 2% upside and downside to maximum interconnector revenues at the cap. This is based on performance against a target level of availability. If developers outperform against the target by up to two percentage points, then the cap level increases by the same amount. If developers underperform against the target by up to two percentage points, then the cap level reduces by the equivalent. The specific availability target varies from project to project, depending on a number of technical factors such as project design and cable length.".

5.15 Per Greenlink's Cap and Floor application the availability incentive at the Cap level was originally designed in order to ensure interconnectors maintain technical availability for periods when the revenues are outside the Cap and Floor range.

5.16 The Cap and Floor also include an availability incentive at the floor. This is a one-way minimum availability incentive such that should the interconnectors availability falls below 80% in any year, floor payments are not paid for that year.

5.17 In considering maximum and minimum levels for a potential Regulated Operating Revenue Regime, given the availability incentivisation incorporated into the Ofgem and CRU Cap and Floor regimes, the UR would consider including an availability incentive within any regime design and assessment.

5.18 In our assessment of any proposed availability incentive, given the Moyle Interconnector is the only other comparator in NI currently, it will be beneficial to consider benchmarking against other new interconnectors in neighbouring jurisdictions. These include Greenlink Interconnector which became operational in 2025 and the upcoming MaresConnect Interconnector in Ireland which is expected to commence operations in 2029.

5.19 In light of the timing of the upcoming LirIC assessment, and the potential for a subsequent assessment under the post construction review, it may be more appropriate to assess its interconnector availability once construction has reached a sufficiently advanced stage, for example when at least 90% of construction is complete. The appropriateness of this approach for LirIC will be considered as part of the financial assessment process commencing in Q4 2026. In the interim, we will explore the methodologies available for adopting such an approach, noting that any change would be subject to future consultation process(es).

6. Next Steps

The Utility Regulator is undertaking a structured, evidence led assessment to inform the development of regulatory frameworks for future interconnection in Northern Ireland. This work will consider factors including system impact and need, as well as the appropriateness of establishing a regulated revenue regime for future interconnection.

This work will be underpinned by a system impact assessment led by SONI, in its role as Northern Ireland's independent system operator, and will account for uncertainty through scenario and sensitivity testing. The assessment will be further informed by detailed market modelling and socio-economic welfare analysis, incorporating input from SONI, alongside an assessment of the merits of the LirIC interconnector project, including its costs and anticipated revenues.

As this represents a new process in Northern Ireland, particular emphasis will be placed on ensuring that potential risks to consumers are appropriately understood and managed, while also recognising the potential benefits of increased interconnection where these can be demonstrated.

Subject to the timely provision of information from the LirIC project developer, the Utility Regulator expects to consult on a draft determination in respect of the revenue regime in Q4 2026, with a final decision following in Q1 2027. By setting out this timetable, the Utility Regulator is providing greater certainty to stakeholders on the expected decision-making process.