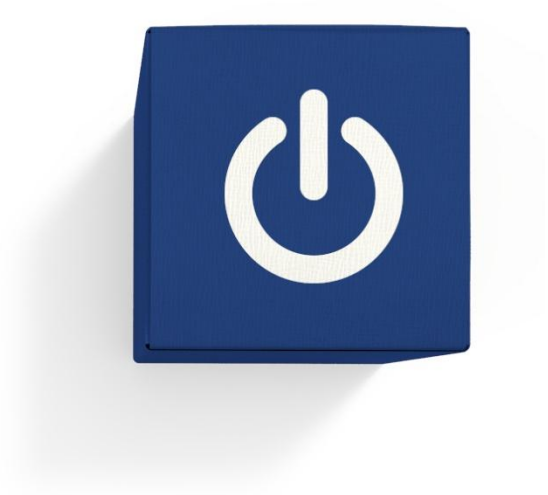
Offshore Cost of Capital

Commission for Regulation of Utilities (CRU)

3 June 2025



FINAL REPORT

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EXECUTIVE SUMMARY

E.1. BACKGROUND AND CONTEXT

Over the past few years, the CRU has developed and consulted on the establishment of a regulatory framework and revenue model to support EirGrid – Ireland's electricity TSO – in its new role as the designated asset owner of the offshore electricity transmission grid. Price Review 6 (PR6) will set the first offshore price control under this model, where a particularly important building block of the price control will be the allowed cost of capital.

In our role as economic advisor for PR6, the CRU asked CEPA to develop a range for the weighted average cost of capital (WACC) that the CRU might apply to set this first offshore price control. This report sets out the approach we have taken to estimate an offshore WACC in PR6 and our initial conclusions.

Business characteristics of offshore asset owner

The offshore grid development programme in Ireland involves a three-phased pathway from a developer-led ('generator build') model towards a fully plan-led ('TSO build') model:

- **Phase 1** – Decentralised development: Offshore wind developers will develop and construct the offshore transmission assets and then transfer ownership to EirGrid.
- **Phase 2** – Transitional Development: Developers may continue to build and transfer transmission assets to EirGrid or may select EirGrid to build the offshore transmission assets.
- **Phase 3** – Centralised development (plan led): EirGrid will plan and build out all offshore transmission infrastructure.

DECC's Offshore Policy Statement[1] published in March 2023 accelerated the move to a "plan led" model in order to meet the Irish Government 2030 target to deliver at least 5 GW of offshore wind capacity by 2030. It also stated that EirGrid will proactively develop offshore grid transmission infrastructure for ORESS 2.

Phase 1 will involve EirGrid making "Asset Transfer Value" (ATV) payments to each Phase 1 developer at the point of transfer, with the value of the ATVs expected to require billions of euro payments by EirGrid during PR6 and PR7. By the end of PR6, EirGrid must also deliver a critical business readiness program for its new offshore function – the Offshore Asset Readiness Plan (OARP) – to enable the connection of these Phase 1 projects.

During PR6 and PR7, EirGrid will also be responsible for the development and construction of the Tonn Nua project under Phase 2. While the capital cost associated with this project remains a topic of ongoing discussion, EirGrid's latest estimates suggest this will also be a multiple billion-euro investment.

These are high-value, non-discretionary programmes for EirGrid. Unless external events intervene (e.g., delays to Phase 1 projects transferring) the timelines and expenditure cannot be deferred and will involve significant execution challenges. They will require EirGrid to (over a short period of time) finance a multi-billion-euro investment programme from a limited starting asset base. However, once this period of high upfront investment is complete, and infrastructure is in place, EirGrid will largely be responsible for maintaining an operational asset base with more limited opportunities for ongoing investment and growth.[2]

The clarity and the predictability of the regulatory framework in enabling EirGrid to recover the costs of these programmes, including its financing costs, is, therefore, critical to successful delivery of these programmes over the next decade. With these issues in mind, the CRU has proposed a supportive revenue model for offshore which will adapt its standard RAB x WACC regulatory to facilitate financeability. These adaptations include:

[1] DECC (2024): 'Policy Statement on the Framework for Phase 2 Offshore Wind'

[2] Putting to one side the impact of future phases of investment in the offshore grid, i.e., looking beyond Phase 2.

- an allowed cost of debt adjustment (true-up) mechanism to reflect the terms which EirGrid can obtain competitively in the market; and
- a liquidity revenue building block to reflect the cost of carry, allowing EirGrid to justify additional revenue to reflect its unique offshore related finance raising challenges and pressures.

The regulatory framework will also include:

- a balanced package of performance incentives which will offer EirGrid rewards (carrot) and penalties (stick) in its delivery of Phase 2 and in successfully maintaining high availability of its offshore grid assets;
- a strong and transparent (codified) investment gateway process to support robust cost, risk and schedule management over the course of major operating and Phase 2 construction project life cycles;
- various regime features that will help to bring forward cashflows, including a proposal to depreciate EirGrid's Phase 2 grid investments from the start of PR7; and
- an exceptional events (allowed revenue adjustment) mechanism to facilitate recovery of costs that EirGrid may incur from exceptional (major failure) events.

We have also been guided by the CRU to assume that the offshore price control in PR6 and PR7 will be set on a **hybrid returns basis** with:

- allowed debt returns set on a nominal basis; and
- allowed equity returns set on a real basis.

This will help to support the matching of allowed revenues and costs[3]. It will also support the financeability of the offshore programme by bringing forward cashflows compared a regulatory framework where the allowed return on the RAB is set on a real basis and the RAB is indexed to inflation.

As we discuss below, this proposal means that in estimating a range for the cost of debt in PR6, we present both nominal and real estimates, but it is the nominal estimate that would form the allowed debt rate of return in PR6. For the cost of equity, we present only a real estimate.

Policy in setting an allowed WACC in PR6

The offshore programme in PR6 has several unusual characteristics which complicate estimating the cost of capital for offshore in PR6 and looking forward to future price controls. In particular, Phase 1 and Phase 2 are investment programmes with different characteristics and risks from an investment perspective.

While the CRU has determined that it will set a separate offshore RAB for the offshore asset owner price control[4], there are in principle several ways that Phase 1 and Phase 2 could be treated within the CRU's regulatory framework and a cost of capital estimated and applied to calculate an allowed return.

In EirGrid's financial modelling, it appears to assume CRU will in effect maintain two separate components of the offshore RAB: a Phase 1 component and a Phase 2 component. It then estimates and applies a separate cost of capital – a Phase 1 WACC and a Phase 2 WACC – to each of these components to calculate the allowed return building block component of its allowed revenue.

Whilst this is intended to reflect the different risks associated with delivery of Phase 1 and Phase 2, setting a separate allowed cost of capital for different components of a regulated business' investment programme is a relatively unusual approach compared to how most network utility price controls provide for an allowed return. The

[3] EirGrid is expecting to issue only nominal, rather than index-linked, debt in financing its offshore investment programme.

[4] In effect, treating EirGrid's offshore asset owner activities like a separate regulated business for price control purposes.

more standard approach is for a regulator to set a single cost of capital that reflects the risks and the sources of finance and cashflows associated with the price-controlled activities as a whole.

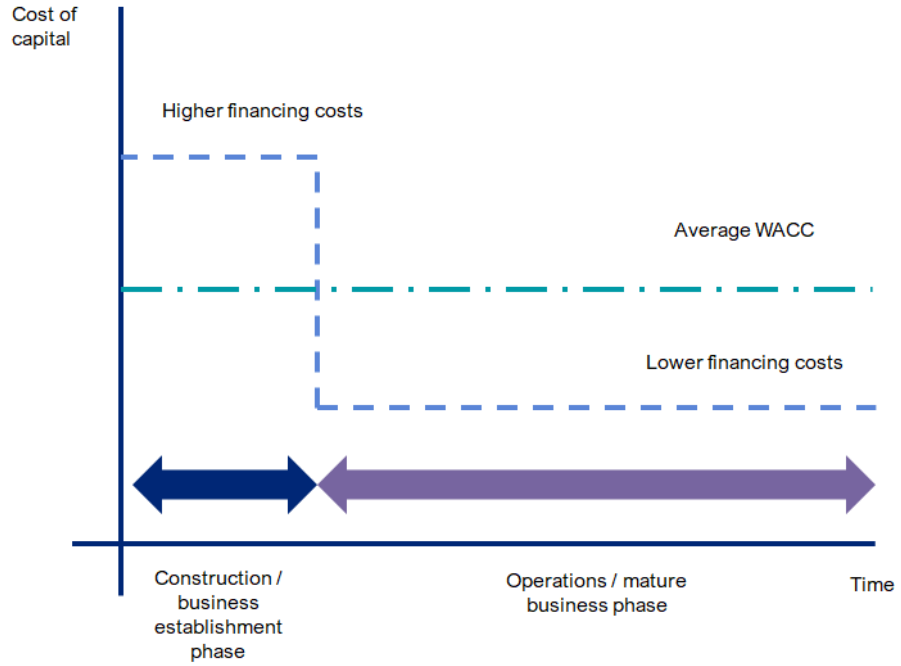
Guided by the CRU, we estimate a **single allowed cost of capital for the PR6 offshore price control** intended to reflect the risks associated with investment into the offshore grid programme as a whole.

This approach appears more consistent with how EirGrid itself expects to finance its offshore programme in practice and has the advantage of not requiring the CRU to maintain separate allowed costs of capital for different phases of the grid's development. Differentiation of the risks and the influences on the cost of equity may also not be easy to disentangle between the delivery of Phases 1 and 2, particularly where there are no 'pure-play' comparators for benchmarking expected returns from EirGrid's new offshore asset owner role.

The CRU also faces a policy choice of how it seeks to reflect the changing investment risks in its allowed returns over the project life cycle of Phases 1 and 2, particularly for Phase 2. Whilst CRU's regulatory framework is designed to mitigate EirGrid's risk in construction of the Phase 2 grid, an infrastructure project in theory can be expected to be higher risk during construction, with the risks then expected to reduce once the asset enters its operational period (provided there is ongoing security of asset value over the asset life).[5]

There are, in principle, several ways that the CRU could seek to reflect this "project cycle evolution" in its offshore asset owner allowed cost of capital. One approach would be to increase EirGrid's allowed cost of capital, and therefore returns, during the initial establishment of the offshore business and construction of Phase 2 and then reduce the allowed rate of return once the programme reaches more mature operations (the blue dotted line in the figure below). An alternative would be for the CRU to set a rate of return which 'looks through' the project life cycle and reflects an assessment of the cost of capital over the full life of the investment (the green dashed line).

Figure E.1: Illustrative financing costs over investment life



Source: CEPA[6]

As we discuss in the main report, there are precedents of regulators adopting both approaches. If seeking to set an allowed cost of capital that looks through the different stages of the project cycle, the important principle is the regulator is consistent in its approach over time and across price reviews. In the alternative approach, to avoid an

[5] The underlying intent of a RAB based revenue model.

[6] Adapted from Utility Regulator (2010): 'Assessment of Potential Financing Options for Utility Networks'

outcome where consumers pay excessive returns, the allowed cost of capital must be carefully adapted over the project life and across price reviews to reflect changes in the risk profile of investment.

For the purposes of this report, our approach is to assume that an investor would take a medium-term investment horizon to their participation in the offshore grid programme. They will look for a return on investment that is consistent with comparable investment opportunities which reflect similar construction and operating risks over this investment horizon. With this perspective in mind, below we set out our proposals on the parameters of the cost of capital for the offshore price control in PR6, namely gearing, cost of equity and cost of debt.

E.2. PARAMETER ESTIMATES

Gearing

We assume the offshore asset owner will seek to maintain a comfortable investment grade rating to support the financing of its offshore investment programme in PR6 and will seek to maintain a level of gearing consistent with this objective. The level of gearing that can be achieved by the offshore asset owner in this context will be driven by the level of cashflow risk it faces under the regulatory framework and the nature of financing.

We propose a range of **55% - 70% notional gearing** for the offshore asset owner. Our:

- Lower bound is consistent with the point estimate used in recent CRU precedent and other examples in Great Britain and would reflect an assumption that the offshore asset owner needs to maintain an equity wedge similar to that required by onshore networks.
- Upper bound is based more closely on evidence on gearing levels adopted in 'Project RAB Co' structures and by some European TSOs. This is still consistent with an investment grade credit rating on the basis the regulatory framework provides a strong underlying credit profile for an energy network.

In proposing a point estimate to inform an early view of the offshore WACC, we note the following:

- EirGrid states ongoing discussions with its Shareholder (the Irish Government) as regards equity contributions for the offshore programme may be consistent with 70% notional gearing.
- Similar to some 'Project RAB Co' structures - such as Thames Tideway Tunnel – in the UK, Ireland's offshore asset owner will need to deploy a large volume of capital at pace during PR6 and PR7.[7]
- All else equal, and on the assumption that the regulatory framework is supportive of this, this might suggest that the level of gearing the business would adopt would be higher than has been the standard assumption (55%) used in recent CRU energy network price controls.
- Gearing towards the top end of the range, while higher than values CRU has used in recent price control decisions, is still consistent with rating agency guidance for an investment grade rating level[8].
- Despite a supportive regulatory framework, during the initial period of the offshore grid's establishment, the business might ideally maintain a level of headroom that provides some flexibility to finance a range of possible scenarios, including scope for cost escalation.

Considering these factors in the round, we assume a **point estimate of 60%** notional gearing for the offshore asset owner in PR6, subject to further financeability testing if other parameters change.

[7] Based on current cost forecasts, more than €5bn of capital may need to be deployed in the offshore RAB during this period.

[8] We understand that Moody's rating guidance indicates that net debt / RAB gearing up to 75% would be consistent with a standalone Baa2 credit rating.

Cost of equity

Consistent with CRU precedent and guidance, we have sought to estimate the cost of equity primarily through the lens of a Capital Asset Pricing Model (CAPM) framework.[9] The CAPM relates the cost of equity to a 'risk-free rate', the expected return on a market-wide portfolio of investments and the beta.

We adopt the **same economy-wide parameters in CAPM as we adopt in our onshore WACC report**.

This means we assume a range for the **risk-free rate of 0.5-0.6%**, a **total market return of 6.4-6.8%** and, therefore, an equity market risk premium of **5.9-6.2%**. Given the data used to estimate these parameters, we also apply the same inflation adjustment in the allowed rate of equity return as we adopt onshore, i.e., **0.1%-0.4%**.

The focus of our cost of equity analysis for offshore has, therefore, been on an appropriate beta value.

The unlevered beta estimate for the offshore asset owner involves considerable subjectivity and judgement, given aspects of the regulatory framework are still in development and no 'pure-play' comparators exist for the group of offshore business activities in question. We have also noted our approach looks to take a 'medium-term' investment horizon in considering the characteristics and risks (and, therefore, comparable investment opportunities) used to benchmark an investor's expected rate of return from investing in the offshore network.

With this in mind, and based on a range of market evidence, including empirical estimates of beta from several comparator cohorts, we identify a broad range of 0.30-0.40 for where an appropriate unlevered beta value for the offshore asset owner might fall in PR6, which is wider than our 0.31-0.35 range for the onshore network.

Assuming an offshore unlevered beta towards the lower end of this range would align with beta evidence from pure-play UK / European energy networks and evidence from US networks typically subject to 'cost of service' based regulation. This would reflect a perspective that investment in Phase 1[10] will be in operational offshore network infrastructure, with a supportive regulatory framework which substantially mitigates the operating and financing risks ultimately borne by the investor in the offshore programme.

Assuming an offshore unlevered beta value more towards the upper end of the range would be more aligned with beta evidence of contracted generation and some European energy networks.

This would reflect a perspective that Phase 2 development and construction activities, and the broader offshore programme's execution challenges, high operating leverage during PR6 and PR7[11] and "point in time" investment risks (together with the "newness" of the offshore regulatory framework during the establishment and initial financing of the offshore grid) mean an investor would expect a higher return relative to onshore.

Overall, we conclude the cost of equity offshore during PR6 is likely to be higher compared to a more established onshore electricity network (at an equivalent level of gearing). Despite a supportive regulatory framework, over the medium-term investment horizon there are execution challenges with the delivery of the offshore grid programme, with the business needing to operate at a high level of operating leverage before transitioning to a steadier state business more comparable to an established network company. We consider that this would drive a higher cost of equity during PR6, although for reasons that are not typical CAPM beta – i.e., non-diversifiable – risks.

On this basis, our proposal for how the CRU might set an allowed cost of equity in PR6 and PR7 would be as follows. We propose that the CRU set a baseline range for the cost of equity offshore that aligns with our recommended CAPM parameters for the onshore network, i.e., the CAPM market parameters above and a beta

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[9] We have supplemented this with cross checks to other sources of evidence, including infrastructure fund discount rates, equity IRRs of OFTOs and various regulatory decisions in the UK and other parts of the EU.

[10] Which is expected to comprise the majority of EirGrid's investment activities in PR6 and PR7.

[11] On various measures – e.g., operating costs as a percentage of allowed revenues and investment relative to RAB – the offshore business will have high operating leverage during PR6 and PR7. While the regulatory framework substantially mitigates the risk this creates for profit volatility, both the investment and operational / business readiness activities in PR6 and PR7 are non-discretionary programmes.

consistent with our proposed range onshore (0.31-0.35 on an unlevered basis), adjusting for the proposed higher level of notional gearing offshore (60%) compared to onshore (55%).

We then also propose that the CRU provide an additional uplift to this baseline cost of equity to reflect the issues and risks discussed above associated with the upfront investment period in the Phase 1 offshore grid and EirGrid's development and construction of Phase 2 during PR6 and PR7. Providing such an uplift would be consistent with the approach some other regulators have taken in setting an allowed cost of capital during periods of high upfront investment and operating leverage in new infrastructure, including offshore grids.[12] This would be despite EirGrid's investment in the offshore grid predominantly being in operational Phase 1 projects for the next two offshore price controls, which intrinsically we view as being a low beta risk investment.

For the purposes of the forthcoming PR6 consultation, our initial proposal is that the CRU set this adjustment as a **0.55% uplift to the allowed pre-tax cost of equity** which would be broadly equivalent to adding a 0.03 uplift to the unlevered beta compared to our recommended range onshore.

However, once this upfront investment period is complete[13], we would expect this uplift to be removed and there would be a strong case for the allowed cost of equity offshore to be aligned with, if not lower than, the onshore network, given the offshore grid's enduring business and investment characteristics.

On this basis, the table below summarises our proposed offshore asset owner allowed cost of equity.

Table E.1: Proposed range for offshore cost of capital in PR6 – equity, real pre-tax

Parameter	Low	High
Notional gearing	60%	60%
Risk free rate (real)	0.50%	0.60%
Total market return (real)	6.40%	6.80%
Equity market risk premium	5.90%	6.20%
Unlevered beta	0.31	0.35
Equity beta	0.78	0.88
Cost of equity (post tax, real)	5.07%	6.03%
Tax	12.50%	15.00%
Cost of equity (pre tax, real)	5.80%	7.09%
Inflation expectations adjustment	0.10%	0.40%
Offshore uplift for PR6	0.55%	
Proposed cost of equity (pre-tax, real)	**6.35%**	**8.04%**

Source: CEPA

The 67th percentile of this range – which has formed the basis for the CRU's point estimate of the allowed WACC in recent energy network price control decisions – is a **real pre-tax cost of equity of 7.51%**.

[12] For example, the ACM included an uplift to TenneT's beta (the offshore asset owner in the Netherlands) in its current offshore price control, consistent with the approach taken by the UK Competition Commission for Heathrow Airport of applying an uplift to the cost of capital during its delivery of construction of Terminal 5. This was attributed to operating leverage.

[13] Which is expected to be the case by the end of PR7.

Our proposed approach involves a time-limited uplift for potentially two price controls during the offshore grid's development and upfront investment period. This uplift is then removed, lowering the allowed cost of equity at future price controls. An alternative option is for the CRU to aim to set an equity rate of return that is more stable over time. This would require a clear commitment to adopt a full-life cycle risk approach at each price control.

Cost of debt

EirGrid will start PR6 with no existing debt related to its offshore grid programme and so our estimate of the offshore cost of debt reflects an assumption of debt raising starting from PR6.

Our approach for estimating ESB Networks' cost of new debt onshore during PR6 is based on analysis of iBoxx EUR non-financial corporate A and BBB 10yr+ indices, across spot and 12m averages. In our range for the cost of new debt, we also provide for an allowance of 10-20bps for fees and transaction costs.

Similar to ESB Networks, we would expect the offshore asset owner to issue longer term debt, reflecting efficient costs and the network's economic asset lives.[14] We consider that fees should be equivalent to those used for ESB Networks at the notional level. However, how these are treated within the Liquidity Building Block and Cost of Debt true-up mechanisms that are proposed for the offshore price control is an issue that will need to be carefully considered prior to the finalization of the design of these regulatory framework features.[15]

We make one adjustment in relation to the assumed borrowing rate. We apply a 50bps uplift to the upper bound above BBB. This reflects the potential that debt may attract a premium during the initial financing of the business as the offshore asset owner has not yet issued bonds and the regime will be new. This is broadly equivalent to one notch as the credit rating moves towards the investment grade threshold.

This gives an allowed cost of debt in PR6 including fees of **3.77-4.41% on a nominal basis**.

While there is considerable uncertainty of EirGrid's future borrowing costs we note that in practice this will be adjusted for via the cost of debt true-up mechanism proposed for PR6 and PR7.

E.3. RANGE AND POINT ESTIMATE FOR THE OFFSHORE COST OF CAPITAL IN PR6

The table below brings together our proposed range for the cost of capital parameters if the offshore price control were set on a real, pre-tax basis.

The 67th percentile of this range[16] would imply:

- A real cost of equity of **7.51%** including adjustment for differences in inflation expectations.
- A real pre-tax WACC of **4.58%** including adjustment for differences in inflation expectations.
- Nominal cost of debt allowance of **4.20%**.[17]

[14] We have assumed 10-year + debt but understand for a period of time that EirGrid may seek to borrow at a shorter tenor, closer to 5-7 years as it becomes an established issuer in the market.

[15] Given that the Liquidity Building Block may explicitly account for transaction costs, such as bond issuance or initial rating fees, which are provided for in the fees and transaction cost allowances in other price determinations.

[16] The percentile used to determine a point estimate for setting the price control from a range in the CRU's most recent energy network price controls.

[17] This does not include an adjustment for differences in inflation expectations, given the benchmark cost of debt is based on nominal market data. Table E2 does apply an inflation expectation adjustment to the WACC to be consistent with the basis on which the real cost of debt is estimated using German breakeven inflation in these calculations.

Table E.2: Range for offshore WACC in PR6 – real

Real, pre-tax WACC	Offshore Cost of Capital	
	Low	High
Notional Gearing	60%	60%
Benchmark cost of debt	1.74%	1.86%
Uplift for offshore (new issuer)	0.00%	0.50%
Issuance costs	0.10%	0.20%
Cost of debt	**1.84%**	**2.56%**
Risk free rate	0.50%	0.60%
Total Market Return	6.40%	6.80%
Equity market risk premium	**5.90%**	**6.20%**
Unlevered beta	0.31	0.35
Equity beta	**0.78**	**0.88**
Cost of equity (post-tax)	**5.07%**	**6.03%**
Tax	12.50%	15.00%
Cost of equity (pre-tax)	**5.80%**	**7.09%**
Cost of equity (pre-tax) uplift	0.55%	
Cost of equity (pre-tax)	**6.35%**	**7.64%**
WACC (pre-tax)	**3.64%**	**4.59%**
Inflation expectations adjustment (IEA)	0.10%	0.40%
Proposed WACC (pre-tax)	**3.74%**	**4.99%**

Source: CEPA

We would view the CRU adopting the 67th percentile of our real cost of equity range – i.e., 7.51% - as reflecting a decision to apply an uplift to the offshore cost of equity on the basis one, or all, of the following factors drive higher expected returns over a medium term investment horizon during PR6 and PR7 relative to an investment opportunity in a more established onshore electricity network:

- high programme execution risk;
- absence of a RAB and associated cashflows implying high operating leverage;
- high "point in time" investment risks; and
- the "newness" of the offshore regulatory framework.

By selecting a point estimate at the 67th percentile of this range, the CRU would be reflecting an uplift of 0.03 to the unlevered beta compared to the equivalent percentile of our proposed range for the onshore network in PR6, and equivalent to a 22 bps increase in the WACC at 60% notional gearing.

As a result, we would view this estimate as the CRU taking a supportive approach to facilitation of investment in the offshore network during PR6 and PR7.

1. INTRODUCTION

1.1. CONTEXT

Ireland has set an ambitious target to install at least 5GW capacity of offshore wind generation by 2030. Ireland has further committed to a target of 20GW by 2040 and 37GW by 2050. These ambitious Government targets will require the development of a new offshore electricity grid in Ireland, which will be delivered over several phases and at a significant cost to the Irish electricity consumer.

In 2021, DECC's "Policy Statement on the Framework for Ireland's Offshore Electricity System"[18] designated EirGrid as the TSO and offshore asset owner for Ireland's offshore transmission grid. The Maritime Area Planning Act 2021 (the "MAP Act") provides that EirGrid's licence to discharge the functions of the transmission operator shall provide for EirGrid's ownership of transmission assets for certain specified purposes e.g., offshore activities.

In response to the Government's Policy Statement, and related legislative changes, the CRU has over the past few years developed and consulted with stakeholders on the establishment of a new offshore regulatory framework and revenue model for EirGrid as the offshore asset owner. The ongoing electricity price control review – Price Review 6 (PR6) – will set the first offshore revenue control under this model.

The offshore grid development programme in Ireland involves a three-phased pathway from a developer-led ('generator build') model towards a fully plan-led model:

- **Phase 1** – Decentralised development: Offshore wind developers will develop and construct the offshore transmission assets and then transfer ownership to EirGrid.
- **Phase 2** – Transitional Development: Developers may continue to build and transfer transmission assets to EirGrid or may select EirGrid to build the offshore transmission assets.
- **Phase 3** – Centralised development (plan led): EirGrid will plan and build out all offshore transmission infrastructure.

DECC's second offshore Policy Statement, published in March 2023, accelerated the move to a "plan led" model in order to meet the 2030 target to deliver at least 5 GW of offshore wind capacity by 2030. It also stated that EirGrid will proactively develop offshore grid transmission infrastructure for ORESS 2. This will mean that during the periods of PR6 (2026-2030) and PR7 (2031-2035) EirGrid will be responsible for the:

- ownership, financing and operation of developer led Phase 1 grid assets; and
- development, construction, financing and operation of Phase 2 grid assets – currently comprising the Tonn Nua project.

It is expected that EirGrid will be responsible for the development and construction of several future projects as part of subsequent phases of the offshore grid's development.

An important element of the revenue controls that the CRU will set as part of PR6 and future periods will be the financial building blocks provided, in particular the allowed return on capital. In this context, the CRU engaged CEPA to develop a range for the weighted average cost of capital (WACC) that the CRU might apply to set its first offshore price control as part of PR6. This report sets out:

- how the CRU could approach setting an allowed rate of return for the offshore price control, specifically for PR6, but also looking forward to future periods;

[18] DECC (2021): 'Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System'

- how we have approached estimating a range for an allowed WACC in PR6 and the sources of market evidence and regulatory precedent used; and
- an early estimate of the WACC to inform the forthcoming PR6 consultation.

1.2. OFFSHORE REVENUE MODEL

The CRU's offshore regulatory model decision paper (CRU/2024/99) concluded that the CRU would apply a RAB x WACC framework to set the financial building blocks of the offshore asset owner revenue control, but this would need to be adapted for the initial price control periods to facilitate the financing of the offshore programme. These adaptations included: i) an allowed cost of debt adjustment (true-up) mechanism to reflect the terms which EirGrid can obtain competitively in the market; and ii) scope for EirGrid to justify additional liquidity and cost of carry revenue building blocks to reflect its unique offshore related finance raising challenges and pressures.[19]

The CRU decision paper determined that there will be a separate Regulatory Asset Base (RAB) for offshore investments from EirGrid's onshore TSO activities which will allow for a return via the allowed return on the RAB (at the allowed cost of capital) and the return of the RAB, via depreciation. The CRU will set a separate allowed rate of return on the offshore asset owner RAB from the rate provided for EirGrid's TSO price control.

Consistent with its practice for other utilities it regulates, the CRU concluded that it would give primary regard to the financeability of its offshore price controls under a notional capital structure. As a consequence, an estimate of the offshore asset owner's cost of capital should be in reference to a benchmark notional capital structure.

Whilst aspects of the offshore regulatory framework are still to be finalised following the PR6 consultation, we have been guided by the CRU to assume that the offshore price control in PR6 will be set on a **hybrid returns basis** with:

- allowed debt returns on the RAB set on a nominal basis; and
- allowed equity returns on the RAB set on a real basis.

In estimating a range for the cost of debt in PR6, we therefore present **both nominal and real estimates**. For the cost of equity, we present only a real estimate.

As discussed above, EirGrid's debt costs will be subject to a true-up mechanism during at least PR6 and PR7, as per the regulatory framework decision in CRU/2024/99. As discussed in subsequent sections of the report in estimating a range for the cost of debt for PR6, we have been cognisant of the need for this early estimate of the cost of debt to be consistent with the design objectives and the principles for how this debt true-up mechanism will operate in practice. For example, consistency is required of assumptions made on the credit rating level and treatment of fees and cost of carry within the offshore revenue model and allowed WACC.

Finally, again guided by the CRU, for the purposes of our analysis we have assumed:

- Phase 1 RAB additions will be depreciated from the point of asset transfer.
- Phase 2 "Category 2" RAB additions, which relate to construction, will earn a return on capital during PR6 and will be depreciated from the point of expense following Final Investment Decision (FID), assumed to be from the start of PR7.[20]
- Phase 2 "Category 4" capital expenditure, such as buildings and facilities and IT systems, will be depreciated from the point of expense in both PR6 and PR7.

[19] These are discussed in further detail in later sections of the report.

[20] This will mean the development expenditure EirGrid incur during PR6, will start to be depreciated from the start of PR7.

1.3. REPORT STRUCTURE

The rest of this report is structured as follows:

- Section 2 discusses a series of methodological issues for setting an offshore cost of capital in PR6 and our approach to estimating the offshore asset owner's cost of capital.
- Section 3 considers the relevant characteristics of the offshore asset owner's activities for estimating the cost of capital and implications for the comparator cohort to inform cost of capital parameters.
- Section 4 provides our initial assessment of a range for notional gearing for the offshore asset owner activity looking to PR6 and PR7.
- Section 5 provides our early estimate of the cost of equity.
- Section 6 provides our estimate of the cost of debt.
- Section 7 concludes with an overall WACC calculation.

2. APPROACH

This section sets out the approach we take to estimate a range for the offshore asset owner's cost of capital. We start by discussing key methodological choices the CRU face in setting an allowed cost of capital for offshore in PR6 to ensure that its methodology remains consistent and appropriate over time.

2.1. TREATMENT OF PHASE 1 AND PHASE 2

As its PR6 business plan submission discusses, EirGrid will during PR6 and PR7 invest in a series of offshore grid projects associated with Phase 1 and Phase 2 (and potentially future phases) of the offshore grid's development. While the CRU has determined that it will set a separate offshore RAB for the offshore asset owner price control[21], there are in principle several ways that Phase 1 and Phase 2 could be treated within the regulatory framework and the cost of capital estimated and applied to calculate EirGrid's allowed return.

In EirGrid's financial modelling, it appears to assume CRU will in effect maintain two separate components of the offshore RAB: a Phase 1 component and a Phase 2 component. EirGrid then estimates and applies a separate cost of capital – a Phase 1 WACC and a Phase 2 WACC – to each of these components to calculate allowed returns.

Whilst this is intended to reflect the different risks associated with delivery of Phase 1 and Phase 2, setting a separate allowed cost of capital for different components of a regulated business' investment programme is a relatively unusual approach compared to how most network utility price controls provide for an allowed return. The more standard approach is for a regulator to set a single cost of capital which reflects the risks and the sources of finance and cashflows associated with the price-controlled activities as a whole.

In principle, either approach could be applied. The advantage of EirGrid's proposal is that it permits the allowed cost of capital to be set with reference to the specific project characteristics and risks associated with each phase of EirGrid's investment in the offshore grid. This may help with the transparency and predictability of the approach to setting the allowed returns over time and across price control periods.

However, investors expected returns from offshore might be expected to reflect the risk of their prospective investment in the offshore business and its functions as whole. Setting a cost of capital for Phases 1 and 2 separately also introduces greater complexity into the regulatory framework and how the CRU might need to approach issues such as the optimal range for notional gearing. The approach to pre-funding and debt true-up mechanisms may also be more challenging and less predictable to apply with separate offshore RAB components and rates of return, particularly if different levels of gearing are considered appropriate for Phases 1 and 2.

Guided by the CRU, we estimate a **single allowed cost of capital for the PR6 offshore price control** intended to reflect the risks associated with investment into the offshore grid programme as a whole.

This approach appears more consistent with how EirGrid itself expects to finance its offshore programme in practice, and for the reasons outlined above, has the advantage of not requiring the CRU to determine and maintain separate costs of capital for different phases of offshore grid investment. Differentiation of the risks and the influences on the cost of equity may also not be easy to disentangle between the delivery of Phases 1 and 2, particularly as there are no 'pure-play' comparators to EirGrid's new offshore asset owner role.

However, to aid with the transparency of our approach and conclusions, we have sought to identify what we consider might be the different influences on the cost of equity during Phase 1 and the different stages of delivery of Phase 2. This means our analysis and findings could in principle be used by the CRU to set a separate allowed rate of return for Phase 1 and Phase 2 during PR6 and future price controls, should it conclude that this was ultimately the optimal approach for determining returns under the offshore price control.

[21] In effect, treating EirGrid's offshore asset owner activities like a separate regulated business for price control purposes.

2.2. SETTING THE COST OF CAPITAL THROUGH THE PROJECT CYCLE

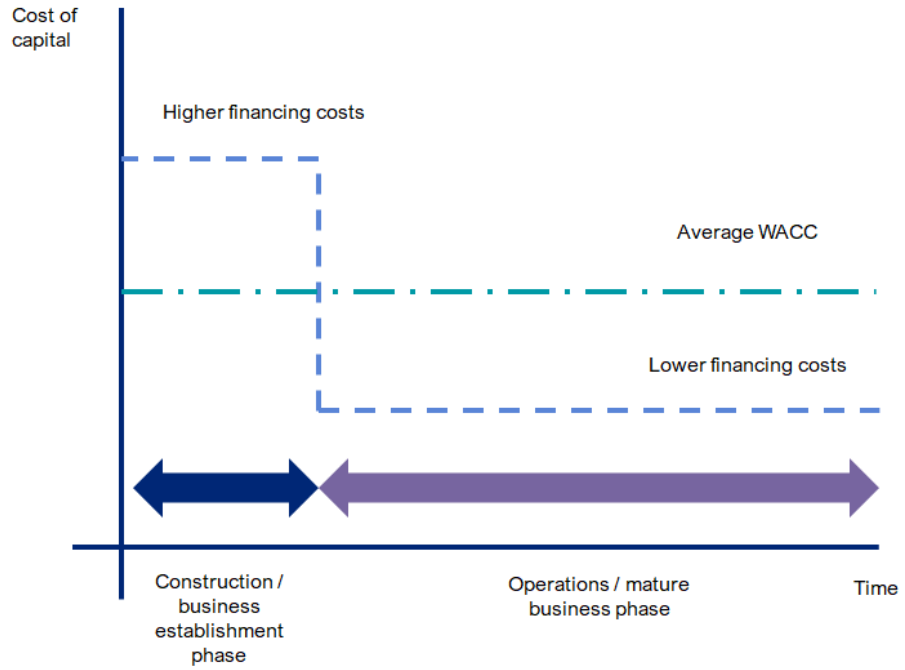
As discussed above, EirGrid's delivery of Phase 1 and Phase 2 (and future phases) raise different risks and investment characteristics investors. EirGrid's role in Phase 2 will be associated with the development and construction of offshore grid assets as well as operations over the asset's operating life (as per Phase 1).

Before any account is taken of the impact of the regulatory framework on the allocation of risk, the risks of an infrastructure project in theory would be expected to be at their highest during the development and construction stages of the project and then would be expected to reduce once the infrastructure asset enters its operational period. For Phase 1, investors will only be exposed to the risks of the lower risk operations period, but in Phase 2 investors will be exposed to construction and operating risks over the life of the project cycle.

There are, in principle, several ways that the CRU could seek to reflect this "project cycle evolution" in its offshore asset owner allowed cost of capital.

There are, in principle, several ways that the CRU could seek to reflect this "project cycle evolution" in its offshore allowed cost of capital. One approach would be to increase EirGrid's allowed cost of capital, and therefore returns, during the initial establishment of the offshore business and construction of Phase 2 and then reduce the allowed rate of return once the programme reaches more mature operations (the blue dotted line in Figure 2.1). An alternative would be for the CRU to set a rate of return which 'looks through' the project life cycle and reflects an assessment of the cost of capital over the full life of the investment (the green dashed line).

Figure 2.1: Illustrative financing costs over investment life



Source: CEPA[22]

There are examples of both approaches being applied in other regulated sectors, albeit in different circumstances to EirGrid's offshore grid programme. Examples of the former approach, include the separate allowed return on capital that applies to the Thames Tideway Tunnel in Great Britain (GB) during its construction period and the separate allowed cost of capital that will apply during the operational phase. A similar approach is proposed for Sizewell C, the nuclear power plant expected to be financed under a RAB based structure, also in GB.

[22] Adapted from Utility Regulator (2010): 'Assessment of Potential Financing Options for Utility Networks'

In GB, returns to investors in offshore transmission vary over the project cycle to reflect the different roles of the offshore wind farm (construction) and OFTO (operations) in financing the grid. The UK Competition Commission[23], provided an uplift to the cost of capital for Heathrow Airport during construction of Terminal 5. For TenneT's current offshore price control in the Netherlands, ACM made an upwards adjustment to the cost of equity to reflect the size of its investment programme relative to RAB during the current phase of construction of the offshore grid.[24]

Examples of the latter approach, include how Ofwat recently approached setting its allowed cost of equity for Portsmouth Water's Havant Thicket project during PR24. In many long-term infrastructure agreements, the payment annuity or allowed revenues will also reflect the full life cost of capital of the project.

In this latter approach, the important principle is that the regulator is consistent in its approach over time and price control reviews. In the former approach, to avoid a situation of consumers paying excess returns, the allowed cost of capital has to be carefully adapted over the project life as the risk profile of the project / programme changes.

For the purposes of this report, we have developed an analytical framework that in principle could allow the CRU to reflect either approach when setting its allowed cost of capital for the offshore asset owner during PR6 and future periods. In relation to the cost of equity, we have sought to develop an approach that can be consistently applied over time, makes use of available (but imperfect) market evidence, and based on the CRU's guidance, would permit the CRU to set a single allowed cost of capital for the offshore price control.

Our approach is to assume that an investor would adopt a medium-term investment horizon for their participation in the offshore grid programme and will look for a return on investment consistent with comparable investment opportunities that reflect a range of construction and operating risks over this period, as will be the case with EirGrid's delivery of the offshore programme during PR6 and PR7. However, we also identify how allowed returns might be adapted to reflect an evolution of the offshore programme and its risks over time.

2.3. Approach

We have sought to develop a step-based framework that could, in principle, be used to define the cost of capital for the offshore grid over multiple price reviews by the CRU, to support regulatory predictability and stability over time. We have illustrated this framework in Figure 2.2 below.

Our approach to defining the offshore WACC is consistent with CRU regulatory practice and is underpinned by the following principles and objectives:

- Ultimately based within the framework of a **benchmark notional entity** – consistent with CRU/2024/99 and CRU/2020/029[25].
- **An investor driven perspective.** Whilst estimating the cost of capital should recognize the specific context of the offshore grid in Ireland, it should be assessed by reference to a global set of comparable investment opportunities and reference points. [26]
- **Evidence driven and reasoned**, noting that there is no 'pure play' comparator that reflects the specific circumstances and features of the offshore asset owner role in Ireland.
- **Balanced package** – the offshore price control package, including the allowed cost of capital, needs to be consistent and balanced as a whole.

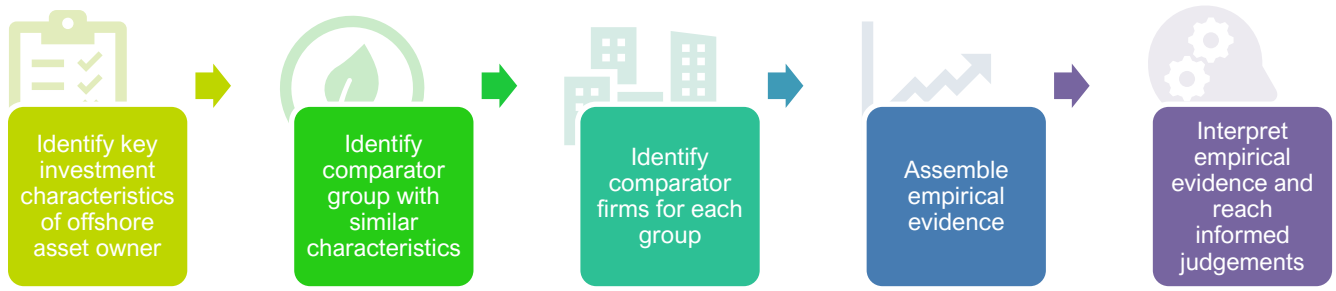
[23] Now the Competition and Markets Authority (CMA)

[24] See Appendix A for a discussion of this precedent.

[25] CRU (2020): 'Cost of capital – CRU Approach', CRU20029-Cost-of-Capital-CRU-Approach-Information-Paper.pdf

[26] Being able to identify what comparable investment opportunities to Ireland's offshore grid is, therefore, central to our approach and identification of the relevant evidence base.

Figure 2.2: Step-based approach to estimating an offshore cost of capital



Source: CEPA

Our first step is to characterize the offshore asset owner role and business characteristics, both in PR6 and looking forward over the medium term to PR7 / future control periods. From this, we identify a comparator cohort that could provide relevant evidence and data to inform decisions on gearing and the cost of equity as they share aspects of these characteristics. We then interpret this evidence to reach overall views on what might be an appropriate range for the cost of capital given the principles and objectives we outline above. We note that:

- Onshore networks and returns set for other assets help provide benchmarks, but as discussed in later sections, do not have the exact equivalent risk profile and characteristics of Ireland's offshore grid.
- The absence of perfect comparators means that use of a broader set of comparators/ benchmarks is required in the offshore asset owner context.

Consistent with the approach we have used to estimate the cost of capital for onshore networks in PR6[27], we have focused on Eurozone market evidence to inform our estimates of the economy wide parameters of the WACC – such as the risk-free rate. We assess the cost of capital independent of ownership structure and independently define an appropriate range for gearing consistent with a financeable outcome.

Cost of equity

Consistent with CRU precedence and guidance, we have sought to estimate the cost of equity primarily through the lens of a CAPM framework. The CAPM relates the cost of equity to a 'risk-free rate', the expected return on a market-wide portfolio of investments and the equity beta:

$$rE = rf + \beta E * (TMR - rf)$$

- rf is the **risk-free rate,** which is the theoretical return an investor would expect to earn on a riskless investment.
- βE or **equity beta** is a business-specific measure of an investor's exposure to systematic risk that cannot be reduced by holding a diversified portfolio of investments.
- TMR is the **total market return,** representing the expected return on a market-wide portfolio of investments.

[27] CEPA (2025): 'PR6 Onshore Cost of Capital'

The **asset beta** is the equity beta of the firm removing the effect of gearing.[28] Asset betas allow for more precise comparisons of risk across firms with different levels of gearing.

Within the CAPM framework, only risk which cannot be eliminated through diversification – systematic risk – is relevant for determining an investor's required return on equity. This definition of risk is captured by the beta term, which measures the covariance of changes in an asset's value and changes in the value of the market index.[29]

The CAPM framework as a result distinguishes between:

- **Business-specific risks**, which are unique to a particular investment. Equity investors can eliminate their exposure to such risks by holding a diversified portfolio. In a sufficiently diversified portfolio, on average, business-specific risks that cause lower returns for one investment will be offset by different business-specific risks that create higher returns for another investment.
- **Systematic risk**, which is the variability in returns that cannot be removed through diversification. Systematic risk is associated with factors that impact all investments in the portfolio. A diversified investor requires an overall return that is commensurate with the risk of its portfolio as a whole.

Although non-systematic risk does not affect the cost of equity in the CAPM framework, this does not mean that it is irrelevant to investment decisions. When considering a project, investors will require that expected returns are at least equal to the cost of equity. Even if it does not affect the cost of equity, a business-specific risk might be reflected in the investors' decision-making as a change in the forecast cash flows and therefore in the expected returns of the asset. In addition to a focus on systematic risk, the CAPM framework rests on several other assumptions, including a normal and symmetrical distribution of returns around the mean. There are a range of views on how regulatory determinations should account for these assumptions.

We have assumed in our analysis, that the regulatory framework CRU has put in place for offshore is broadly consistent with these assumptions. And whilst our approach is primarily CAPM based, consistent with regulatory best practice, we have considered other sources of market evidence and regulatory precedent to inform and cross check to the overall judgements and conclusions on the cost of equity.

Cost of debt

In financing its offshore investment programme, EirGrid has stated that its objectives are to:

- Secure a 'strong' investment grade rating on a standalone basis to ensure financial resilience and access to debt funding at low cost.
- Issue long-term benchmark-size public bonds (i.e., at least €500m) appropriate to the life of its assets, supplemented by loan (revolving credit) facilities.
- Ensure that committed financing is available at least 12 months ahead of asset transfer to meet going concern requirements.
- Maintain alternate liquidity to meet asset transfer requirements arising from Phase 1 investment in offshore grid in the event of debt market disruption.

EirGrid's proposal is that on a 'standalone' basis, it will seek an issuer rating that is higher than the minimum rating considered investment grade, namely Baa3 (Moody's) or BBB- (S&P and Fitch). We have developed an estimate of EirGrid's cost of debt in PR6 and future price control period based on the following assumptions:

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[28] The asset beta is calculated as: *(βe x (1 – gearing)) + (gearing x debt beta)*. In contrast, an 'unlevered beta' assumes that the debt beta is zero.

[29] Defined more formally, the beta of security i is calculated as the ratio of the covariance of security i's return and the market portfolio return, and the variance of the market portfolio return over a specified period. The beta therefore measures the contribution of a security to portfolio risk.

- EirGrid will require a comfortable investment grade credit rating for its investment programme and will raise its debt from public bond markets.
- EirGrid will benefit from a liquidity building block and cost of debt true-up mechanism which will directly remunerate EirGrid for costs implicitly provided for in debt cost allowances in other determinations.[30]

As we discuss in section 6, it is recognised that the offshore asset owner in Ireland will be a new issuer in the public bond market. As a result, there is the possibility that it may incur, for a period of time in its initial financing, a premium on its debt compared to some external market benchmarks.

Notional gearing and consistency of WACC parameters

In theory, economic regulators should set the notional gearing ratio for regulated utilities equal to the 'optimal' range for the gearing ratio from the investor's perspective. If this is correctly set, together with the other WACC parameters, the regulated business will be able to secure the required debt and equity in the 'optimal' proportions and sustain an appropriate capital structure and credit rating in perpetuity.[31]

Finance theory on optimal capital structures suggests that companies operating in competitive markets, and where interest on debt is tax deductible, should choose a gearing ratio where the marginal benefit (from the interest tax shield where applicable) of additional debt just equals the marginal cost of default risk. At low gearing ratios the tax shield benefit is achieved with little additional default risk, but at high gearing ratios the marginal tax shield benefit may be reduced (because there is little or no remaining tax capacity) and the marginal default risk will rise significantly (especially at gearing ratios in excess of around 80%). Marginal default risk, in turn, is a function of the volatility (uncertainty) of revenues and costs of the company in question.

This analysis suggests there is **an industry-specific range for the optimal gearing ratio** that should be used for setting the WACC and that a range of external factors are relevant to determining what is this optimal range in a regulated utility context such as the offshore grid programme in Ireland. One of the relatively unique features of regulated utilities (compared to companies in other sectors of the economy) is that the impact of sector risks on investors and the optimal range for gearing will be highly influenced by the regulatory framework which applies to the company. Depending on how risks are shared between the company and customers under this framework (e.g., the degree to which outturn costs can be passed through into charges) will influence the risk of default and, therefore, what investors might view to be an appropriate, optimal, range for gearing for that sector.

All else equal, the greater the degree of underlying risk (cost risk, operational & service risks, etc) the lower will be the optimal gearing range. At the same time, the more the regulatory regime shares risks with customers, the higher will be the optimal gearing range, at least from an investor's perspective.

From a broader consumer perspective, lower levels of gearing are likely to make the company more financially resilient, able to manage underlying risk better and maintain sufficient headroom to maintain the target credit rating for the notional company. But this headroom could also be provided through other means – for example, via price control reopeners, or risk mitigation measures (e.g., to manage low probability exceptional events), rather than via lower gearing. The assumption of an optimal range for gearing in the offshore grid context, therefore, needs to be assessed with reference to the role that the regulatory framework plays in determining a robust and achievable level of gearing given the cashflow risks which the company is exposed to.

As with other elements of the cost of capital, our approach to estimating notional gearing for offshore grid is to benchmark to market evidence and regulatory decisions. We consider the characteristics of the offshore programme and comparator and credit rating data to inform our judgements.

[30] For example, costs of carry that might arise from a regulated business being a relatively infrequent issuer.

[31] It should be noted that the use of a notional gearing ratio does not mean that the regulator expects companies to adopt this capital structure.

It is important to note that decisions on the overall WACC require consistency of the assumptions used across the cost of debt, equity and gearing. A decision, for example, that assumed very high risk when informing the costs of debt and equity would likely be inconsistent with an assumption that the regulated business is also able to maintain a very high level of gearing. Similarly, in circumstances where investment and cashflow risks are low, it might be expected, all else equal, that the debt capacity of the regulated business to be higher.

If we take an example of highly geared structures, e.g. OFTOs (operational phase) in Great Britain, OFTO's capacity to achieve high (80-90%) levels of gearing in recent tender competitions reflects that they have relatively limited risk through their debt instruments, contracts and the overarching regulatory framework – which includes no construction activity, no demand risk etc. In contrast, businesses perceived to be subject to much greater cashflow risks, such as regulated retail energy companies, would be expected to operate at a lower levels of debt capacity to reflect that a higher level of equity buffer is needed to manage against downside risks.

All else equal, we would expect that if the offshore price control assumes a relatively high level of gearing – facilitated by the CRU's offshore regulatory framework and revenue model – then this would also be associated with an assumption that other elements of the cost of capital for the offshore asset owner would be consistent with the returns achieved by relatively low risk comparable investment opportunities.

In the next section of the report, we consider the relevant characteristics of the offshore asset owner for estimating gearing and other elements of the offshore cost of capital.

3. CHARACTERISTICS AND COMPARATOR INVESTMENT OPPORTUNITIES

In this section we consider the business characteristics of the offshore asset owner and the characteristics we consider are most relevant to estimating the cost of capital. We use this analysis to define the characteristics the comparators and evidence base used in subsequent sections of the report would ideally capture to inform our analysis and judgements on the parameters of the offshore asset owner's cost of capital.

We discuss how the offshore asset owner function will be responsible for delivery of substantial investment and operating programmes in PR6 and PR7. As well as creating a requirement for substantial sources of new financing, delivery of these programmes will require the business to manage a series of business risks with financial impacts. The CRU's proposed regulatory framework appears to provide substantial mitigations for investors against these risks, in particular, strong pathways to cost recovery and guardrails against exceptional events.

We conclude that to inform our estimates and judgements of **gearing** we would expect the comparator cohort for the offshore asset owner to have robust regulatory structures in place which support a comfortable investment-grade rating. We would also expect that part of the comparator cohort and evidence base would reflect sectors where a high quantum of investment has needed to be deployed at pace with construction, and where the regulatory framework / contract has protections / mechanisms to facilitate this high pace of investment.

As there is no perfect comparator to the offshore asset owner in Ireland during PR6 and PR7, we conclude the above factors mean that precedents of gearing levels across a range of energy network utilities and regulated "projects" provide relevant evidence for determining an appropriate range for notional gearing.

From an **equity returns perspective**, we conclude that whilst the offshore asset owner shares investment characteristics with onshore energy networks, there are also several unusual and distinct characteristics of the offshore investment opportunity in Ireland. This means a wider cohort of comparators than we have used to estimate asset beta for the onshore network price controls in PR6 need to be considered.

3.1. BUSINESS CHARACTERISTICS

EirGrid's role as the offshore asset owner will comprise a range of development, construction, operating and financing activities related to the delivery of the offshore grid over the next 10-15 years.

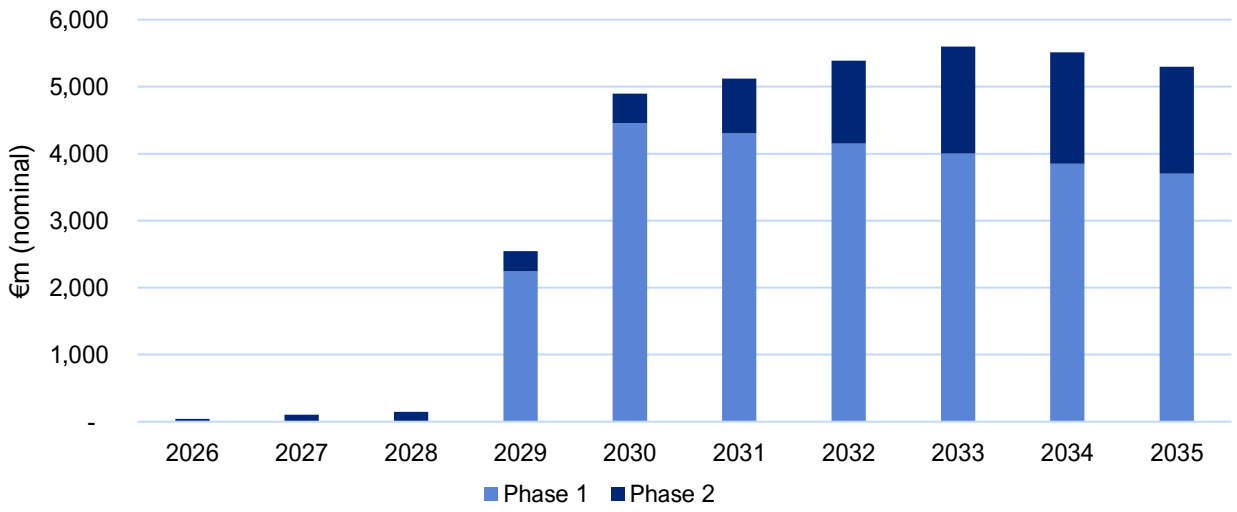
Investment activities

In PR6 and PR7, EirGrid's offshore business will scale significantly as a result of the acquisition of six[32] developer led Phase 1 projects and EirGrid's build out of the offshore grid off the south coast of Ireland ('the Phase 2 Tonn Nua project'). EirGrid will make "Asset Transfer Value" (ATV) payments to each of the Phase 1 developers, with the latest estimate of the total cost to facilitate the transfer of these six projects being €3.8bn (2024 prices). The total capital cost of the offshore grid associated with Tonn Nua remains a topic of discussion, but EirGrid's latest estimates suggest the total cost, including development expenditure (devex) and construction expenditure (capex), could be in the range of €1.6-€2.3bn depending on the provision made for risk and uncertainty.

The offshore RAB is, therefore, expected to grow significantly over the next two price control periods, starting from a minimal asset base from the start of PR6 as illustrated in Figure 3.1 below. Whilst the current focus is on the development and delivery of Phases 1 and 2 of Ireland's offshore grid, there are potential future phases of development which mean that the offshore RAB could grow substantially beyond PR7. Whilst PR6 and PR7 and delivery of Phases 1 and 2 can be characterized as a period of high upfront investment followed by limited growth opportunities, the broader offshore programme may provide an opportunity for growth.

[32] We note that development of one of these projects, Sceirde Rocks Windfarm, has recently been halted by the developer.

Figure 3.1: Offshore RAB growth in PR6 and PR7

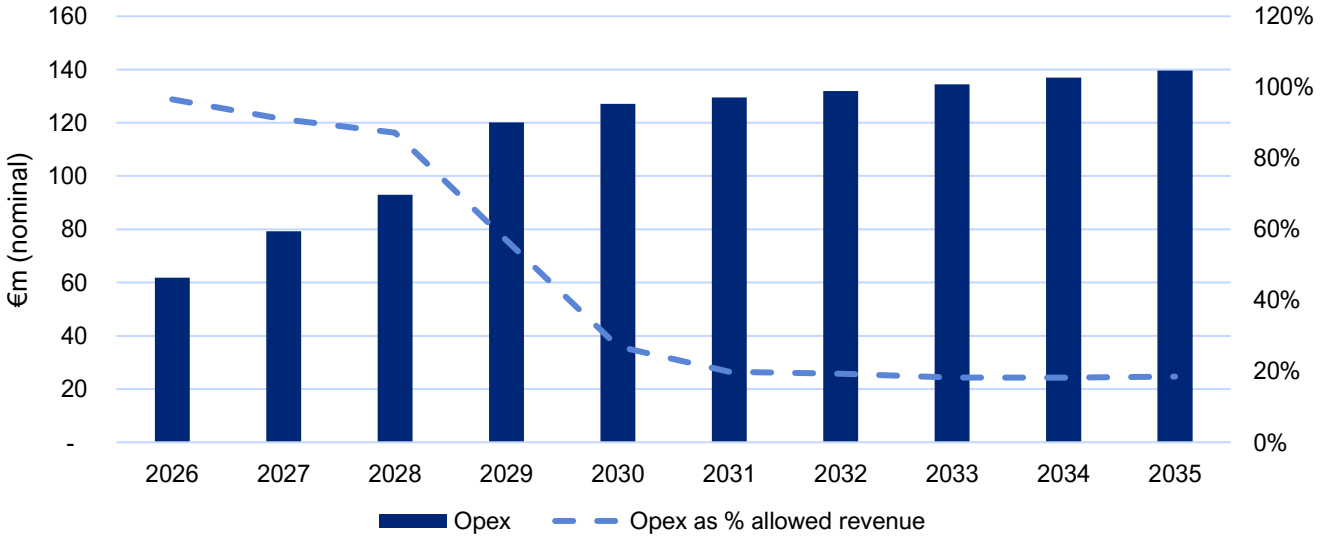


Source: CEPA analysis of EirGrid data

Business readiness and operating activities

Alongside its investment activities, EirGrid will also be responsible during PR6 for delivering a business readiness program for its new offshore function – the Offshore Asset Readiness Plan (OARP). This is a significant, business critical, establishment and operational programme necessary for EirGrid to be able to operate and maintain the Phase 1 grid assets that transfer from offshore wind developers during PR6 and PR7.[33] The figure below illustrates the build-up of EirGrid's forecast operating costs for the offshore price control during PR6. During this period of business readiness, there is likely to be significant uncertainty and variation in the offshore asset owner's required costs as: a) the OARP evolves; and b) EirGrid place new contracts for its insurances and procures new operation and maintenance (O&M) capacities and capabilities for its offshore network.

Figure 3.2: Forecast offshore operating costs in PR6 – €m and as a % of allowed revenues



Source: CEPA analysis of EirGrid data

[33] We note that aspects of the OARP may technically be considered project capex even if funded in the revenue control as opex.

A characteristic of both the investment and operational / business readiness activities in PR6 are that they are non-discretionary programmes. Unless external events intervene (e.g., delays to Phase 1 project transfers) their timelines cannot be deferred. So, whilst their underlying cost remains uncertain, they can be considered (from an investment perspective) as fixed obligations which the offshore asset owner has limited discretion over delivery.

As Figure 3.2 above illustrates, the expenditure incurred in the delivery of these programmes is significant relative to the buildup of the RAB and the offshore asset owner's returns and revenues, particularly during PR6. This means that if the risks of the programme are unmitigated, the business is likely to require a substantial quantum of risk capital to manage the inherent cashflow risks of the programmes.

Offshore revenue model

CRU/99/24 determined that EirGrid's revenue model will operate on a RAB x WACC basis with the allowed revenues comprising a series of building block components including a depreciation allowance, allowed return on the RAB, an opex allowance, a liquidity building block (LBB) and a cost of debt true-up mechanism.

As discussed in section 1, we have assumed the offshore price control will operate on a hybrid returns basis, with allowed debt returns funded on a nominal basis and allowed equity returns funded on a real basis - with the notional equity proportion of the RAB, therefore, indexed to inflation. The allowed revenues will be recovered by EirGrid through a combination of OG-TUoS and D-TUoS charges under the following structure:

- OG-TUoS charges will reflect a fixed monthly schedule of payments (not subject to indexation) over a 30-year cost recovery period using a fixed rate of return.[34]
- Variations between the offshore revenue control's allowed revenues and the OG-TUoS payments from offshore generators will be recovered from D-TUoS.[35]

The ATV payments that EirGrid will be required to make to offshore developers will be determined by the CRU following a post construction review (PCR) of the Phase 1 developers' incurred capital costs. The ATV payments will be directly reflected in EirGrid's RAB without adjustment.[36] Whilst this means that EirGrid faces no capital cost risk under its regulatory framework for Phase 1, it will face a series of interest cost risks and uncertainties in financing the programme during PR6 and PR7 as result of:

- Uncertainty over timing and quantum of Phase 1 project transfers;
- Uncertain credit rating and spreads (which will feed into its all in cost of debt);
- Unknown interest rates at time of debt issuance;
- Unknown timing of debt issuance relative to transfer payments;
- Unknown inflation (and hence uncertain nominal RAB returns); and
- Being a first-time issuer in the public bond market.[37]

It also faces liquidity challenges related to:

- Needing to secure funding ahead of RAB, i.e., to pre-finance; and

[34] OG-TUoS payments will start from the date of asset transfer / commissioning.

[35] This will include the entirety of the operating costs of the offshore grid.

[36] EirGrid is expected to incur stamp duty in the asset transfer process which will be added to the RAB together with the ATV payment.

[37] EirGrid will have no embedded debt (at least for its offshore business) and so all the debt it will raise will be issued is at market rates at the time of issue. This means all debt will be affected by EirGrid being a first-time issuer.

- Mismatch of timings for revenue collection and expenditure in the pre-funding period.

The latter issue primarily relates to OG-TUoS charges – paid by the offshore generator - not commencing until Phase 1 project asset ('ATV') transfer. This payment process could result in EirGrid facing a mismatch in the timings between revenue collection and expenditure, given there is a lag between when allowed revenues can ultimately be recovered from adjustments to other regulated tariffs, namely D-TUoS charges.

The proposed revenue model will provide significant mitigations against these risks via the LBB and the cost of debt true-up mechanism that will permit EirGrid – on a t+2 lag basis – to recover its actual interest expense up to the level of notional gearing used by the CRU to set the price control allowed WACC. This means that investors in the offshore asset owner will be substantially protected from liquidity and financing risks, with a regulatory model mitigating the risk of mismatches between allowed revenues and debt costs.

Investment governance, cost recovery and incentives

CRU/24/99 also established a framework for investment gateway monitoring and governance to manage the delivery of the development and construction periods of the Phase 2 Tonn Nua capital project. The decision was based on the following core principles:

- As part of its PR6 price control, CRU would set a capex envelope for the EirGrid's ORESS Phase 2 Project. This envelope would cover cost in both the PR6 and PR7 price controls and make an appropriate allowance for risk and uncertainty[38] given that the project is in early-stage development.
- The investment gateway process will oversee the delivery of capital project and EirGrid's use of the capex envelope during development and construction as captured in the RAB.
- If efficient costs of the project exceed the envelope, then CRU/24/99 indicated that they will be recoverable – i.e., the envelope will be extended.

The regulatory model is based, therefore, on the principle EirGrid and its investors should expect a high degree of surety of cost recovery for Phase 2, supported by this codified investment gateway process.

CRU/24/99 also discusses the cost recovery principles for operating costs which, at a high-level, imply EirGrid should assume it will be able to recover its outturn costs. The decision paper states that:

- EirGrid's liability for opex overruns will be limited, as for capex, providing it is able to demonstrate good practice in seeking to minimise cost overruns and escalation.
- The CRU would also be open to extending the Phase 2 capex gateway process to manage the firming of high value uncertain costs associated with operating the offshore grid.[39]

The Phase 2 CRU's regulatory framework will also include timely delivery and cost incentives on EirGrid performance in its delivery of the project in PR6 (development) and PR7 (construction). This will provide opportunities for EirGrid to out/under perform its revenue control. We understand that:

- the strength of the incentive is expected to be constrained in cashflow terms during PR6 and PR7 given the establishment and size of offshore RAB; and
- the penalty for under performance under this incentive will primarily take the form of a RAB adjustment which would not impact EirGrid's allowed returns in PR6 and PR7.[40]

[38] Sometimes also referred to as optimism bias.

[39] For example, insurance and O&M contract costs.

[40] That is the incentive will be a % of RAB at risk that will be applied as a RAB uplift/reduction from the start of PR8.

The CRU also proposes to put in place an availability incentive for the assets that are under EirGrid's control. Whilst this financial incentive is expected to place a meaningful level of revenue at risk from PR7 (potentially 1-2% of annual Return on Regulated Equity (RoRE), the CRU has stated that it will place defined 'tramlines' around the level of equity returns that will be put at risk in each price control period.

We understand the offshore regulatory framework will also put in place a defined exceptional / income adjusting event mechanism for managing the recovery of costs associated with addressing asset failure events should these occur over time. However, the CRU's expectation is that EirGrid will seek to draw on commercial solutions (warranties, indemnities and insurance) prior to seeking additional funding under its price control.

In contrast to some other European countries, whilst offshore wind developers in Ireland will have strong financial guarantees of availability (GoA) – both if EirGrid is delayed in constructing an offshore grid connection (Phase 2) and if an operational asset had an unplanned outage – we understand that EirGrid will not be exposed to the developer compensation under these GoAs which are a consumer risk. EirGrid's risk under these events is limited to its performance under its price control financial incentives, significantly capping its risk.

3.2. RELEVANT INVESTMENT CHARACTERISTICS

Having summarised the business characteristics of the offshore asset owner function in PR6 and PR7 and the CRU's proposed regulatory framework, in this section we:

- consider key characteristics from a credit and equity perspective; and
- the characteristics the comparator cohort and evidence base used in subsequent sections of the report should, therefore, ideally capture to usefully inform judgements on the parameters of the offshore asset owner's cost of capital.

We first consider the key characteristics of the offshore asset owner from a credit perspective, with the caveat that CEPA is not a rating agency. We then consider the characteristics we believe are most relevant to equity investor returns; in particular, characteristics for a CAPM asset beta that the comparator cohort would ideally capture.

3.2.1. Credit perspective

From a **credit perspective**, the offshore investment opportunity can be characterized as:

- a sector that will require investment to take **place at pace and at a high quantum** from a **limited starting asset base** at the start of PR6;
- during PR6, primarily an opportunity to support the **operational financing and acquisition of Phase 1 grid assets** and investment in early stage development works for Phase 2;
- during PR7 and beyond, the operation and continued operational financing and acquisition of Phase 1 projects alongside **construction of the large Phase 2 Tonn Nua project**; and
- an investment underpinned by a revenue model and regulatory framework widely applied internationally and by the CRU in Ireland, although untested in an offshore context.

As EirGrid discusses in its PR6 business plan submission, it is possible rating agencies may consider criteria in their assessments that are applied for rating Private Finance Initiative / Public-Private Partnerships during the construction phases of projects, as well as standard criteria each of the agencies apply to rating energy network utilities. The CRU's regulatory framework means there are mitigations against many of the core concerns and risks associated with infrastructure projects during development and construction from a credit perspective:

- strong regulatory commitments to cost recovery and access to consumer revenues to support financeability are in place, with EirGrid having limited exposure to planning/consenting risk;

- allowed revenues will commence prior to and during construction to support core business' credit metrics and cashflows during this period;[41]
- there is a balance of risk and reward via a package of incentives which will offer both rewards (carrot) and penalties (stick) as part of the price control's performance incentive framework;
- a strong and transparent (codified) investment gateway process will be in place, to support robust cost, risk and schedule management over the course of the project life cycle.

The offshore asset owner's regulatory framework, therefore, constrains the cashflow risks that will have to be managed by the equity wedge of the business. While we have not sought to model the risk from a bottom-up basis, all else equal, we might expect that this increases the capacity for the offshore asset owner to adopt a more highly geared capital structure than might be achievable in some other contexts.

We assume in our analysis that the offshore asset owner would seek to maintain a comfortable investment grade rating to support the financing of its grid investment programme. Therefore, whilst we would expect levels of gearing maintained by mature regulated energy network utilities to provide relevant evidence for judging an appropriate level of gearing for the offshore asset owner during PR6, we would also expect that part of the comparator cohort and evidence base considered would also reflect comparators where:

- a high quantum of capital investment and financing has been required to be deployed in a relatively short time period (i.e., at pace);
- the borrowing entity had responsibility for a significant construction programme alongside operating existing infrastructure (while maintaining an investment grade rating); and
- regulatory framework / contract protections are put in place to provide security over asset value and to facilitate the delivery of a significant investment programme at pace.

On the basis of these criteria, we have identified the following groups of comparators that – to varying degrees – might provide relevant evidence for assessing the offshore asset owner's appropriate level of gearing:

- Regulated networks;
- OFTOs; and
- Regulated project 'RAB' companies such as Thames Tideway Tunnel and Sizewell C.[42]

As the table below shows, we also considered construction companies as a potential comparator group. However, the absence of robust regulatory structures and protections that maintain a comfortable investment-grade credit rating in this case means we do not consider them to be strong comparators for the offshore asset owner. This reflects the role of the regulatory framework in significantly constraining the stranding / long term security of asset value and construction risks that apply to the offshore asset owner.

[41] This is a result of both the hybrid real / nominal approach to allowed returns and the CRU's decision to depreciate the Phase 2 component of the RAB from the start of PR7.

[42] Noting that Sizewell C has still to reach Final Investment Decision. In contrast, Thames Tideway Tunnel came into operation earlier this year.

Table 3.1: Relevant comparator groups (credit / gearing perspective)

Characteristics	Electricity networks	Gas Networks	OFTOs	Regulated project RAB Co	Construction firms
Investment at pace and high scale [43]	✓	✗	✓	✓	~
Stable reg. framework with constrained risk transfer	✓	✓	✓	✓	✗
Secure asset value / limited demand risk	✓	✓	✓	✓	✗
Role in construction and operation	✓	✓	✗	✓	~

Source: CEPA, Legend: ✓= broadly similar to offshore asset owner, ~= partly similar to offshore asset owner, ✗= not similar to offshore asset owner

3.2.2. Equity perspective

As discussed in Section 1, we use the CAPM to estimate the offshore asset owner's cost of equity during PR6. In the CAPM, the beta term is intended to cover systematic risk; that is, risk that investors cannot mitigate through diversifying into a broader portfolio of assets.

Data from equity markets is often used to estimate historic betas with reference to a stock market index, to inform judgements on the forward-looking value. When a regulated entity such as the offshore asset owner is not listed, an estimate of their asset beta must rely on data from listed companies which may be considered comparators; that is, they are considered by investors to be investment substitutes and have similar systematic risk. By similar systematic risk, we mean that the relationship between the comparator's future value and the chosen stock market index is similar to what we would expect for the offshore asset owner.

Fundamentally then, asset beta is determined by how the offshore asset owner's value can be expected to change, relative to changes in the value of the market index. Changes in the regulated business's value relate to the interaction of two factors:[44,45]

- Changes in expected **future cash flows**. For a regulated asset such as the offshore asset owner, value is determined by expectations of outperformance relative to regulatory allowances. Broadly speaking, for EirGrid future regulated revenues are determined by the building blocks allowance[46] and the application of

[43] Relative to the existing asset base.

[44] Similar 'decompositions' of beta have been discussed in the context of past Ofgem determinations. For example, in RIIO-1 academic work from Campbell and Mei (1993): *Where do Betas Come From? Price Dynamics and the Sources of Systematic Risk, The Review of Financial Studies, Vol 6 No. 3* was cited who decompose beta into components: market beta of news about the asset's future cash flows; market beta of news about future real interest rates (i.e., the RfR); and market beta of news about the asset's future excess returns (i.e., the ERP). More examples can be found in the literature.

[45] Expected inflation impacts both future cash flows and the discount rate, but could potentially be thought about as a separate factor.

[46] Including allowances for operating costs, return of capital, return on capital, and pass-through that might be permitted under the CRU's regulatory framework.

incentive mechanisms. Value will depend on whether the company is expected to perform better than assumed in the regulatory determination, in terms of both costs (including the cost of capital) and performance delivery (time schedule and availability).

- Changes in the **discount rate** used to convert these future cash flows to a present value. Systematic variation in the discount rate will be driven by changes in the interest rates and equity market returns. If discount rates rise, asset values generally fall. For regulated assets such as the offshore asset owner in Ireland, there is an additional effect associated with how movements in the RfR and TMR flow through to the allowed rate of return (see discussion below).

Accordingly, we consider that it is relevant to consider both factors, their interactions, and the extent to which they are a source of systematic risk, when thinking about what matters for the offshore asset owner asset beta.

We consider the following factors are also likely to be important to investors:

- The **security over long-term asset value**. Related to the exposure of investors to demand risk (see below) and the value of their investment to changes in technologies and use of the infrastructure.
- **Systematic demand risk.** Demand characteristics affect the sensitivity of returns to economic shocks that affect broader market returns. Returns are typically considered more sensitive to economic shocks if they relate to services with higher income elasticity. If the firm is subject to economic regulation, this may change how this factor affects returns and beta. For example, exposure to demand risk can be mitigated by whether under-recovery of allowed revenues can be recouped in future periods, as is the case with the offshore asset owner.
- **Operating leverage** represents the ratio of fixed costs to variable costs – the higher the proportion of fixed costs, the higher the operating leverage. All else equal, a firm with lower operating leverage may be able to reduce profit volatility (and beta) by adjusting variable costs as economic conditions change, to a greater extent than a firm with a higher proportion of fixed costs.

  Consistent reporting of costs as fixed or variable is generally not available. Assessments of operating leverage therefore tend to rely on proxy measures, which all suffer from limitations. This creates challenges for precisely controlling for this factor in practice. However, it may be a reason for selecting comparator firms that are likely to have a similar cost structure as the offshore asset owner.

With these factors, and the fundamental business characteristics of the offshore asset owner during PR6 and PR7 (see section 3.1 above) in mind, the table below outlines the characteristics that the comparator sample for the offshore asset owner would ideally capture.

Table 3.2 – Relevant characteristics to offshore asset owner

Characteristic	Description
Long term security of asset value	The value of the offshore asset owner is underpinned by a RAB-based framework that will allow EirGrid to recover its invested capital over the economic life of the offshore grid assets. Investment in Phase 1 and Phase 2 are in offshore wind farm and grid infrastructure with a significant track record of deployment internationally. EirGrid is not exposed to the underlying performance of the wind farm or asset stranding as a result of its RAB based framework. The CRU has also confirmed that EirGrid is not subject to payment risk from the OG-TUoS grid charges paid by the wind farms. **Relevant comparators may include companies that also benefit from similar RAB-based frameworks and a high-proportion of revenues are underpinned by long-term contracts that limit investor exposure to stranding risks.**

Characteristic	Description
Limited / no exposure to demand risk	EirGrid has no exposure to demand risk as a result of the form of its revenue control, which is a revenue cap. As noted above, it is not exposed to the underlying performance of the wind farm associated with its offshore grid assets and none of its performance incentives expose EirGrid to demand risks. EirGrid will be subject to a form of availability incentive. **Comparators will be relevant if they also face limited / no demand risk either as a result of long-term contracting arrangements or due to risks being mitigated by a regulatory framework. Comparators that also face availability-based revenue streams / incentives may also be relevant.**
Returns reflect changes in discount rates	As outlined above, if discount rates rise, asset values in general – for the offshore asset owner and the broader stock market – will fall. However, CRU's determinations may reflect such movements in regulated company allowed returns – reducing the sensitivity of its value to changes in discount rates, relative to the broader stock market. This feature creates a dynamic between macroeconomic conditions and allowed returns that may be different to unregulated assets (or regulated assets that operate under a very different framework). **Comparators may be relevant if they share similar features in terms of their economic regulatory framework.**
Constrained scope to outperform the contract / regulatory settlement related to costs and availability	As discussed above, the proposed regulatory framework for EirGrid includes a series of financial incentives related to the development and construction phases of Phase 2 and maintaining availability of offshore grid assets. In principle, there may be scope for EirGrid to outperform the costs assumed to set its revenue control, and there could be a systematic component to this under/out performance (for example, in how cost shocks impact EirGrid and the wider economy / stock market). However, as the discussion above illustrates, the scope for EirGrid not recovering its costs and outperforming its regulatory settlement is expected to be limited. **Relevant comparators might be expected to have some (albeit limited) scope for outperformance of the revenue control, but the form of regulation and basis of long-term value for the investor might be closer to investment opportunities under cost of service / rate of return style regulation.**
Limited exposure to financing and inflation risks	As discussed above, whilst EirGrid will need to execute a significant offshore financing programme during PR6 and PR7 the form of revenue control is intended to substantially support the business with liquidity and financing cost recovery via the proposed LBB and cost of debt true-up mechanism. The CRU's proposal to adopt a hybrid returns basis for setting the offshore price control, also reduces the risk to investors from inflation. **Relevant comparators may have constrained financing and inflation risks potentially because of similar adjustment mechanisms or inherently because of the commitments to company financing obligations under the terms of the regulatory framework / contract.**
Exposure to both construction and operational phases of the infrastructure project cycle	EirGrid's role as offshore asset owner during PR6 and PR7 is fairly unusual in that it will be responsible for establishing a new offshore business and will be undertaking a range of construction and operating activities. **Relevant comparators would be expected to have some exposure to both construction and operational phases of the infrastructure project cycle, albeit under contracts / regulatory frameworks that significantly mitigate / constrain the exposure to development and construction risk.**

Characteristic	Description
High upfront investment requirements and operating leverage which falls over time	As Figures 3.1 and 3.2 above illustrate, an important characteristic of the offshore asset owner will be its high upfront investment requirement and relatively high operating leverage during the establishment period of the business. This will fall over time, even by the end of PR6 assuming several Phase 1 asset transfers take place, and the risk is mitigated by EirGrid not being exposed to demand risk and having a regulatory framework that supports cost recovery, but will be a characteristic of the initial investment period. The high upfront capital requirements will expose the investor to "point in time" investment risks. **Relevant comparators might be expected to exhibit some similar investment characteristics although these features may be challenging to capture in a beta estimate. They may be observed in some other infrastructure contexts.**
A declining stream of cashflows over time	From a theoretical perspective, we would expect a declining stream of cash flows to have a lower beta relative to a growing stream of cash flows (all else equal), in particular when future investments are correlated to economic growth. This is because any factor that affects the valuation of future cash flows (e.g., a change in the discount rate) will have a correspondingly smaller effect on an asset with shorter cash flows.[47] [48] One of the differentiating characteristics of the offshore asset owner – putting to one side the potential for future phases of grid development – is that in contrast with an onshore electricity network which (based on current projections for grid development in most jurisdictions) might be expected to have a growing present value over time, the offshore asset owner (once the high upfront investment has been made in Phase 1 and 2) will have a declining present value. **Relevant comparators might be expected to exhibit similar characteristics, although as with the previous investment characteristic, this may be challenging to capture within a comparator cohort.** Nevertheless, it is important characteristic.

Source: CEPA

Based on these characteristics we identified the following comparator cohort that could – to varying degrees – provide relevant evidence to inform the asset beta for the offshore asset owner in PR6 and over the medium term looking forward to future price controls.

Regulated energy networks

This is the comparator cohort that we have used as our primary evidence source to estimate beta and the cost of equity for the onshore price controls in PR6. These companies share several characteristics with the offshore asset owner during PR6 and PR7, including:

- Security over long-term asset value via the RAB based revenue model underpinned by building blocks.

  Energy networks in Europe are also subject to revenue cap regimes that protect returns from impacts of shifts in demand / use of the network over the life of the asset. Both face relatively constrained scope for

[47] This effect has been raised in other regulatory WACC contexts. For example, in a telecommunications context, see Brattle (2016), *Review of approaches to estimate a reasonable rate of return for investments in telecoms networks in regulatory proceedings and options for EU harmonization*, p.99.

[48] For example, we can compare two hypothetical projects with the same net present value (NPV) of cash flows based on an initial discount rate, but where cashflows for the first project are spread over a shorter time period than the second. Under these conditions, a change in the discount will have a proportionally higher impact on the NPV of the project with the longer stream of cash flows.

out/under performance related to opportunities for the network to out/underperform its regulatory settlement, either via explicit performance or cost incentives, or by other means.

- The offshore asset owner and energy networks share a common feature that changes in the RfR and TMR may, to a degree, over time will feed into allowed returns, reducing the sensitivity of their value to changes in discount rate rates relative to the broader stock market. That is, both exhibit a similar risk exposure to changes in discount rates over time.
- Electricity networks are expected to deliver significant investment programmes at pace and scale over the next decade and beyond linked to decarbonization policies across the European Union (EU) and its members states. Other regulated networks will be undertaking a range of construction and operating activities, although onshore network owners, particularly electricity networks, will tend to be growing an existing operating asset base.
- Fundamentally the activities being undertaken are similar although for the majority of regulated networks the activities are onshore rather than offshore, which raise different investment and performance risks and challenges for the offshore grid development programme.

However, there are also features of regulated energy networks that mean they are not fully aligned with the characteristics of the offshore asset owner:

- Most electricity networks are expected to grow overtime and do not exhibit characteristics of high upfront investment requirements which fall over time and then result in a declining stream of cashflows.
- While the role of the offshore asset owner may expand over time[49], and be more consistent with an expected investment profile of an onshore electricity network in coming decades, at least for Phases 1 and 2, the offshore programme in Ireland is a more 'point in time' investment opportunity with an asset value that is then expected to decline over time.
- As established and mature networks, most regulated networks will not have the same degree of operating leverage and investment intensity as the offshore asset owner during its business establishment period.

Therefore, whilst we consider regulated energy networks a primary comparator group for the offshore asset owner in PR6 and PR7 we believe a wider comparator cohort needs to be considered.

As core features of the CRU's regulatory framework for offshore appear intended to offer high surety of cost recovery – with constrained opportunity for under/out performance – we have considered evidence from both European energy networks and energy networks in the US which typically are subject to 'cost of service' based regulation, particularly in light of the lower risk operational period (Phase 1) which will be EirGrid's primary investment activity during PR6 and PR7.

OFTOs

OFTOs are operational offshore transmission assets with long-term inflation linked, albeit fixed, revenue streams. They offer some (albeit limited) opportunities for changes in value and are exposed to similar operating and availability risks as the offshore asset owner in PR6. However:

- OFTOs have to date only been responsible for operating offshore grid assets constructed by wind farm developers. Whilst this is equivalent to Phase 1 in Ireland, the offshore asset owner in PR6 and PR7 will also be responsible for development and construction of Phase 2.

[49] Given Irish Government policy on Phase 3 grid development.

- Further, from a practical perspective, they cannot be used to directly observe the asset beta of OFTOs. This might only be inferred by 'backing out' an asset beta from the total equity returns implied in OFTO bids, which will involve significant analytical limitations.

Whilst in principle, we consider operational OFTOs to be a primary comparator group for the offshore asset owner practical limitations in their use for estimating an asset beta mean that we consider their bid equity returns can only act a secondary source / cross check on the expected returns for the offshore asset owner.[50]

Project base 'RAB Co'

In this comparator cohort we include companies such as Thames Tideway Tunnel and Sizewell C which have some similar characteristics of activities and regulatory framework to the offshore asset owner.

However, similar to OFTOs there are limitations on how these comparators can be used practically to inform a decision on asset beta as we cannot directly observe the asset beta of either business.

Further, they are undertaking different activities than the offshore asset owner. Whilst Ofwat has provided some guidance on how it expects to approach assessing the asset beta in the operational period of the Thames Tideway Tunnel project compared to water and sewerage appointees, it is also still to make an actual determination on this issue. Sizewell C is expected to reach Final Investment Decision (FID) this year, but its proposed RAB regime is also yet to operate in practice during either construction or operation.

As a result, while we consider some of the regulatory statements of intent made around both 'RAB Co' projects are useful information and comparisons for the offshore asset owner, we consider they again provide more of a sense check for reaching judgements on the offshore asset owner's asset beta.

Construction companies

EirGrid's PR6 submission emphasizes in its assessment of the cost of equity the Phase 2 construction activities the offshore asset owner will undertake during PR6 and PR7 (see discussion in Section 5).

In principle considering construction companies might, therefore, appear a useful comparator cohort for the offshore asset owner – not least because this comparator cohort has been used to inform decisions on Interest During Construction (IDC) allowances for OFTOs and electricity interconnectors by Ofgem (both decisions are referenced by EirGrid and their advisors KPMG in their analysis).

However, there are several reasons why construction companies cannot be considered good comparators for the offshore asset owner:

- Construction companies operate in competitive markets subject to demand risks and do not benefit from the security of asset value as the offshore asset owner does. This is also the case with IDC decisions which EirGrid and KPMG reference (which rely on construction firm beta evidence) as they apply to assets which do not guarantee cost recovery / asset security to the same extent a RAB based structure does.
- Investments in construction companies will be more exposed to changes in discount rates as the underlying returns to investors will not be adapted in the same way that they are for regulated network companies as the RfR and TMR change over time.
- Construction companies are a poor comparator for the operational focus of the offshore asset owner during the period of PR6. Whilst the performance of the construction stage of Phase 2 will be an important driver of value for the project, Phase 1 is in practice a more significant part of the overall business function, as Figure 3.1 above illustrates in comparing Phase 1 and Phase 2 components of the offshore RAB.

For these reasons, we consider evidence from construction companies should only act as a cross check to evidence from other comparator cohorts. We would expect them to – at best – act as a high upper bound on the

[50] Similar to how Ofgem has used equity IRR data as part of the RIIO-2 process.

asset beta of the offshore asset owner given the differences in the activities and regulatory mitigations / protections which EirGrid will benefit from relative to construction companies. Importantly, it is those differences which also mean the offshore asset owner is likely to be able to support a higher level of gearing in its investment programme and still maintain a comfortable investment grade rating.

Contracted generation

We include in this cohort companies which have a high degree of security of their asset value from operating under long-term contracts such as contracts for difference (CfDs), Power Purchase Agreements (PPAs) etc. Typically, these contracts expose the generator to various performance / operating risks, including availability, but limit exposure to wholesale price and certain trading risks. However, there are several reasons why this cohort of companies are not good comparators to the offshore asset owner:

- The offshore asset owner is involved in fundamentally different activities – networks not generation.
- Contracted generators may be insulated from price but not volume and other trading risks.
- Long-term contracts cannot adapt to changes in costs and circumstances.[51]

One of the characteristics of contracted generation is it may share some of the characteristics of the offshore asset owner in terms of high upfront costs / investment and over time a declining asset value – in contrast to a growth infrastructure business which offers scope for outperformance / value creation linked to evolution and changes in the broader economy.

Given fundamental differences in the sector and activities of contracted generation and the offshore asset owner (generation vs. network ownership) we consider this group may only provide a cross check to the asset beta that might be sensible and reasonable to assume to set the offshore price control.

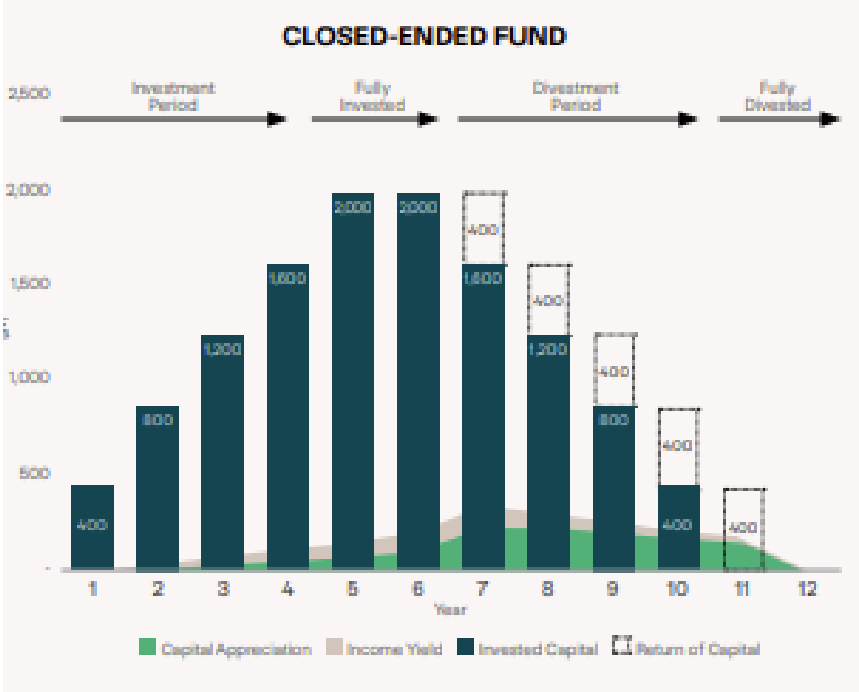
Infrastructure funds

Another comparator cohort that shares some features with the investment characteristics of the offshore asset owner are infrastructure funds. Infrastructure funds typically invest in core and essential infrastructure that deliver resilient cashflows from a protected market position. Examples in the UK include INPP and HICL.

There are examples of both closed-end and open-end infrastructure funds and the profile of investment of a closed end fund (high upfront capital commitments followed by the return of capital to investors and a declining asset value) shares some characteristics with offshore asset owner investment, where once Phase 1 and Phase 2 are invested in, capital will be returned to the investor over the period of depreciation / asset life. The investment profile of a closed end infrastructure fund is illustrated in the figure below.

[51] In contrast changes in the offshore asset owner's costs will be reflected in changes to allowed revenues over time.

Figure 3.4 – Investment profile of a closed end infrastructure fund



Source: IFM Investors[52]

However, the proposed regulatory framework for the offshore grid – and the fact there may be opportunities for growth in the offshore asset owner role beyond Phase 1 and Phase 2 – in practice mean closed-end infrastructure funds are not a good match for the offshore asset owner investment opportunity.

IFM Investors state that closed-end infrastructure funds typically suit newly emerging infrastructure that tends to have non-core characteristics with relatively high return expectations that are likely to only last for a period of time and where there is some level of stranded asset risk in the future. IFM state that the challenge in investing in these types of assets with a 'core' infrastructure view is that: their essentially tends to be unproven or not yet achieved, they are subject to significant disruption risks; and they have more competitive environments. They reference data centres as a good example of this. When they first emerged, data centres were viewed as innovative infrastructure assets, but their essentiality was unproven and offered the potential for relatively high returns.

Aspects of how EirGrid and KPMG describe and characterise Phase 2 of the offshore grid arguably seeks to portray some similarities with this investment characterisation. However, in our view, the characteristics of the offshore asset owner appear closer to core long-term infrastructure which are the focus of open-ended funds. Typically, this includes opportunities to expand/improve existing assets and participate in growth opportunities over time, as well as offering stable and predictable (typically index-linked) equity returns with constrained operating risk.

This might suggest that expected returns for the offshore asset owner would be more aligned with core infrastructure rates of return and expected exposure to the asset through the cycle, although undoubtedly the offshore grid programme in Ireland faces a challenging upfront execution period.

Similar to OFTOs and Project RAB Co comparators, there are practical challenges in using market evidence of core infrastructure funds cost of capital to inform allowed equity returns for the offshore asset owner. However, at a minimum we consider they may provide a secondary source of evidence and suggest that comparator cohorts such as regulated networks and contracted generation, which share investment characteristics with core infrastructure funds, are an important source of evidence given their shared characteristics.

[52] IFM (2023): 'Open and closed-ended funds in infrastructure portfolios.

Summary

The discussion above indicates that there is no 'pure-play' or perfect comparator cohort for the offshore asset owner during PR6 and PR7. All of the comparator groups in principle offer relevant evidence to the judgement on beta that the CRU will need to make in PR6 even if in some cases they may simply act as an upper bound or higher reference point for a reasonable assumption for asset beta to set the offshore price control.

Table 3.4: Relevant comparator groups (equity perspective)

Characteristics	Energy networks	OFTOs	Project RAB Co	Construction firms	Contracted generation	Core infra. funds
Long term security of asset value	✓	✓	✓	✗	~	✓
Limited / no exposure to demand risk	✓	✓	✓	✗	~	~
Returns reflect changes in discount rates	✓	✗	✓	✗	✗	✗
Some scope for outperformance	✓	✓	✓	~	~	~
Limited exposure to financing and inflation risks	~	✓	✓	✗	~	~
Exposure to both construction and operations risks	✓	✗	✓	✗	✓	✓
High upfront investment and operating leverage	✗	✓	✓	~	✓	~
Declining stream of cashflows with some possibility for growth	✗	~	✓	✗	~	~

Source: CEPA, Legend: ✓= broadly similar to offshore asset owner, ~= partly similar to offshore asset owner, ✗= not similar to offshore asset owner

4. GEARING

In this section we discuss notional gearing and set out our initial proposal for the range of gearing the offshore asset owner might maintain in PR6 and looking forward to PR7. We discuss EirGrid's proposal on notional gearing and review evidence of gearing levels adopted by the comparator cohort we identified in the previous section.

We conclude on a relatively wide range for notional gearing, with our initial estimate being 55-70%. Following discussion with CRU, we use 60% for the basis of calculating the WACC in subsequent sections of the report.

4.1. EirGrid proposal

In its PR6 submission, EirGrid propose that an appropriate leverage for its offshore assets is 70% of the RAB, based on its view of ratings agency guidance and some precedent of some regulated utilities maintaining gearing at this level, notably StatNet and TenneT. EirGrid's view is that this level of leverage would, in the steady state, support cashflow-based credit metrics consistent with its targeted credit rating.

EirGrid states that its ongoing discussions with its Shareholder (the Irish Government) as regards equity contributions for the offshore grid programme are consistent with 70% notional gearing. EirGrid argue that if the CRU based the specification of the notional company on a thicker equity wedge than EirGrid is able to achieve, then it would introduce unnecessary risk into the regulatory framework and delivery of the offshore programme.

EirGrid's proposals for liquidity and cost of debt true-ups are based on this view of 70% leverage for the notional company during PR6 and PR7.

4.2. Relevant evidence and context

For gearing, we consider that:

- The maximum level of gearing possible in a project is inversely related to the level of risk in the business (as discussed in section 1), i.e. high gearing is aligned with a lower risk investment environment.
- Gearing impacts on credit rating, with the objective of a comfortable investment grade credit rating acting as a constraint on the expected optimal level of debt in the regulated business.
- Evidence from regulated networks as a comparator group for the offshore asset owner suggests a level of gearing close to or below the level of notional gearing the CRU has tended to assume in its energy network price controls (i.e., 55%) although there are some notable exceptions.
- Where some firms pursue more project finance-based funding solutions, these have typically been associated with higher levels of gearing than corporate finance solutions.

We discuss separate pieces of evidence below.

Rating agency guidance

The table below sets out the levels of gearing for different credit ratings used in Moody's scorecard for regulated electric and gas networks. This is one criterion as part of a broader scorecard.

Table 4.1: Moody's (2022) regulated electric and gas networks scorecard – net debt / RAB ratios

	Aaa	Aa	A	Baa	Ba
Net Debt / RAB	< 30%	30-45%	45-60%	60-75%	75-90%

Source: Moody's.

Moody's in their rating guidance for energy networks note that "*leverage and coverage measures are critical indicators of a regulated network's financial flexibility and long-term viability, including the ability to adapt to changes in the economic and regulatory environments in which it operates.*" Specifically, on gearing it notes that the "*ratio of net debt to regulated asset base (Net Debt/RAB) and the ratio of net debt to fixed assets (Net Debt/Fixed Assets) are indicators of debt serviceability and financial leverage. These ratios provide a basis for comparing the size of an issuer's debt relative to that of its peers*."[53]

EirGrid has noted in its submissions that a level of notional gearing up to 75% would be consistent with a standalone Baa2 credit rating which provides some headroom above the 70% that EirGrid propose for the notional gearing level of the offshore asset owner in PR6 and PR7.

Comparator market evidence

In the previous section we concluded that regulated networks, OFTOs and Project RAB Co structures (such as Thames Tideway Tunnel and the proposed structure for the Sizewell C nuclear power plant) would provide relevant evidence to the level of gearing the offshore asset owner might adopt during PR6 and PR7.

For the calculation of the TAO/DSO WACC, CEPA's WACC Report (section 3.3.4) includes analysis of listed energy network comparator companies' observed actual gearing levels. We select the same companies for this analysis as are used in our asset beta calculations. We focus our analysis on a pure-play comparator set, but also include a wider comparator set as a cross check in our analysis. We find on average observed gearing levels of **our pure play comparator set of around 45-47%, and similar 45-48% for our wider comparator set**.

These comparators are relatively mature energy network businesses and while many of them are tasked with delivering sizeable investment programmes over the coming decade, will be growing their business from a significant existing network asset base in contrast with the offshore asset owner. As EirGrid identify in their submissions, there are some examples of European TSO's maintaining levels of gearing close to (or above) the level of gearing of these listed comparators. For example, Moody's report:

- **Statnett's** forecast net debt / RAB as 75% in 2024 and 82% in 2025.[54]
- **TenneT** forecast net debt / fixed assets as 70-75% in 2024.[55]

In both cases these TSOs have maintained an investment grade credit rating above the minimum level. However, it is important to note that in both cases Moody's reference the support of the Dutch and Norwegian governments as a credit strength, and in Statnett's case, highlight that its level of gearing was a credit challenge for the business alongside the size of its investment programme. It is challenging to disentangle these effects, but the two companies provide evidence that higher levels of gearing than the CRU has typically assumed in its price controls, can be consistent with a comfortable investment grade credit rating.

However, it is important to note that if a very high level of leverage is assumed in financing future investment programmes this would indicate that a limited equity wedge is needed to manage the cashflow risks of the investment programme. All else equal, this would suggest that the level of risk that sits with the company and its investors is constrained and most likely supported by protections in the regulatory framework (or in practice by commitments for contingent government support if required).

OFTOs in recent tender rounds have maintained levels of gearing as high as 80-90% albeit these are under highly secured project finance structures investing into operational offshore grid projects. There are parallels with Phase 1 of the offshore asset owner's investment programme, but the parallels are not exact, and we would not expect that it would wish to target this level of gearing as an optimal range.

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[53] Moody's (2022): 'Regulated Electric and Gas Networks'

[54] Both were forecast values at the time of publication. Moody's (2024): 'Statnett SF – Update to credit analysis'

[55] Moody's (2024): 'TenneT Holding B.V. – Update to credit analysis'

In investor presentations and reports for 2024, Thames Tideway Tunnel has stated its Regulatory Capital Value (RCV) gearing as being c. 69% during the construction period of the project. This reflects the strong RAB based regulatory framework and risk mitigations (e.g., in relation to its financing costs) that exist for the company.

Sizewell C has yet to reach FID but the Department for Energy Security and Net Zero (DESNZ) recently consulted on a methodology to set a level of notional gearing for setting the Initial WACC (IWACC) during the construction period and Ofgem has consulted on how it will approach notional gearing during the operational period. DESNZ reference the level of notional gearing that has been assumed in recent energy network price control decisions in the UK. It also states that it would be appropriate to take into consideration the anticipated pace and quantum of investment, market commentary and the availability of equity versus debt capital when setting a notional gearing.

The consultation notes that:

> "*In the case of SZC, the Secretary of State notes that the anticipated pace of investment is very different from the network companies. The Day 1 RAB will be set by reference to the development expenditure which has already been incurred by the company prior to Revenue Commencement, but that the pace and size of the construction costs post Revenue Commencement will far exceed anything which is likely to be incurred on an existing network business. Furthermore, the quantum of investment over the length of the Pre-PCR Phase is likely to be significant.*"[56]

It also discusses the importance of likely level of notional gearing that Ofgem may set – as the economic regulator – in the operations period of the project and that "*were it to set a notional gearing above that which is likely to be set by the Economic Regulator, there would need to be a glide path to enable additional equity to be injected into the relevant nuclear licensee company to bring the actual gearing in line with the notional gearing.*"

Ofgem in its economic guidance has set out the principles that it will use to set notional gearing in the operations phase. Neither DESNZ or Ofgem has indicated in its publications – including the UK Government's recent response to its consultation – what the level of notional gearing may be for SZC.

Overall, we consider statements and evidence from Project RAB Co's might support a higher level of notional gearing for the offshore asset owner given that the structures share similarities with EirGrid's regime[57] and investment programme during Phase 1 and Phase 2.

CRU decisions on notional gearing

In previous price controls, the CRU have consistently set notional gearing at 55% for use in its electricity network price control WACC. For PR5, a single network WACC was used for the TSO, TAO and DSO which reflected a 55% gearing assumption. For PR6, our proposal for the onshore price controls is a 55% gearing level both for the network WACC for ESBN and for the onshore TSO WACC for EirGrid.

Given that the notional gearing is the assumed proportion of debt financing in the capital structure of an efficient notional company, observed gearing levels in the market of similar companies, i.e. European publicly-listed utility companies, can be used to benchmark the efficient level of gearing (as discussed above). The CRU have in the past reviewed the observed gearing levels of various comparator sets. Sometimes this has been as a cross check, and CRU have opted to stick with 55% to provide predictability and stability overtime as opposed to deviating this for each price control to align with comparator gearing levels. The precedent of 55% precedent in electricity price controls stems back to PR3 where 55% was justified on the basis that:

- it would enable both ESB Networks and EirGrid (subject to performance against other financial ratios) to achieve a strong investment-grade credit rating, as had been assumed in the cost of debt analysis;

[56] DESNZ (2024): 'Consultation on the methodology to determine the Initial Weighted Average Cost of Capital in the proposed Economic Licence for SZC'

[57] Not least the key role of the RAB in the regulatory framework.

- a range of 50 to 60 per cent was consistent with a number of regulatory precedents on gearing in Ireland and the UK; and
- a range for gearing of 50 to 60 per cent was not misaligned with actual gearing imputed at PR3 for ESB Networks.

Other regulatory decisions on notional gearing

Outside of electricity, the recent PC4 and PC5 decisions in Gas have also used 55% notional gearing, with notional gearing for water being slightly lower at 50%. We also observe 55% being used in GB Electricity Transmission and Electricity System Operation, Gas distribution in Northern Ireland (NI), and Ofwat PR24. We observe 60% being used for Gas Transmission and Distribution in GB, Electricity Distribution in GB, and Gas Transmission in NI.

Table 4.4.2: Notional gearing in recent Irish and GB price controls

Regulator and Price control	Year of decision	Point Estimate
CRU PR4	2015	55%
CRU PC4	2017	55%
CRU RC3	2019	50%
CAR, DAA	2019	50%
Ofgem, RIIO-2 ET & ESO	2019	55%
Ofgem, RIIO-2 GT & GD	2019	60%
CRU PR5	2020	55%
Ofgem, RIIO-2 ED	2022	60%
UR, SRP20 TSO	2020	40%
CMA, PR19	2021	60%
UR, GT22	2022	60%
UR, GD23	2023	55%
Ofwat, PR24	2024	55%

Source: CEPA review of price control documents

4.3. Conclusions

We propose a range of **55% - 70% notional gearing** for the offshore asset owner. Our:

- Lower bound is consistent with the point estimate used in recent CRU precedent and other examples in Great Britain and would reflect an assumption that the offshore asset owner needs to maintain an equity wedge consistent with what is required for onshore networks.
- Upper bound is based more closely on evidence on gearing levels adopted in 'Project RAB Co' structures and by some European TSOs. This is still consistent with an investment grade credit rating on the basis the regulatory framework provides a strong underlying credit profile for an energy network.

In proposing a point estimate to inform an early view of the offshore WACC, we note the following:

- EirGrid states ongoing discussions with its Shareholder as regards equity contributions for the offshore programme may be consistent with 70% notional gearing.
- Similar to some 'Project RAB Co' structures - such as Thames Tideway Tunnel – in the UK, Ireland's offshore asset owner will need to deploy a large volume of capital at pace during PR6 and PR7.

- All else equal, and on the assumption that the regulatory framework is supportive of this, this might suggest that the level of gearing the business would adopt would be higher than has been the standard assumption (55%) used in recent CRU energy network price controls.
- Gearing towards the top end of the range, while higher than values CRU has used in recent price control decisions, is still consistent with rating agency guidance for an investment grade rating level.
- Despite a supportive regulatory framework, during the initial period of the offshore grid's establishment, the business might ideally maintain a level of headroom that provides some flexibility to finance a range of possible scenarios, including scope for cost escalation.

Considering these factors in the round, we assume a **point estimate of 60%** notional gearing for the offshore asset owner in PR6, subject to financeability testing.

5. COST OF EQUITY

The cost of equity for the offshore asset owner will be set under periodic price control decisions. This includes a five-year period for PR6. Any approach should provide predictability and transparency of returns as investment horizons are likely to be longer than this five-year period.

In this section we set out our initial estimate of the cost of equity for the offshore asset owner with reference to market evidence from the comparator cohort we identified in section 3, alongside consideration of regulatory precedent comparisons and cross checks of our CAPM implied returns. Given we propose to align the economy wide parameters of the CAPM with our proposals for the onshore price control WACC – i.e., the RfR and TMR – the focus of this section is, therefore, on beta and cross-checks of our CAPM derived range.

5.1. CAPM ANALYSIS

5.1.1. Beta

EirGrid proposal

EirGrid, with support from their advisers, KPMG[58], propose assets betas of 0.37-0.40 for Phase 1 grid investments, and 0.45-0.55 for Phase 2 grid investment.[59] In the case of the Phase 2 proposal, it is unclear from EirGrid's submission if this is viewed as an enduring proposal for its asset beta – i.e., a "through the project life cycle" proposal, or a transitional uplift to beta during development and construction which would then be expected to revert once the project enters operations and becomes equivalent to Phase 1 grid assets.

To estimate the asset beta, a relative risk assessment was conducted by KPMG against a set of comparators and what are considered relevant risk factors for beta. This is used to calibrate a range of the asset betas for offshore. The results of this assessment are summarised in the figure below with the proposed asset beta ranges for the Phase 1 and Phase 2 grid overlayed to the comparator estimates.

For Phase 1, KPMG conclude that the level of risk offshore is comparable to EirGrid onshore / ESBN under PR5 at the lower end and NGET under RIIO-T3 at the upper end. For Phase 2, KPMG conclude that the level of risk offshore is higher compared to Phase 1 and RIIO-T3 at the end lower end and below nuclear at the higher end.

Whilst we agree that Phase 1 should be viewed as lower risk than Phase 2, and as we discuss in section 3, we are sympathetic to the financing pressures and challenges with the delivery and execution of the offshore grid programme in Ireland, there are several aspects of KPMG's conclusions we consider are challengeable.

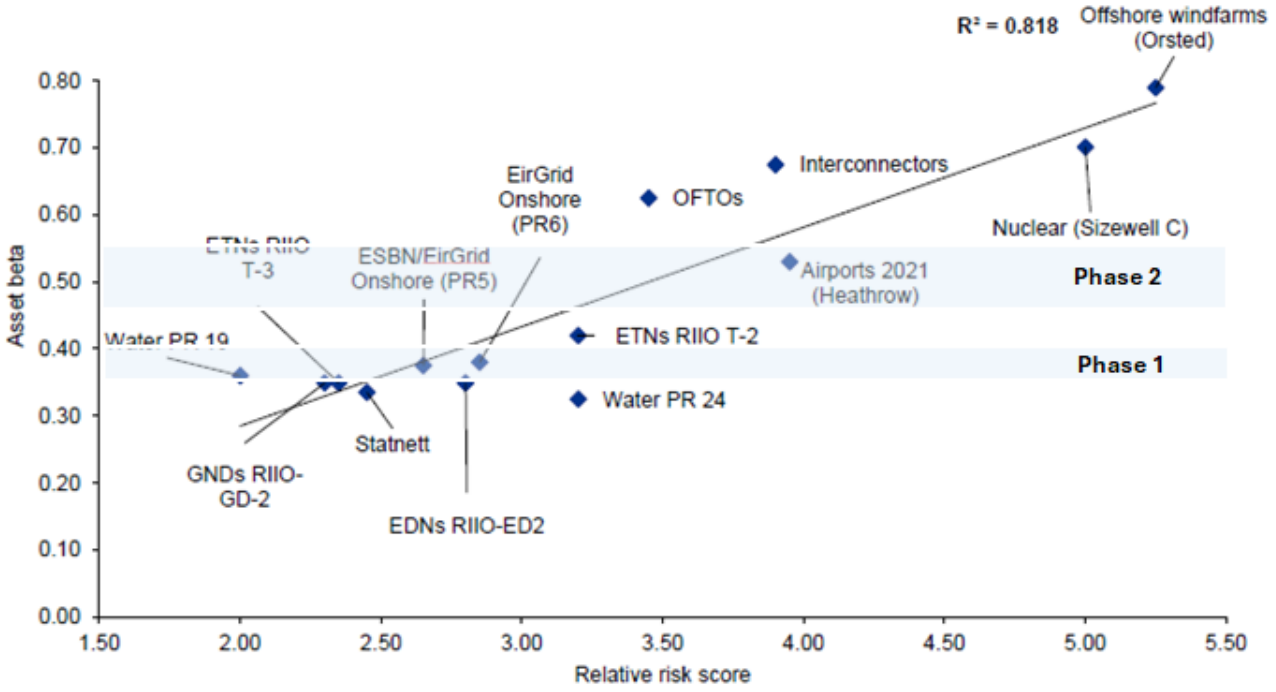
First, there are several examples that are quoted as precedents, in particular National Grid in RIIO-T3, that are in fact not regulatory decisions (and, therefore, precedent) at the current time. Rather they are company business plan proposals. The evidence that informs these proposals is not made clear in KPMG's analysis and they may not be accepted by Ofgem in their entirety at its Final Determination.

Second, the conclusions reached are largely based on qualitative judgements of how the regulatory framework for the offshore asset owner compares to UK regulated sectors. There is limited comparison for example, to recent regulatory decisions (including for offshore grids) in Europe and as discussed in section 3, we consider several of the groups viewed as relevant comparators, in our view, have important differences to the offshore asset owner which make them, at best, imperfect comparators. For example, at the top-end of its range for Phase 2, KPMG conclude that the offshore asset owner's asset beta is equivalent to Heathrow airport where the regulatory framework exposes the regulated company to systematic demand risk. Demand risk can be an important source of systematic risk, but the offshore asset owner is not exposed to demand / asset stranding risk.

[58] KPMG (2024): 'Assessment of financeability at PR6'

[59] We understand these are proposed alongside a proposed debt beta of 0.075.

Figure 5.1 – Correlation matrix between relative risk scores and asset beta comparators [60]



Source: KPMG, we note care needs to be taken in translating these values into CRU's regulatory framework where the precedent has typically not been to use a debt beta and so asset beta is equivalent to unlevered beta.

Third, there are references in several cases to EirGrid's limited experience in developing a large asset base and operating in a marine environment. It is unclear why this is relevant to judgements on asset beta, which should reflect non-diversifiable systematic risk. In any case EirGrid in practice does have experience of operating in a marine environment from its development of two electricity interconnectors.[61]

Fourth, while these comparator groups are not ultimately used in the asset beta ranges that are proposed, reference is given to offshore transmission ('OFTOs') and interconnector IDC allowances (which relies on analysis by Ofgem that uses construction company betas) together with offshore generator developer betas, as capturing similar risks to the offshore asset owner activities during Phase 2 development and construction. However, these comparators do not share an important characteristic with the offshore asset owner that it has long term security of its asset value via the RAB framework which the CRU has proposed. Firms like Orsted – and wind farms during construction of offshore transmission links – do not have the same security of asset value.[62]

The framework of analysis used also appears to us to be more from the perspective of assessing the credit risk of the comparators as opposed to defining the most relevant characteristics for the cohort to estimate beta using a CAPM framework. There are no pure-play or perfect comparators to the offshore asset owner during PR6 and PR7: whilst a ranking of the risks compared to the comparator groups is relevant to the assessment of beta, fundamentally the judgement if taking an investor perspective, is which of the characteristics of the comparator cohorts are most important for identifying a comparable investment opportunity.

[60] Note we believe there is an error in the labelling of RIIO-2 and RIIO-2 references, which we believe should be the other way around – i.e., RIIO-T3 is considered to be relatively higher risk compared to RIIO-2.

[61] Rather than beta risk, the comparisons made appear more aligned with a view that the investment opportunity in the offshore asset owner poses significant asymmetric risks for the investor to be remunerated through the allowed asset beta. However, how those asymmetric risks will arise, and the materiality of their impact is not discussed in the analysis.

[62] This has been most clearly demonstrated recently with the write-downs that firms like Orsted have had to make in recent years due to the cancellation or delay to offshore wind development projects.

We are in agreement with EirGrid and KPMG regarding the financing challenges and upfront investment / execution risks of the offshore programme, for both Phases 1 and Phase 2. But we also consider there are substantial mitigations of the risks for investors.

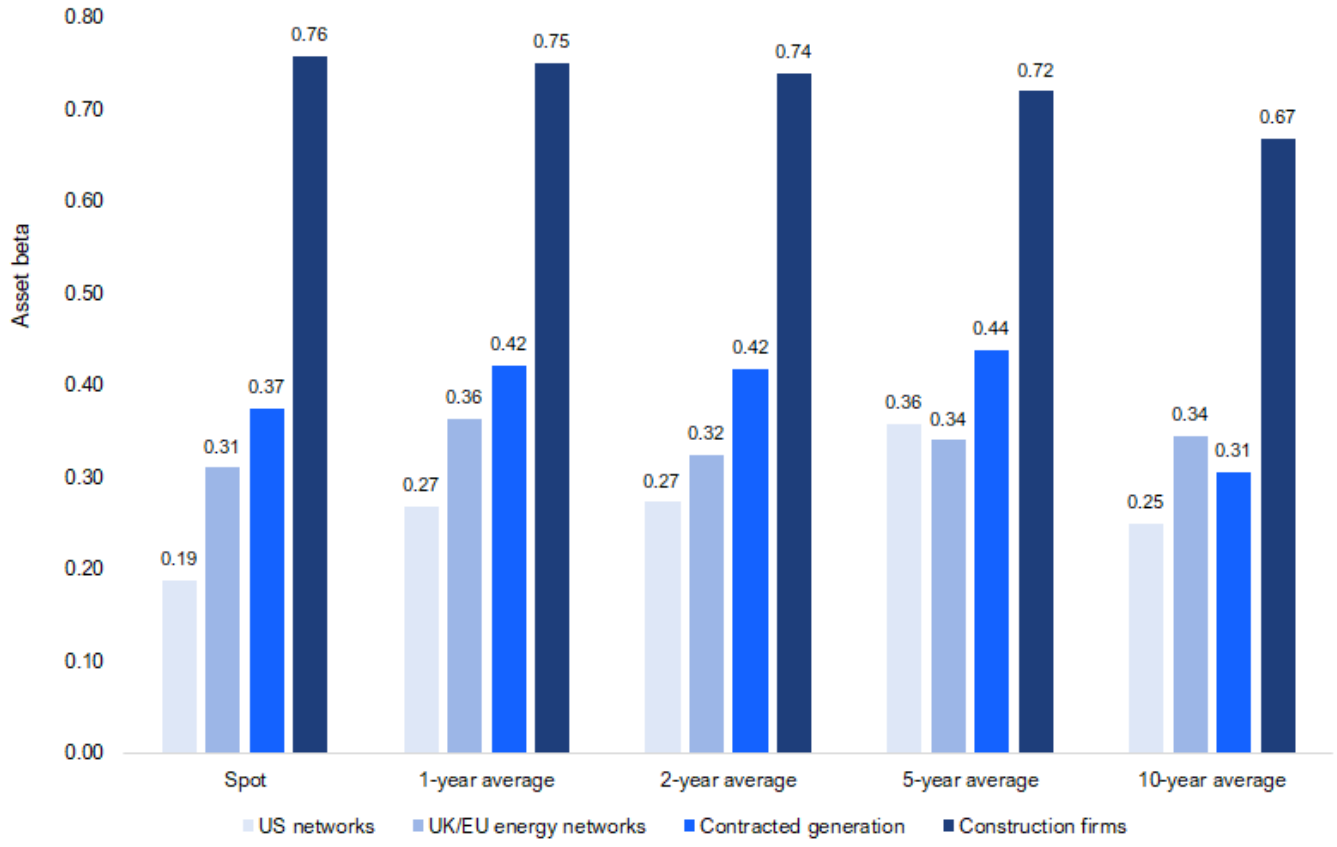
Market evidence

This section presents a summary of the empirical beta estimates from our comparator cohort sample. We present a range of asset beta observations from different periods, ranging from spots to longer-term averages. In all cases, we report 2-year asset betas which assume a zero-debt beta consistent with CRU regulatory precedent. Further details on the comparators we have used and the estimated betas, are provided in Appendix B.

Figure 5.2 below shows the asset beta ranges when averages are taken across each of the comparator groups.

Alongside UK/EU energy networks used for our onshore WACC estimates, we also report betas for several US energy networks. The US energy networks operate in a different jurisdiction than the offshore asset owner (i.e. the US vs. UK/EU) and for this reason, together with some other factors[63], we would be cautious in drawing overly strong conclusions from this evidence base. However, as discussed in section 3, US energy networks typically operate under cost of service ('rate of return') style regulation which has some similarities with the Irish regulatory regime and mitigations the offshore regulatory framework is intended to provide the offshore asset owner. To the extent that the US regime is viewed as lower beta risk relative to European networks, it may also provide a relevant comparator group for judging the beta that should apply for Phase 1 (operational) grid investments separately.

Figure 5.2: Average beta results – averages by comparator group and time period



Source: CEPA analysis

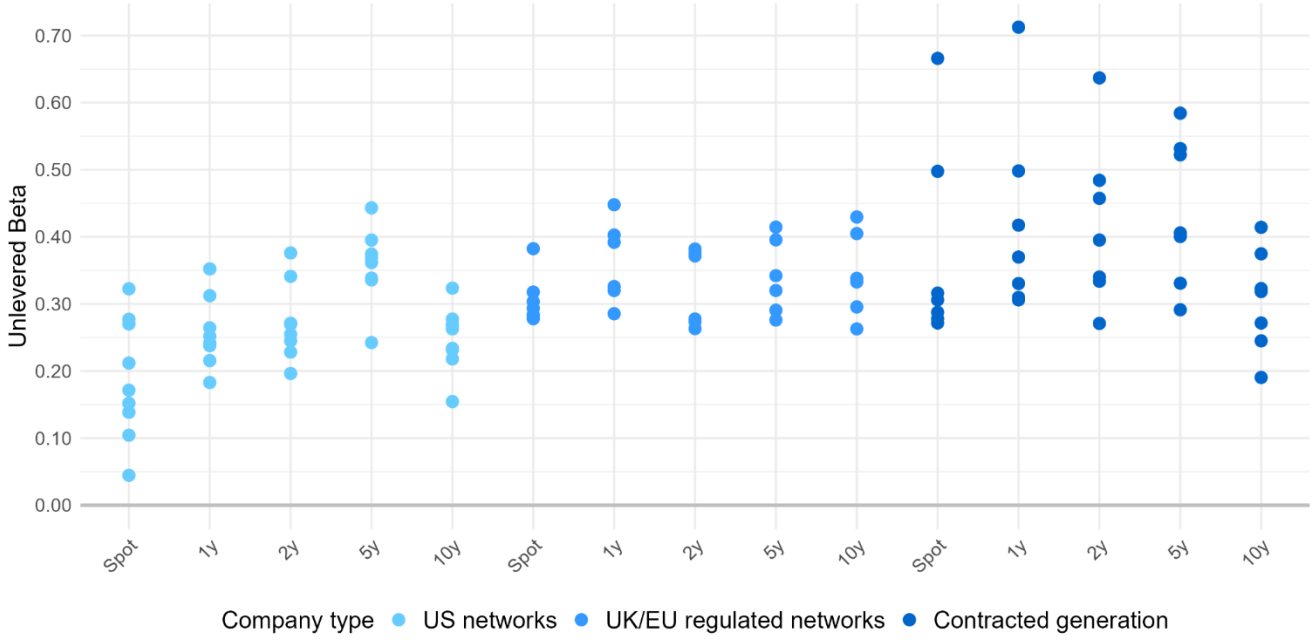
[63] Including that these are mature energy network companies managing an existing asset base.

As Figure 5.2 shows, construction firm betas – which have informed some of the IDC decisions that Ofgem has made for offshore transmission projects and interconnectors during development and construction – have higher betas than the other comparator cohort. For the reasons we set out in section 3, we do not consider these are close investment substitutes for the offshore asset owner. However, to the extent the technical risks and construction activities EirGrid draw out in their submissions – engineering and construction challenges, regulatory framework uncertainties, First of A Kind (FOAK) risk (from an EirGrid perspective), offshore / marine operating environment and supply chain issues – are considered important, giving some weight to this evidence might justify why a premium[64] could be justified within the expected equity returns of the offshore asset owner.

The contracted generation group while again an imperfect comparator group for the offshore asset owner – networks vs. generation, and different regime/contractual arrangements – provides another perspective. Activities that have infrastructure like features, but are not mature energy networks, can also have betas which are not inconsistent with the ranges typically debated for regulated utilities. As we discussed in section 3, aspects of the investment proposition in contracted generation – long term contracts, with high upfront investment, availability risks and security over long-term asset value as a result of the contractual arrangements – have some similarities with the offshore asset owner during PR6 and PR7. But there are also aspects – e.g., how the regulatory framework will adapt allowed revenues and returns over time and the inherent nature of the activities – which mean this group might not be considered a good comparator cohort for the offshore asset owner.

Figure 5.3 below illustrates the range of comparator group results by averaging period, excluding construction firms for the reasons noted above. Further information on the comparators in each sample is provided in Appendix B.

Figure 5.3: Range of comparator group results by averaging period (excluding construction firms)



Source: CEPA analysis

Overall, we consider this market evidence gives a relatively broad range for what the offshore asset owner's asset beta could plausibly be depending on the weight placed on particular investment characteristics and, therefore, particular comparator groups. Given that contracted generation is an imperfect comparator for what is ultimately a network investment, we would tend to see the evidence associated with this cohort as providing a natural upper bound for an unlevered beta assumption for PR6. The evidence from the US and UK/EU networks helps to inform a lower bound and investment opportunity closer to the operational characteristics of Phase 1.

[64] Relative to mature onshore networks.

Regulatory precedent

Onshore electricity networks (UK and Ireland)

We present our qualitative assessment of risk for both Phase 1 and Phase 2 spend relative to ESBN and RIIO SHET T1. We discuss other examples of regulated network betas within this sub-section. The relevant unlevered betas for our two principal comparators are:

- ESBN PR6: 0.31-0.35.
- RIIO-T1 SHET: 0.43.

The RIIO-T1 SHET case involved an asset beta that was 0.05 higher than the equivalent asset beta for National Grid Electricity Transmission (NGET). The programme had a materially higher totex-to-RAB ratio, based on transmission required to connect renewable generation in Scotland.

In Table 5.1 below, we compare the risks under OAO Phase 1 and Phase 2 to these two cases. The assessment is made for PR6 investments; consequently there is high operational leverage with no existing RAB. However, this would likely decrease as the scheme matures and some execution risk drops away.

Table 5.1: Comparison of relative risk for OAO relative to onshore – PR6

Risk type	OAO Phase 1 vs ESBN PR6	OAO Phase 1 vs RIIO T1	OAO Phase 2 vs ESBN PR6	OAO Phase 2 vs RIIO T1
Revenue (demand) risk	Similar	Similar	Similar	Similar
Long-term asset value risk	Similar	Similar	Similar	Similar
Capex risk	Lower	Lower	Similar/Higher	Similar
Opex risk	Similar	Similar	Similar	Similar
Operating leverage	Higher	Higher	Higher	Higher
Inflation risk	Lower	Lower	Lower	Lower
Financing / debt cost risk	Lower	Lower	Lower	Lower
Performance / incentive risk	Similar	Lower	Similar	Lower
Regulatory risk	Similar	Similar	Similar	Similar
Discount rate risk	Similar / Higher	Similar / Higher	Similar / Higher	Similar / Higher
Overall	**Lower/Similar**	**Lower**	**Similar/Higher**	**Lower/Similar**

Source: CEPA assessment

We consider OAO Phase 1 faces less systematic risk than OAO Phase 2. If EirGrid were only responsible for Phase 1 activities, we consider that this would be lower or similar risk to ESBN at PR6. This reflects the absence of construction risk, and the additional protections set out in the regulatory framework, though noting higher operational leverage exists during the upfront investment period in the grid.

If EirGrid were only responsible for Phase 2 activities, we consider that the risk profile sits between ESBN at PR6 and RIIO-T1 SHET. Operational gearing and capex risk point to higher risk, but we recognise the additional protections in place for the regulatory regime for the OAO.

Offshore electricity networks (France & Netherlands)

In Appendix A of the report, we look at two decisions from European regulators on the appropriate cost of capital for offshore wind – ACM (Netherlands) and CRE (France).

We note the following features:

- Both regimes involve parties responsible for constructing offshore assets, not simply operating or financing them.
- Gearing for the two comparators are 45% (ACM) and 60% (CRE).
- The starting asset betas for onshore were 0.39 (ACM) and 0.37 (CRE), higher than our assessment of comparators for ESBN at PR6.
- The nominal post-tax cost of equity estimates for onshore of 5.63% (ACM[65]) and 6.0% (CRE) sit below our proposed equivalent range for ESBN at PR6 (4.56% to 5.42% real, pre inflation adjustment)[66].
- Both apply a premium for offshore assets, however we consider that the uplift for CRE is not relevant for the OAO at PR6.
    - ACM apply a one standard deviation uplift to asset beta for risk, leading to a 0.09 increase in the asset beta. Our comparator range would imply an increase of 0.04-0.06 to a smaller starting point.
    - CRE apply a 0.50% increase to the WACC (equivalent to 1.25% on the cost of equity), but this reflects risks regarding compensation during the operational phase.

This suggests that a zero or small increase in beta may be appropriate, though higher betas are used with lower assumed market-wide parameters in these cases.

Other infrastructure sectors / RAB Co structures

There are other examples of betas that we consider could be relevant for our assessment. We discuss below a series of examples that we consider relevant for setting beta.

Table 5.2: Additional case studies for beta estimation

Case study	Discussion
Thames Tideway Tunnel - Operational phase	In assessing the beta for the operational phase for the Thames Tideway Tunnel, Ofwat economic guidance indicated that the asset beta for the operational phase could be equivalent to 0.20, reflecting lower risk than networks responsible for a mix of construction and operational activity.
Heathrow Terminal 5	For the construction of Terminal 5, the CAA opted for an equity beta at the top end of their previously proposed range of 0.8 to 1.0 to reflect the construction risk and subsequent demand risk from investment in a new terminal. However, after setting their decision, the regulator noted that an expected increase in empirical betas for BAA did not materialise.
Havant Thicket reservoir (PR24 – Ofwat)	Havant Thicket, a project undertaken by Portsmouth Water that uses the water company appointee cost of capital despite the potential for higher risk. Ofwat noted that it considered it appropriate to set a single return to blend risks over the economic life of the asset, despite the totex investment being 1.9x the size of the existing asset base.
Bristol Water (PR14 – CMA)	Bristol Water received a 13% uplift to the asset beta of water and sewerage companies, reflecting its higher operational leverage. This is equivalent to a 0.04 increase in beta.
RIIO ED2 (Ofgem) / PR24 (Ofwat)	No explicit adjustment to beta was made by either regulator, despite a material increase in the size of the investment programme, hence a step up in the totex-to-RAB ratios.

Source: CEPA

[65] Note that this figure involves an increase to the nominal risk-free rate to reflect prevailing market conditions.

[66] There is a difference in notional gearing for ACM, meaning that a comparison is not like-for-like.

Recommendation – broad range

The unlevered beta estimate for the offshore asset owner involves considerable subjectivity and judgement, given aspects of the regulatory framework are still in development and no 'pure-play' comparators exist for the group of offshore business activities in question. We have also noted our approach looks to take a 'medium-term' investment horizon in considering the characteristics and risks (and, therefore, comparable investment opportunities) used to benchmark an investor's expected rate of return from investing in the offshore network.

With this in mind, and based on a range of evidence, including empirical estimates of beta from several comparator cohorts, we have identified **a broad range of 0.30-0.40** as an appropriate unlevered beta value for the offshore asset owner in PR6, wider than our proposal for the onshore network in PR6, i.e., 0.31-0.35.

Assuming an offshore unlevered beta towards the lower end of this range would align with beta evidence from pure-play UK / European energy networks and evidence from US energy networks typically subject to 'cost of service' based regulation. This would reflect a perspective that investment in Phase 1[67] will be in operational offshore network infrastructure, with a supportive regulatory framework that substantially mitigates the operating and financing risks that are ultimately borne by the investor in the offshore grid programme.

Assuming an offshore unlevered beta value towards the upper end of the range would be more aligned with beta evidence of contracted generation and some European energy networks. This would reflect a perspective that Phase 2 development and construction activities, and the broader offshore programme's execution challenges, high operating leverage during PR6 and PR7 and "point in time" investment risks (together with the "newness" of the offshore regulatory framework during the establishment and initial financing of the offshore grid) mean an investor would expect a higher return relative to onshore during PR6 and PR7.

5.1.2. Other cost of equity parameters

The parameters for the risk-free rate and Total Market Return match our recommended estimates for both ESB Networks and EirGrid TSO for PR6, namely:

- 0.50-0.60% for the risk-free rate; and
- 6.40-6.80% for the Total Market Return.

We use also the same inflation adjustment for the offshore asset owner at PR6 – of 0.1% to 0.4% – as for our ESB Networks and EirGrid TSO PR6 recommendations.[68]

5.1.3. CAPM estimate - initial range

Overall, we conclude the cost of equity offshore during PR6 is likely to be higher compared to a more mature onshore electricity network. Despite a supportive regulatory framework, over the medium-term investment horizon there are execution challenges with the delivery of the offshore grid programme, with the business needing to operate at a high level of operating leverage before transitioning to a steadier state business more comparable to an established network company. We consider that this would drive a higher cost of equity during PR6, although for reasons that are not typical CAPM beta – i.e., non-diversifiable – risks.

On this basis, our proposal for how the CRU might set an allowed cost of equity in PR6 and PR7 would be as follows. We propose that the CRU set a baseline range for the cost of equity offshore that aligns with our recommended CAPM parameters for the onshore network, i.e., the CAPM market parameters above and a beta consistent with our proposed range onshore (0.31-0.35 on an unlevered basis), adjusting for the proposed higher level of notional gearing offshore (60%) compared to onshore (55%).

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[67] Which is expected to comprise the majority of EirGrid's investment activities in PR6 and PR7.

[68] This would apply to both debt and equity in a real returns framework. As we discuss in section 6, it would not be a necessary adjustment to the allowed cost of debt should the CRU apply the proposed hybrid returns framework as inflation expectations will be reflected directly in the nominal estimate of the cost of debt.

We then also propose that the CRU provide an additional (time-limited) uplift to this baseline cost of equity to reflect the issues and risks discussed above associated with the upfront investment period in the Phase 1 offshore grid and EirGrid's development and construction of Phase 2 during PR6 and PR7. Providing such an uplift would be consistent with the approach some other regulators have taken in setting an allowed cost of capital during periods of high upfront investment and operating leverage in new infrastructure, including offshore grids. This would be despite EirGrid's investment in the offshore grid predominantly being in operational Phase 1 projects for the next two offshore price controls, which intrinsically we view as being a low beta risk investment.

For the purposes of the forthcoming PR6 consultation, our initial proposal is that the CRU set this adjustment as a **0.55% uplift to the allowed pre-tax cost of equity** which would be broadly equivalent to adding a 0.03 uplift to the unlevered beta compared to our recommended range onshore.

However, once this upfront investment period is complete[69], we would expect this uplift to be removed and there would be a strong case for the allowed cost of equity offshore to be aligned with, if not lower than, the onshore network, given the offshore grid's enduring business and investment characteristics.

The table below summarises our proposed offshore asset owner allowed cost of equity.

Table 5.3: Proposed range for offshore cost of capital in PR6 – equity, real pre-tax

Parameter	Low	High
Notional gearing	60%	60%
Risk free rate (real)	0.50%	0.60%
Total market return (real)	6.40%	6.80%
Equity market risk premium	5.90%	6.20%
Unlevered beta	0.31	0.35
Equity beta	0.78	0.88
Cost of equity (post tax, real)	5.07%	6.03%
Tax	12.50%	15.00%
Cost of equity (pre tax, real)	5.80%	7.09%
Inflation expectations adjustment	0.10%	0.40%
Offshore uplift	0.55%	
Proposed cost of equity (pre-tax, real)	**6.45%**	**8.04%**

Source: CEPA

The 67th percentile of this range – which has formed the basis for the CRU's point estimate of the allowed WACC in recent energy network price control decisions – is a **real pre-tax cost of equity of 7.51%**.

This would suggest:

- a pre-tax equity premium of 694bps over the risk-free rate; and
- a nominal pre-tax cost of equity of approximately 9.3% (at a 2% rate of inflation), at 60% gearing.

[69] Which is expected to be the case by the end of PR7.

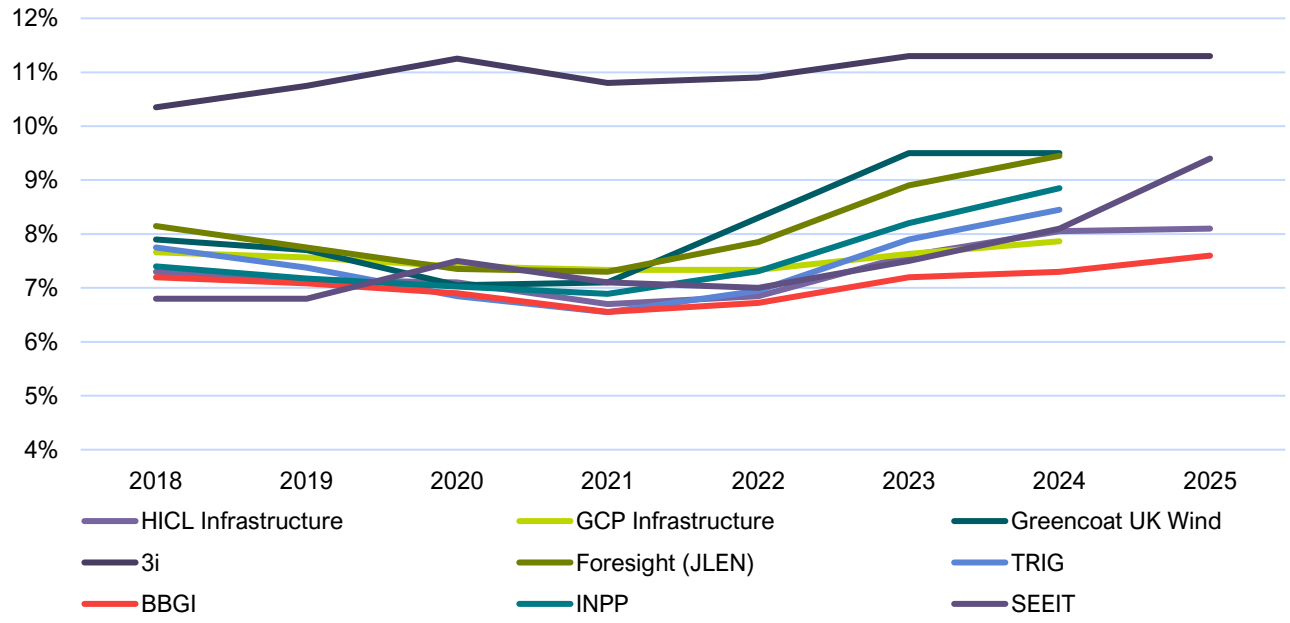
5.2. CROSS-CHECKS

We look at two market-based cross-checks to test our initial estimate of the cost of equity – infrastructure fund discount rates and quoted OFTO returns. This is to ensure that a more CAPM-based estimate is consistent with other competitive return benchmarks.

5.2.1. Infrastructure fund discount rate

We present in Figure 5.5 the discount rates for infrastructure funds. These funds operate across a range investments that may be broadly consistent with the risk profile of investments in energy infrastructure.

Figure 5.5: Selected infrastructure fund discount rates



Source: CEPA analysis.

The infrastructure funds shown operate in the UK and Europe. With the exception of 3i, the nominal equity returns are between 7-9%, with quoted premium over nominal gilts between 3-5%.

This would indicate that the proposed returns for the offshore asset owner are not inconsistent with the evidence from infrastructure funds and are, if anything, slightly higher.

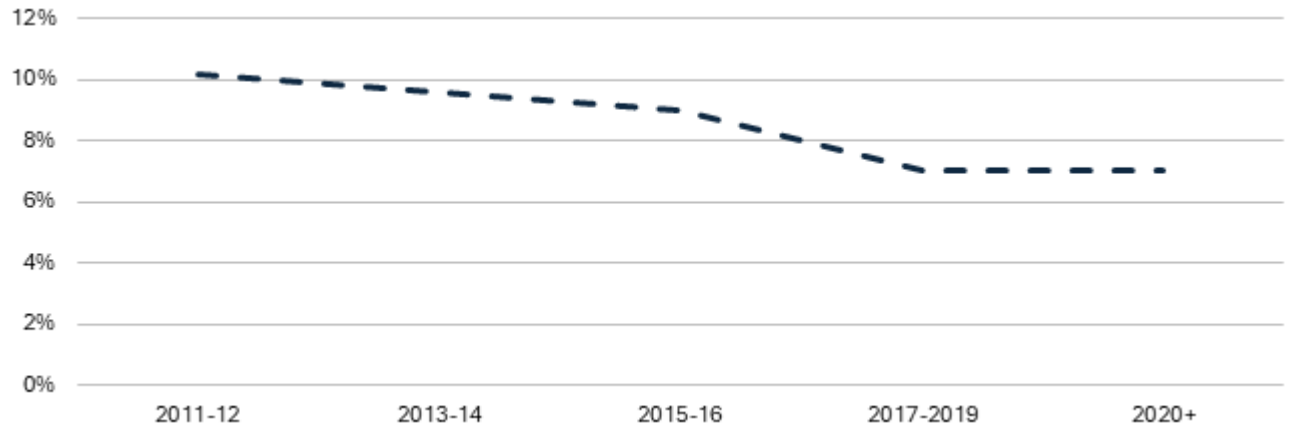
There are two factors that suggest that the returns may not be comparable:

- The risks of the portfolio of projects for infrastructure funds may differ to an offshore wind / grid context.
- The level of gearing for infrastructure funds is unclear, as there is debt at the individual investment level and debt issued at the fund level.

5.2.2. OFTO returns

OFTOs are the operational phase assets for offshore transmission. These are subject to competitive tendering and these are considered to have very low levels of risk. This has helped bidders gear up to 85-90% on the assets. The data below was presented by Ofgem for the RIIO-ED2 price control in 2022.

Figure 5.6: OFTOs – average nominal post-tax equity IRR by financial close years and gearing[70]



Source: CEPA adapted from Ofgem (2022) [71]

The equity premium over 20yr gilts is c.4-6% over this period. Gilts have returned to a similar level as observed in the early OFTO projects. This would suggest that yields may have increased since the last figure shown by Ofgem (7.0% nominal post-tax).

The much higher level of gearing would indicate a significantly lower equity return at a level of gearing closer to 55-70%. However, this is an operational asset.

Overall, this indicates that our estimate for the offshore asset owner is sufficient for the risks faced, and the level of financial risk assumed via notional gearing.

5.3. COST OF EQUITY – FINAL RANGE

Our cost of equity range is unchanged following the two cross-checks explored above, i.e. **real pre-tax range with inflation adjustment of 6.45%-8.04%**.

[70] Weighted by project transfer value.

[71] Ofgem (2022): 'RIIO-ED2: Draft Determinations – Finance', p. 60-61

6. COST OF DEBT

The offshore asset owner will not have existing (embedded) debt going into PR6, unlike more mature network companies. The cost of debt will, therefore, reflect the cost of new debt taken out in PR6. The Offshore Asset Owner is expecting to use public bond debt to raise debt finance and we have derived an estimate of the cost of debt on this basis. We focus on a real cost of debt allowance for this section.

6.1. EIRGRID POSITION

EirGrid has proposed a similar position to their TSO proposals for PR6 on the cost of debt, minus a 35bps small company premium proposed for the TSO. This is equivalent to 2.38% (versus 2.73% proposed for the TSO).

EirGrid focus on iBoxx EUR BBB 5-7yr and 7-10yr indices, with a proposed Irish debt specific uplift of 21bps and issuance costs of 30bps.

6.2. RECOMMENDATIONS

Our approach for ESB Networks' cost of new debt at PR6 is based on analysis of iBoxx EUR non-financial corporate A and BBB 10yr+ indices, across spot and 12m averages. In our range for the cost of debt, we also provide for an allowance of 10-20bps for fees and transaction costs.

Similar to ESB Networks, we would expect the offshore asset owner to issue longer term debt, reflecting efficient costs and the network's economic asset lives. We consider that fees should be equivalent to those used for ESB Networks at the notional level. However, how they are treated within the Liquidity Building Block and Cost of Debt true-up mechanisms and the allowed WACC is an issue that will need to be carefully considered prior to the finalization of the price control framework.[72]

We make one adjustment in relation to the assumed borrowing rate. We apply a 50bps uplift to the upper bound above BBB. This reflects the potential that debt may attract a premium during the establishment of the business as the offshore asset owner has not yet issued bonds and the regime will be new, with the growth of the RAB potentially acting as a drag on the credit rating during the initial establishment of the regime. This is broadly equivalent to one notch as the credit rating moves towards the investment grade threshold.

This gives an allowed cost of debt in PR6 including fees of:

- 3.77-4.41% (nominal)
- 1.84-2.56% (real).

[72] Given that the Liquidity Building Block may explicitly account for transaction costs, such as the cost of carry, which are provided for in the fees and transaction cost allowances in other price determinations.

7. CONCLUSIONS

In this concluding section, we set out our recommendations for the offshore asset owner cost of capital in PR6. As we have been guided by the CRU to assume the returns framework for PR6 will be on a hybrid basis, we present cost of equity and cost of debt separately; the former in real terms, the latter in nominal terms.

The table below brings together our proposed range for the cost of capital parameters if the price control were set on a real, pre-tax basis.

Table 7.1: Range for offshore WACC in PR6 – real

Real, pre-tax WACC	Offshore Cost of Capital	
	Low	High
Notional Gearing	60%	60%
Benchmark cost of debt	1.74%	1.86%
Uplift for offshore (new issuer)	0.00%	0.50%
Issuance costs	0.10%	0.20%
Cost of debt	**1.84%**	**2.56%**
Risk free rate	0.50%	0.60%
Total Market Return	6.40%	6.80%
Equity market risk premium	**5.90%**	**6.20%**
Unlevered beta	0.31	0.35
Equity beta	**0.78**	**0.88**
Cost of equity (post-tax)	**5.07%**	**6.03%**
Tax	12.50%	15.00%
Cost of equity (pre-tax)	**5.80%**	**7.09%**
Cost of equity (pre-tax) uplift	0.55%	
Cost of equity (pre-tax)	**6.35%**	**7.64%**
WACC (pre-tax)	**3.64%**	**4.59%**
Inflation expectations adjustment (IEA)	0.10%	0.40%
Proposed WACC (pre-tax)	**3.74%**	**4.99%**

Source: CEPA

The 67th percentile of this range would imply:

- A real cost of equity of **7.51%** including adjustment for differences in inflation expectations.
- A real pre-tax WACC of **4.58%** including adjustment for differences in inflation expectations.
- Nominal cost of debt allowance of **4.20%**. [73]

[73] This does not include an adjustment for differences in inflation expectations, given in this estimate the benchmark cost of debt is based on nominal market data. Table 7.1 does apply an inflation expectation adjustment to the WACC to be consistent with the basis on which the real cost of debt is estimated using German breakeven inflation in these calculations.

We would view the CRU adopting the 67th percentile of our real cost of equity range – i.e., 7.51% - as reflecting a decision to apply a time-limited uplift to the offshore cost of equity on the basis one, or all, of the following factors drive higher expected returns over a medium term investment horizon during PR6 and PR7 relative to an investment opportunity in a more established onshore electricity network:

- high programme execution risk;
- absence of a RAB and associated cashflows implying high operating leverage;
- high "point in time" investment risks; and
- the "newness" of the offshore regulatory framework.

By selecting a point estimate at the 67th percentile of this range, the CRU would be reflecting an uplift of 0.03 to the unlevered beta compared to the equivalent percentile of our proposed range for the onshore network in PR6, and equivalent to a 22 bps increase in the WACC at 60% notional gearing.

As a result, we would view this estimate as the CRU taking a supportive approach to facilitation of investment in the offshore network during PR6 and PR7.

Appendix A REGULATORY PRECEDENT

ACM – TenneT 2022-2026 offshore decision

On 20 September 2021, the ACM published its final Method Decisions for the current period for TenneT's transport, system and offshore activities in the Netherlands.

The allowed return decreased from 3.0% (real, pre-tax) in 2021 to 2.0% ("real-plus", pre-tax) for transmission and system operations in 2022 and to 2.4% ("real-plus", pre-tax) for offshore operations, also in 2022.[74] The ACM set a separate allowed return for TSO and offshore activities in its final Method Decisions.

The ACM used the same gearing assumption for both TSO and offshore activity WACC decisions (42.5% a reduction from 50%) and set the allowed asset beta for both decisions using consistent comparator data, informed by a study by ACM's economic consultants, Brattle.

Brattle considered evidence of gearing and beta from 7 comparator companies following a screening process and in its analysis made reference to the: *"RAB of TenneT's offshore transmission will increase by 793.98% over the 2019 – 2024 period, representing a compound annual growth rate of 54.98%."*[75]

Brattle note that it had "*researched other cases where regulators have made allowances for large capital investment programs in the cost of capital. A prominent example comes from the airport sector, with the construction of Heathrow Terminal 5. In 2003, the UK Civil Aviation Authority (CAA) selected a WACC at the top of the range selected to remunerate the BAA's investments in Heathrow Terminal 5 … In that circumstance, the CAA found that BAA's investments in Heathrow Terminal 5 would increase Heathrow's RAB by over 70% over the following regulatory period, and that the construction of the new terminal would increase BAA's risks, not only with respect to regulatory and construction risk, but with respect to uncertain demand*."

Brattle concluded:

> "[*we] adopt a similar approach in this case. Specifically, we look for cases where planned investments are expected to increase the RAB significantly over the next few years. We note that unlike the construction of Heathrow Terminal 5, the Dutch Energy Networks face limited volume risk. In the case of the Dutch Energy Networks* ***it is mainly the increase in operating leverage that may potentially affect the beta****. Accordingly, a beta uplift is only warranted in case of an extraordinary increase in the RAB, significantly higher than in the case of Heathrow. TenneT's offshore transmission business definitely meets this criterion. While there is no exact method to determine the correct size of the required uplift, we find the application of a one standard deviation uplift over the median beta to be appropriate. Such an approach is consistent with regulatory precedent in similar circumstances. We note that* ***the increase in beta in offshore transmission should only be temporary****."*

CEPA emphasis added.

Importantly, Brattle also noted that *"*[o]*nce the large capital investment programs are completed, and spending levels are similar to other peer TSOs,* ***then ACM can revert to using the unadjusted median beta****."*[76]

CEPA emphasis added.

In its final determination, the ACM allowed an asset beta of 0.48 as compared to 0.39 which it allowed for TenneT's onshore TSO activities.[77] This was based on a one standard deviation adjustment to the sample median asset beta

[74] Moody's (2022): 'TenneT Holding B.V. – Credit Opinion'

[75] Brattle (2021): 'The WACC for the Dutch Electricity TSO and Electricity and Gas DSOs', p. 25

[76] Ibid., p. 27

[77] Moody's (2022): 'TenneT Holding B.V. – Credit Opinion'

(i.e. an increase of 0.09), based on the pool of comparators[78]. The equivalent analysis from CEPA's preferred comparator set would give a range of 0.34-0.42, with a standard deviation of 0.04-0.06.

While this is a high asset beta compared to many other energy network price control decisions, it is important to consider this in the overall context of the allowed cost of equity. ACM assume a level of notional gearing of 45% and its determined asset beta – alongside the economy wide parameters of the CAPM – resulted in a nominal post-tax cost of equity of 3.90% for the period 2022-2026.

The cost of capital calculations used a -0.01% nominal risk-free rate, based on yields from 2018-2020. There is a fixed Market Risk Premium of 5.0%, meaning that any increase in the nominal risk-free rate feeds through into the nominal post-tax cost of equity. Using the 2024 average of nominal German and Dutch 10yr government bonds, we get a nominal risk-free rate of 2.48%. This implies a prevailing nominal post-tax cost of equity of 6.38% for offshore (0.75% higher than for onshore). This is equivalent to a c.4.6% real post-tax cost of equity.

CRE – TURPE7 RTE 2025-2028 decision

The French regulator, CRE, announced its decision for the four-year regulatory period (TURPE7) in February 2025 (Resolution No. 2025-39). The decision determines the investment programme and cost of capital for RTE, the French TSO. RTE is responsible for constructing, operating and financing offshore wind connections.

The overall investment programme is growing from €2.1bn in 2023 to €6.2bn in 2028, with €100bn of investment expected by 2040.

The WACC is 5.0% nominal pre-tax for RTE in TURPE7[79], with a 0.5% WACC premium for the assets constituting connection of offshore wind farms (equivalent to 125bps aiming up on the cost of equity at 60% notional gearing). The regulator suggested that there is greater complexity and risks for RTE compared to the rest of its activity.

The TURPE7 approach moved away from a longer-term average approach to placing weight on both longer-term data and prevailing evidence, given the increase in interest rates observed since 2022. The CRE rejected arguments that the asset beta had increased for non-offshore activities, highlighting the step-up in investment programmes for the comparators used in beta analysis and the protections under RTEs regulatory framework.

The WACC was based on assumed 60% notional gearing, with the following parameter values.

Table A.1: CRE nominal pre-tax WACC estimate, TURPE7

Parameter	Decision
Risk-free rate	1.9%
Market Risk Premium	5.2%
Asset beta	0.37
Equity beta	0.78
Cost of equity, post-tax	6.0%
Corporate tax rate	25.83%
Cost of equity, pre-tax	8.1%
Cost of debt	2.9%
WACC	5.0%

Source: RTE.

[78] Note that this is different to using the standard errors of the individual beta observations.

[79] The TURPE6 nominal pre-tax WACC was 4.6%. RTE had requested a TURPE7 nominal pre-tax WACC of 5.67%, including an increase in asset beta from 0.37 to 0.42.

The offshore premium of 0.5% on the nominal pre-tax WACC is intended to reflect operating risks in relation to compensation paid by RTE to offshore wind producers with damage to the connections. RTE are responsible for 40% of the compensation for damages caused by third parties, up to a cap of €70m per year. This is not a risk we understand that the offshore asset owner in Ireland would face as part of PR6.

This suggests that the premium does not reflect any additional risk associated with the construction of offshore assets for RTE and therefore the 5.0% nominal pre-tax WACC would be the relevant reference point. This equates to a real pre-tax WACC of c.3.1%, using inflation estimates consistent to what we have applied for the offshore asset owner on the cost of equity.

Appendix B BETA ESTIMATES

In Section 5 of this report, we present beta estimates for four different comparator sets:

- US networks;
- UK/European energy networks;
- Contracted generation; and
- Construction firms.

For transparency, we provide information on the final comparators used in each group.

Table B.1: List of comparators for beta analysis

US energy networks	UK/ European energy networks	Contracted generation	Construction firms
CenterPoint Energy Inc	National Grid	AES Corp	Spirax-Sarco Engineering
Dominion Energy Inc	Terna	Clearway Energy Inc Class C	Homeserve
DTE Energy Co	Snam Rete	Iberdrola	Balfour Beatty
Consolidated Edison Inc	Enagas	Innergex Renewable Energy Inc	Kier Group
Eversource Energy	Elia	NextEra Energy Inc	Keller Group
Public Service Enterprise Group Inc (U.S.) PSEG	Red Electrica	Orsted AS	Morgan Sindall Group
TC Energy Corp (U.S.)		SSE Plc	Headlam Group
UGI Corp			Ricardo
Unitil Corp			Renew Holdings
			Severfield

UK

Queens House

55-56 Lincoln's Inn Fields

London WC2A 3LJ

T. **+44 (0)20 7269 0210**

E. **info@cepa.co.uk**

www.cepa.co.uk

Australia

Level 20, Tower 2 Darling Park

201 Sussex Street

Sydney NSW 2000

T. **+61 2 9006 1308**

E. **info@cepa.net.au**

www.cepa.net.au

cepa-ltd @cepaltd