Consultation

RIIO-2 Draft Determinations – Finance Annex

Publication date	09 July 2020	**Contact:**	RIIO Team
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Response deadline	4 September 2020	**Tel:**	020 7901 7000
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Our aim for the RIIO-2 price controls is to ensure energy consumers across GB get better value, better quality of service and environmentally sustainable outcomes from their networks. In May 2019, we set out the framework for the price controls in our Sector Specific Methodology Decisions. In December 2019, Transmission and Gas Distribution network companies and the Electricity System Operator (ESO) submitted their Business Plans to Ofgem setting out proposed expenditure for RIIO-2. We have now assessed these plans.

This document, and others published alongside it, set out our Draft Determinations for company allowances under the RIIO-2 price controls, for consultation. We are seeking responses to the questions posed in these documents by 4 September 2020. Following consideration of responses, we will make our Final Determinations at the end of the year.

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

Contents

1. Introduction

1.1   In this chapter, we set out:

- A graphical depiction of how this document fits into the overall structure of the full suite of RIIO-2 consultation documents;
- A summary background to our finance work since May 2019 (SSMD);[1]
- Inflation forecasts for RIIO-2;
- Technical annexes in support of our RIIO-2 finance proposals; and
- The impact of a lower cost of capital allowance during RIIO-2.

Structure of RIIO-2 consultation documents

1.2   We highlight below how this document fits into the suite of RIIO-2 documents, with a focus on those published alongside these Draft Determinations for RIIO ET2, RIIO GD2, RIIO GT2 and ESO. We also address finance issues unique to the ESO document within a finance chapter to the ESO Sector Document.

RIIO-2 Draft Determinations documents map
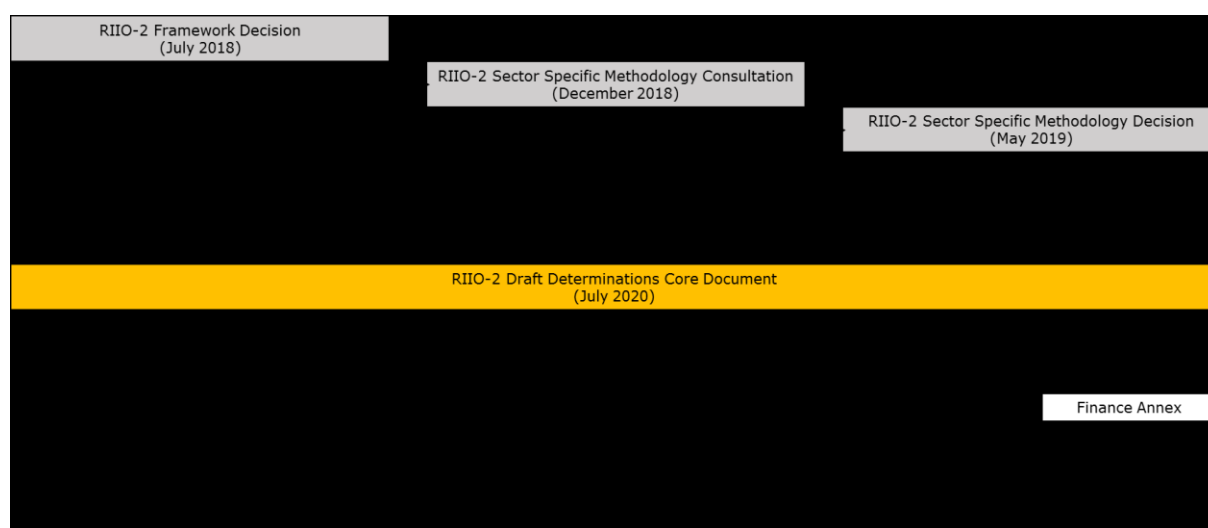
Background to our finance work since May 2019

1.3   Companies submitted final Business Plans in December 2019, including the associated Business Plan Financial Models (BPFMs) as requested in our Business

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[1] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf

Plan Guidance (BPG).[2] Using these submitted models, we have consolidated company plans into sector specific models (ET, GT, GD and ESO), which we refer to as Licence Models, as these help us communicate, and in due course implement, changes to licences for RIIO-2.

1.4 Companies refer to various consultancy reports prepared on their behalf, in support of their RIIO-2 proposals. In response to our Call for Evidence on RIIO-2, Citizens Advice also submitted a report which focused on finance issues.[3] A list of the primary reports is presented below in Table 1 and Table 2.[4]

Table 1: Debt and Financeability focussed consultancy reports we received

Report	Author	Prepared for	Report reference
1	NERA	ENA	HALO effect and additional costs of borrowing at RIIO-2[5]
2	KPMG	NGN	Review of NGN's RIIO-2 Business Plan Financeability[6]
3	Oxera	SHET	RIIO-T2 cost of Debt and Financeability assessment[7]
4	NERA	SPT	November 2019 - Risk modelling for RIIO-T2[8]
5	NERA	GDNs	Cost of Debt at RIIO-2: A report for Gas distribution Networks [9]

1.5 It is our intention to publish an updated Impact Assessment during the month of July 2020. It will present further detail on our considered impact of these RIIO-2 proposals. Pending this, we refer stakeholders to the detailed consideration of impacts in the chapters of this document and the other supplementary annexes, and more broadly across the suite of RIIO-2 documents published as part of our Draft Determinations.

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[2] https://www.ofgem.gov.uk/system/files/docs/2019/10/riio-2_business_plans_guidance_october_2019.pdf#page=40
[3] https://www.ofgem.gov.uk/publications-and-updates/call-evidence-electricity-transmission-gas-transmission-gas-distribution-and-electricity-system-operator-business-plans-riio-2
[4] To avoid repetition, we generally exclude from these tables any substantially identical reports that we considered between SSMC and SSMD, as addressed in the SSMD. https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=6
[5] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/01/A34-%E2%80%93-NGN-RIIO-2-Halo-Effect-Additional-Costs-of-Borrowing-at-RIIO-2.pdf
[6] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A27-NGN-RIIO-2-Review-of-NGNs-RIIO-2-Business-Plan-Financeability.pdf
[7] https://www.ssen-transmission.co.uk/media/3863/oxera-cost-of-debt-and-financeability-assessment-for-she-t-dec-2019.pdf
[8] https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_16_-_Risk_Modelling_Report.pdf
[9] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/01/A30-NGN-RIIO-2-Cost-of-Debt-at-RIIO2-%E2%80%93-A-report-for-Gas-Distribution-Networks.pdf

Table 2: Equity focussed consultancy reports we received

Report	Author	Prepared for	Report reference
1	Frontier	NG and SSE	January 2020 – Beta decomposition[10]
2	Frontier	NG and SSE	January 2020 – Review of Ofgem's RIIO2 beta estimation (de-gearing and re-gearing of betas)[11]
3	Frontier	NGN	September 2019 – Outperformance wedge[12]
4	National Grid (NG)	NG	January 2020 – Total Market Return[13]
5	NERA	SPT	November 2019 – Cost of Capital for SPT[14]
6	Oxera	ENA	November 2019 – The cost of equity for RIIO-2[15]
7	Frontier	ENA	December 2019 – Aiming up and incentives to invest
8	KPMG	ESO	December 2019 - Remuneration requirement & financeability [16]
9	HMK Advisory	Citizens Advice	February 2020 – RIIO-2 Cost of Capital[17]

1.6   In Appendix 2 and Appendix 3 below, we provide a point-by-point analysis of the main issues raised in these reports aside from Report 8 which we address in the ESO annex. To further understand the issues raised we held bilateral meetings with RIIO-2 companies and other stakeholders.

Inflation expectations: OBR's March 2020 forecast

1.7   Before presenting our finance proposals for RIIO-2, we refer to inflation forecasts by the Office for Budget Responsibility (OBR) as at March 2020. These forecasts are an important factor when estimating real price allowances and financeability, and therefore underpin many aspects of our RIIO-2 estimates, as outlined in the remaining chapters of this document.

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[10] https://www.nationalgrid.com/uk/electricity-transmission/document/132956/download
[11] https://www.nationalgridet.com/document/132961/download
[12] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A31-NGN-RIIO-2-Outperformance-Wedge.pdf
[13] https://www.nationalgrid.com/uk/electricity-transmission/document/132971/download
[14] https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_9_SPT_WACC_report.pdf
[15] https://www.oxera.com/wp-content/uploads/2018/01/Cost-of-equity-for-RIIO-2-Q4-2019-update.pdf
[16] https://www.nationalgrideso.com/document/158076/download#page=73
[17] https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Energy%20Consultation%20responses/RIIO-2%20Cost%20of%20Capital%20Final%20Report.pdf

Table 3: Inflation expectations, OBR's March 2020 forecast[18]

YE 31st December	2020	2021	2022	2023	2024
CPI	1.41%	1.80%	2.06%	2.05%	2.02%
RPI	2.16%	2.74%	3.05%	2.95%	2.85%

1.8   In line with SSMC and Sector Specific Methodology Decision (SSMD), we focus on the longest horizon available for our RIIO-2 proposals. We also continue to assume that the best proxy for CPIH is CPI. On this basis, we derive a difference between RPI and CPIH (the RPI-CPIH wedge) of 0.813% based on the OBR forecasts for the year 2024.[19]

 Supporting technical annexes to this document

1.9   Alongside this finance document we publish supporting technical annexes, as listed in Table 4. These allow stakeholders to engage in detail with the primary work that supports our finance proposals, as explained in the remaining sections of this document. We welcome stakeholder views on these annexes during the consultation period.

Table 4: Technical annexes published alongside this finance document

File	Author	File name	Purpose
1	Ofgem	ET licence model.xlsm	Forecasts of allowed revenues and financial metrics for Electricity Transmission (ET), Gas Transmission (GT) Gas Distribution (GD) and ESO licensees
2	Ofgem	GT licence model.xlsm	
3	Ofgem	GD licence model.xlsm	
4	Ofgem	ESO licence model.xlsm	
5	Ofgem	GAD audit letter.pdf	A letter from the Government Actuary Department (GAD) to summarise their review of the RIIO-2 licence models
6	Ofgem	WACC allowance model.xlsx	Presents our proposed implementation approach for debt and equity indexation during RIIO-2
7	Ofgem	AR ER database.xlsx	A collation of historical totex spend compared with totex allowances which we considered when estimating Expected Outperformance for RIIO-2
8	Ofgem	Residual outperformance.xlsx	Analysis of RIIO-1 equity returns which we considered when estimating Expected Outperformance for RIIO-2
9	Ofgem	Simple MAR application model.xlsx	Stylised analysis of Market to Asset Ratios (MARs) which we considered when estimating the cost of equity and Expected Outperformance for RIIO-2

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[18] See CPI and RPI worksheets here: https://obr.uk/download/public-finances-databank/
[19] Derived using the Fisher equation: (1+2.85%) / (1+2.02%) - 1. We display three decimal places solely to allow stakeholders to derive the subsequent tables.

File	Author	File name	Purpose
10	CEPA	Time value of money advice.pdf	Advice we received regarding time value of money adjustments during RIIO-2
11	CEPA	MAR advice.pdf	Advice we received regarding the interpretation of Market to Asset ratios
12	CEPA	ESO advice.pdf	Advice we received on the ESO's price control[20]
12	CEPA	Beta advice.pdf	Advice we received regarding the estimation of systematic risk, including comparability with GB water networks and European energy networks
13	Professor Donald Robertson	Re-estimating beta.pdf	Advice we received regarding the estimation of systematic risk, including the use of GARCH and OLS models, on both an equity beta and asset beta basis.

Impact of a lower cost of capital allowance

1.10   In line with the wider RIIO-2 aims of driving better value for consumers, preparing regulated companies for the energy system of the future and ensuring that the price controls provide sufficient funding to net zero through uncertainty mechanism and other measures, these proposals reduce the allowed return on capital, resetting to levels consistent with current evidence and market conditions.

1.11   We compared company proposals for RIIO-2 with RIIO-1, in terms of average annual revenues. We estimate that combining all sectors (ET, GT, GD and ESO) company proposals for RIIO-2 would increase annual charges from approximately £7.67bn to £7.91bn (18/19 prices), an increase of 3.1%. Over the 5 years of RIIO-2, this would cost consumers £1.2bn (5 years * £0.23bn).

1.12   The main finance issue for RIIO-2 is that we propose to align the cost of capital allowance with our view of market rates. Changing this aspect of the company plans alone, we estimate, reduces annual charges proposed by companies from £7.91bn to £7.17bn. Avoiding £0.74bn in annual charges would save energy consumers £3.7bn over a 5-year period. A breakdown of this comparison is presented in Figure 1 below.

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[20] This advice is discussed in the ESO document published alongside this Finance document.

Figure 1: Annual charges, the impact of a lower cost of capital allowance

£m 18/19 prices

| | | | | |
| 7,671 | +317 | +64 | +0 | +334 | -448 | 7,906 | -708 | -90 | +58 | 7,166 |

RIIO-1 · Return · Tax allowance · Fast money · Slow money · Other · Companies' proposals · Return · Tax allowance · Other · WACC change

Companies' proposals   WACC impact
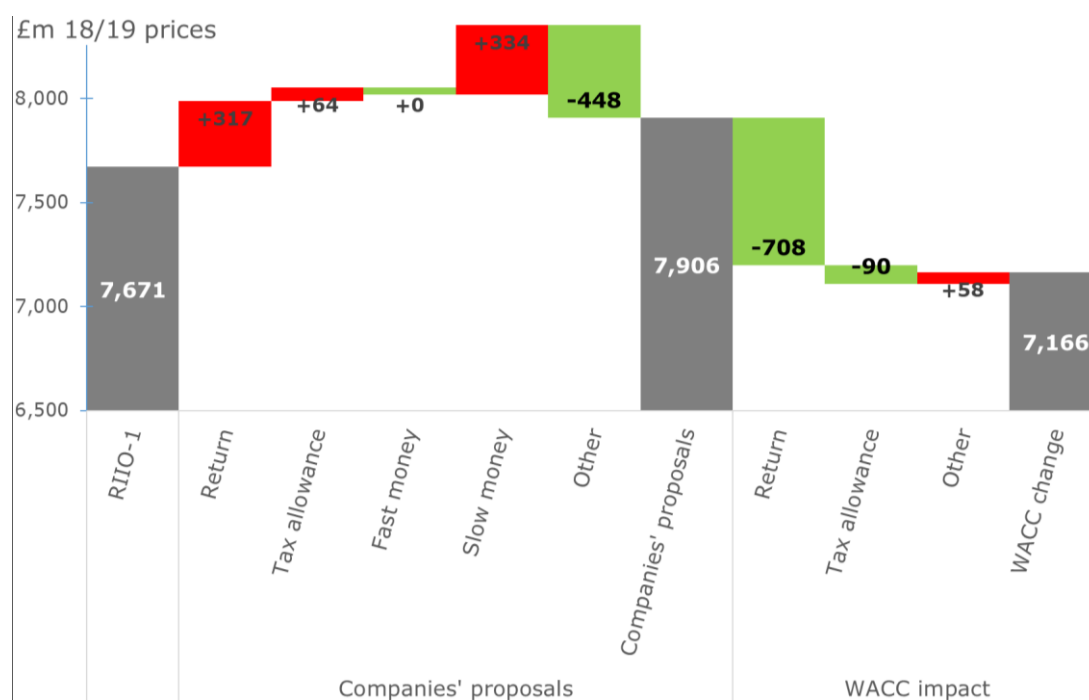
Source: Ofgem analysis of RIIO-2 proposals using updated licence models

1.13 However, it is also helpful to quantify the impact in a different way, as per SSMC and SSMD, of a lower cost of capital allowance.[21] Rather than compare with company proposals, which include their bids for totex and therefore generally higher RIIO-2 Regulatory Asset Values (RAVs), we use our RIIO-2 proposals, for totex, capitalisation and depreciation, and therefore our estimate of RIIO-2 RAV values. Arguably, this value better reflects the impact of a lower cost of capital allowance as it captures the Ofgem view of RIIO-1 and RIIO-2 RAVs. On this basis, the impact of the cost of capital change is approximately £3.3bn (18/19 prices).

1.14 The following chapters set out further detail on the key drivers for these impacts. In particular, chapter 2 sets out proposed allowances for the cost of debt, chapter 3 sets out our proposed allowances for the cost of equity, and chapter 4 presents our proposals for the cost of capital.

1.15 In addition to debt, equity and the cost of capital, the remainder of this document sets out our proposals and considerations for various other finance issues, as follows:

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[21] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=8

- Financeability;

- Financial resilience;

- Corporation tax;

- Return Adjustment Mechanisms;

- Indexation of RAV and calculation of allowed returns;

- Regulatory depreciation; and

- Other finance issues.

1.16 An updated Impact Assessment will be published alongside this document during the month of July 2020. It will present further detail on our considered impact of these RIIO-2 proposals.

2. Allowed return on debt

Section summary

The cost of debt allowance is a significant component of allowed returns and the cost to consumers of network services.

In this section, for ET, GT and GD sectors, we summarise network Business Plan submission proposals on the debt allowance and set out our updated view on what would provide networks with a reasonable allowance for their debt costs.

Allowed return on debt questions

FQ1. Do you agree with our approach to estimating efficient debt costs and setting allowances for debt costs?

FQ2. Do you agree with our proposal to use the iBoxx GBP Utilities 10yr+ index rather than a combination of iBoxx GBP A and BBB 10yr + non-financial indices?

FQ3. Do you agree with our proposal that the RAV growth profile of SHET continues to be materially different to other networks and therefore warrants continuation of a bespoke RAV weighted allowance calculation?

Indexing Cost of Debt Allowance	
Purpose	To provide a reasonable allowance for debt costs that updates with changes in market conditions.
Benefits	Providing an allowance that references an appropriate index retains incentive properties for networks to minimise their debt costs, which over time feeds through into lower costs for consumers. Adjusting for market rate movements protects both consumers and networks from ex-ante forecast error.

Background

2.1 In the SSMD, we decided to apply full indexation to the cost of debt allowance. We indicated that the next steps would involve:

- calibrating the index, including selection of the benchmark index/indices to be used;
- considering transaction and liquidity expenses as well as any offsetting factors; and
- reviewing how to deflate the nominal iBoxx to a CPIH allowance.

2.2   We also stated that we intended to broadly match debt allowances with expected efficient debt costs for RIIO-2 through the calibration of the index.

2.3   In this section, we provide more details behind our analysis and address other specific cost of debt issues raised by the networks in their Business Plan submissions.

2.4   In the SSMD Finance Annex we provided a working assumption for the cost of debt based on an 11-15yr trailing average of A and BBB rated 10yr+ iBoxx indices, which the networks adopted as requested in their notional company financeability assessments. However, networks also proposed a number of alternative calibrations or approaches to setting the allowance and submitted consultant reports supporting their proposals.

2.5   In general, networks proposed a longer trailing average period for the index than the SSMD working assumption. These proposals would be expected to provide networks with a higher cost of debt allowance than the Ofgem SSMD working assumption calibration.

2.6   We consider the main points raised in Business Plan submissions and respond to these in Appendix 2 (consultant reports) and Appendix 4 (company points). No evidence was submitted relating to cost of debt in response to our call for evidence.

Consultation Position

Cost of Debt Parameter	Consultation Position
Index selection	To index the cost of debt allowance with reference to the yield of the iBoxx Utilities 10yr+ index (ISIN reference DE0005996532).
Additional Costs of Borrowing	To add 0.17% to the index above for additional borrowing costs.
Calibrating the index-Trailing Average Period	To calculate the allowance using an extending 10 to 14-year trailing average.
Calibrating the index-Exceptional Cases	To use a RAV-weighted cost of debt allowance calculation for SHET. Not to make any adjustments to allowances for any other exceptional circumstances (eg small company allowances or company specific allowances).
Deflation to CPIH	To deflate the result of the above nominal 'all in' yields to CPIH real allowances using the 5-year OBR forecast for CPI, using the Fisher equation.

2.7 The following tables represent a forecast Draft Determination of the cost of debt allowances for each company, based on an extending 10-14-year trailing average of the iBoxx GBP Utilities 10yr+ index, plus 17bps for transaction and liquidity costs, deflated to CPIH real using the long term OBR forecast for CPI.

Table 5: Forecast Cost of Debt Allowances (NGET, NGGT, SPT, Cadent, NGN, SGN Scot, SGN South, WWU)

Component	2022	2023	2024	2025	2026	Average
Cost of debt (10-14 yr trailing avg)	1.973%	1.830%	1.717%	1.629%	1.560%	1.742%

Source: Markit, Ofgem (see "WACC allowance model" as published alongside these determinations)

Table 6: Forecast Cost of Debt allowances (SHET)[22]

Component	2022	2023	2024	2025	2026	Average
Cost of debt RAV weighted (10-14 yr trailing avg)	1.761%	1.570%	1.397%	1.323%	1.277%	1.466%

Source: Markit, Ofgem (see "WACC allowance model" as published alongside these determinations)

Rationale for Consultation Position

Index Selection

2.8 We updated our comparison of network new bond issuances to the combined A and BBB 10yr+ iBoxx non-financial indices that are used in RIIO-1. We employed the same methodology for this assessment as we set out in the SSMD and we explain in Appendix 2 why we think this is more appropriate than the method used by NERA.

2.9 Our updated analysis found that recent network bond issuance over the last year in particular increased the weighted average halo effect to 18bps if all issuances were compared to the combined A/BBB index or to 11bps if network issuances were compared to the index matching the rating at issue.[23]

2.10 We noted some concern from networks that, in their view, the rating of the notional company may not match the indices used for the cost of debt allowance (if a simple average of the A and BBB indices continued to be used).

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[22] Based on Illustrative UM totex case. The 5-year average forecast using baseline totex assumptions would be 1.58% CPIH real.
[23] The suggestion that regulated utilities, including network companies, are consistently able to issue debt at rates below the iBoxx benchmark used for setting cost of debt allowances.

2.11 The continuation of a material halo effect coupled with some networks' stated focus on the ratings of the indices compared to the rating of notional or actual companies prompted us to consider whether there are alternative indices available that might provide a better match to network debt costs.

2.12 Markit publish a Utilities 10yr+ index, which is not limited to any particular rating category (other than investment grade). We compared this index to the combined BBB and A 10yr+ indices and found that although it exhibited similar movements in both yield and spread terms to the combined A/BBB indices, it exhibited lower yields and spreads in times of financial distress. This is not surprising as we would expect the market to view utilities (which include regulated monopolies providing essential services) to be better insulated from macro-economic shocks than the broader corporate market.

2.13 Given the uncertainty that lays ahead in terms of market reaction to the fallout and recovery from Covid-19, we think it is important to select an index which could be expected to remain a good match for network debt costs, whatever market conditions ensue.

Figure 2: iBoxx Index Yield and benchmark spread history
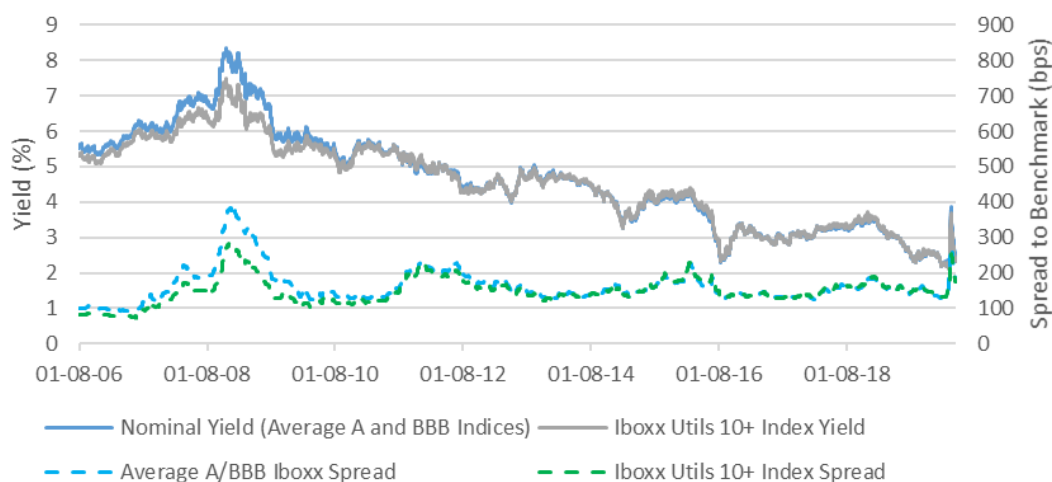
Source: Markit, Ofgem analysis

2.14 We performed the same halo analysis comparing network bond issue spreads to the Utilities 10yr+ index gilt spread and found a halo of only 4bps. This would suggest the Utilities index would provide a closer match to expected network debt costs.

2.15 We checked the constituents of the Utilities 10yr+ index and found it to be a relatively broad and representative index with 80 bonds in the index worth £53bn+ (compared to 106/£65bn for the BBB 10yr+ and 51/£40bn for the A 10+).

2.16 We propose to use the iBoxx Utilities 10yr+ index (ISIN reference DE0005996532) for the calculation of network company cost of debt allowances and that if this index is used we would not propose to assume a halo effect for either embedded or new debt.

2.17 If no halo is assumed (because the index to be used will provide a better match), then our view is that it is appropriate to consider additional costs of borrowing (including transaction and liquidity costs) that would not be captured by the index of bond yields.

Additional Costs of Borrowing

2.18 Networks submitted a report produced by NERA on behalf of the ENA[24] that examined the halo effect and additional costs of borrowing. NERA also provided Ofgem with supporting files. We consider and respond to this report in detail in Appendix 2.

2.19 In summary, based on a combination of evidence submitted to us (transaction costs by NERA) and our own analysis of evidence on other factors proposed by NERA[25], we estimate the following additional costs of borrowing that are not captured in the iBoxx indices:

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24 The Energy Networks Association (ENA) represents transmission and distribution network operators for gas and electricity in the UK. See here: http://www.energynetworks.org/

[25] Costs of switching to CPIH debt and new issue premium, neither of which we propose adding an allowance for and both covered in our commentary in Appendix 2.

Table 7: Additional Costs of Borrowing Estimate

	Ofgem Estimate	Estimate Basis
Transaction Costs	6bps	Based on NERA data but excludes one outlier
Liquidity/RCF cost	3 - 5.5bps	Based on RFPR and group account data about actual RCF holdings. Also supported by assumption of 10% RCF
Cost of carry	1.5 – 11bps	Based on RFPR and group accounts data on cash on balance sheet[26]
Total	17bps	Mid-point of the range, rounded to nearest basis point.

Source: Ofgem analysis

2.20 Our estimate for additional borrowing costs is materially lower than NERA's estimate of 68bps but is in line with both previous Ofgem estimates (20bps in RIIO-1) and recent regulatory precedents (Ofwat PR19[27], 10bps and CMA provisional findings for NERL, 15bps[28]).

Calibrating the Index

2.21 We considered the arguments made by networks regarding setting the trailing average period of the index based on the weighted average life of sector debt.[29] However, as stated in the SSMD, we also assessed expected sector debt costs against expected allowances under different index calibrations.

2.22 We collected detailed information from all GD&T networks on their embedded debt and used this to model expected embedded debt costs. The information we collected includes bond issuances, external loans, intercompany loans, derivatives and other financial liabilities.

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[26] There is a wide range in our estimate for cost of carry because the underlying data represented a broad range of cash held on balance sheet across networks and network group companies. The low represents the median of just regulated network data (a median is less distorted by exceptional years), and high represents the mean of a mixture of regulated network data and group data, with a higher 75% weighting given to regulated network data as group data is often for group businesses managing not only regulated monopoly businesses but also more cyclical business with higher cashflow volatility. The range of cash on balance sheet divided by debt was then multiplied by the 5yr average difference between the iBoxx index and the 3m deposit rate.

[27] https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Allowed-return-on-capital-technical-appendix.pdf, page 5

[28] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf, page 172, Table 12-13

[29] Ofgem initial response included in Appendix 3

Consideration of Unusual or Exceptional Circumstances

2.23   There may be some circumstances that warrant a different approach to calibrating a network's (or sector's) debt allowance. For example, in RIIO-1, SHET proposed and Ofgem accepted that its RAV profile was significantly different to most notional companies and that a simple trailing average index may not fully reflect the cost of debt of a company with a rapidly-growing RAV if interest rates change sharply. A RAV-weighted index has been used during RIIO-1 for SHET.

2.24   In the SSMD, we stated that "in line with RIIO-1, we may consider adjusted indexation mechanisms (such as that used for SHET in RIIO-1) for unusual company-specific circumstances, if appropriate and justified".[30]

2.25   SHET have not requested a bespoke debt index calibration for RIIO-2 but we have considered whether the same conditions that led to the implementation of a bespoke mechanism for SHET in RIIO-1 still apply for RIIO-2.

2.26   Although the difference between SHET's RAV growth profile and that of other networks is not expected to be as extreme in RIIO-2 as it was in RIIO-1, it is still expected to be significantly greater than other networks. Importantly, the combined RIIO-1 and RIIO-2 period RAV growth[31] for SHET (which is expected to form the majority of a debt trailing average period) is over four times the simple average of the other GD&T networks and approximately 85% greater than the next highest growing network.[32]

2.27   A notional company with greater RAV growth than the average notional company could be expected to raise a greater proportion of its debt than the average network during that period of growth. This was the rationale for the RAV-weighted index for SHET in RIIO-1 and remains true for the combined RIIO-1 and RIIO-2 period.

2.28   We therefore consider that SHET continues to show unusual company-specific circumstances that would make a RAV-weighted mechanism for RIIO-2 appropriate and justified. We therefore propose a RAV-weighted mechanism for SHET in RIIO-2.

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[30] SSMD, paragraph 2.24
[31] Measured by compound annual growth rate as (nominal closing RAV at end of RIIO-2/nominal opening RAV at start of RIIO-1)^(1/13)-1
[32] Based on baseline totex allowances for RIIO-2, or ~65% greater based on illustrative totex case for RIIO-2.

2.29 In the SSMD, we encouraged networks to, if appropriate, submit evidence relating to whether a small company premium may be appropriate on a notional company basis.

2.30 SGN Scotland were the only network to submit evidence based on considerations for a small notional company generally, which they characterise as an infrequent issuer premium. They propose that as SGN Scotland is a smaller-than-average network (in terms of RAV), they issue less frequently and that this exposes them to greater risk (than a network that can issue more frequently) that their debt will not be raised at long-term average levels.

2.31 SGN Scotland consider that in future they may want to hedge this assumed greater risk and they consider swaption pricing provided by one of their relationship banks in quantifying the potential cost. As a consequence, they propose a premium of 33-35bps be added to the index for new debt for SGN Scotland.

2.32 We have some concerns with SGN Scotland's proposal. We do not find any systematic or consistent underperformance of smaller networks' issuance or of smaller networks overall consistently underperforming larger networks in terms of their overall cost of debt. In addition, we consider swaptions pricing would be reflecting the cost of an asymmetric hedge – it hedges the risk for the issuer against issuing at a worse rate than the long-run average but the issuer would keep the benefit of issuing at a better rate than the long-run average. Using swaps rather than swaptions could offer a more symmetrical hedge but this potential hedging option does not appear to have been considered by SGN Scotland.

2.33 On balance, we have not been convinced that a) a material additional risk exists for SGN as a smaller network, or b) if a network wanted to hedge a perceived risk that swaptions pricing would represent a neutral or symmetrical way to hedge that risk.

2.34 A number of networks (including Cadent) and their consultants suggested that Cadent are an exceptional case in terms of their debt cash costs because the majority of their debt was raised in 2016, when interest rates were very low. This was due to a restructuring of debt that National Grid undertook ahead of the sale of its four gas distribution networks to Cadent.

2.35 Networks (including Cadent) do not suggest that Cadent should receive a different allowance to other networks but they do suggest that Ofgem take this into consideration in calibrating the allowance for networks generally.

2.36 There are two main ways we could take this into consideration in calibration: either a) exclude Cadent debt costs from the calibration, or b) adjust the debt pool costs for the economic cost of the debt or the costs of refinancing.

2.37 We consider excluding Cadent's debt costs altogether is sub-optimal because this would significantly reduce the data pool remaining for calibration, which could reduce our confidence in the resulting average as being representative of the notional efficient operator.

2.38 As stated in the SSMD,[33] we performed a cross-check on Cadent's submitted all in cost of debt and the adjustments proposed.[34] The quantum and profile of Cadent's proposed adjustments to RIIO-2 debt cost forecasts and our proposed method are similar.[35] We have used our own calculations and profile for these adjustments, along with Cadent's debt cash costs, in our calibration for RIIO-2 debt allowances. However, if we had used Cadent's BPDT-submitted adjustments this would not alter our cost of debt calibration as they are not materially different.

Pooling network debt costs

2.39 A consideration for our calibration of allowances is whether network debt costs are considered in separate sectors (GD, ET and GT all considered separately) or whether sectors are pooled.

2.40 Some network companies propose calibrating allowances based on the expected debt costs of the whole industry (including Electricity Distribution) and some propose calibrating on a sector-by-sector basis.

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[33] Footnote 11, page 17, SSMD Finance annex
[34] Cadent's adjustments are based on a methodology that assumes that old debt continued rather than being refinanced and suggested adjustments over the RIIO-2 years of £287m. However, Cadent and their advisors also considered other methods, some of which would suggest higher adjustments. One such method would involve amortising reported statutory costs but we do not consider this method would be appropriate because reported statutory costs would include spread premium paid to bondholders, fees associated with the refinancing and swap charges, none of which we believe should be included in our cost of debt calibration.
[35] Our method results in total interest rate element cost of the NGG and NGET bond repurchases of £845m (the total cost according to tender document pricing was £513m for NGGT bonds and £410m for NGET bonds but this includes credit spread premium paid to bond investors as part of the tender which we consider to be a transaction cost for equity investors, so we strip this out), which when straight line amortised over the period corresponding to the maturity of those repurchased bonds would lead to adjustments over the RIIO-2 years of £280m.

2.41 We have three main options for pooling expected debt costs for calibrating debt allowances:

- Consider each sector individually
- Consider the industry as a whole, including Electricity Distribution (ED)
- Consider a combination of sectors, as appropriate

2.42 We have considered the merits and challenges of each of these options. We have concerns that considering each sector individually could lead to skewed results because some sectors include only a small number of networks and could be largely or entirely impacted by individual network financing decisions and strategies (rather than anything intrinsic to those sectors).

2.43 We consider there to be merits to broadening the pool to include more networks and a greater volume of debt raised. This could allow us to gain a picture that could be considered more representative of a notional efficient operator.

2.44 However, we do not believe it is appropriate to include ED expected sector debt costs in our current calibration exercise. This is because we do not have forecast totex or associated debt issuance forecasts for the ED sector, have not considered notional gearing for that sector in detail and have not been through as detailed a debt cost verification exercise for ED sector costs.[36]

2.45 In addition, if we were to include ED in this calibration exercise it would likely imply a debt allowance calibration for the ED sector, which we do not think is appropriate at this stage, particularly given we are not yet at a stage where we can have regard to the financeability of the ED notional efficient operator for RIIO-2.

2.46 Some networks also seem to disagree about which sector the adjustments for the National Grid/Cadent refinancing/debt costs should be applied to. Considering gas distribution, gas transmission and electricity transmission debt costs as a whole would render any such judgement about which sector these costs should be applied to irrelevant because the adjustment would be applied to a pool including all sectors to which these costs could reasonably be applied.

2.47 We consider the volume of debt within the gas distribution and transmission sectors at over £23bn (excluding intercompany loans) to be sufficient to draw

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[36] This is because the ED sector is not yet at Business Plan submission stage.

robust estimates of average debt costs and therefore calibrating to these expected costs would represent a reasonable debt allowance for a notional efficient operator in gas distribution and transmission sectors. Reducing the number of sectors to be combined further (so, for example, considering just GD combined with GT or ET combined with GT) would reduce the pool size and increase the risk that the smaller pool is skewed by specific company financing decisions rather than representing a reasonable allowance for a notional efficient operator.

2.48 We therefore propose to calibrate debt allowances for gas distribution, gas transmission and electricity transmission networks with reference to expected debt costs of gas distribution, gas transmission and electricity transmission networks.

Other Calibration Considerations

2.49 We consider it appropriate to exclude intercompany loans from our analysis of embedded debt costs because we are not satisfied that features of these loans represent terms and conditions that would be generally available to a notionally efficient operator if borrowing from an external third party.

2.50 We compared each instrument's rate to market rates at the time of borrowing (contract) by allocating instruments into tenor buckets (1-3yr, 3-5yr, 5-7yr, 7-10yr, 10-15yr and 15yr+) and comparing these rates to:

- For fixed rate instruments - to the iBoxx yield of the relevant tenor bucketed iBoxx indices
- For floating rate instruments - to the iBoxx asset swap margin of the relevant tenor bucketed iBoxx indices
- For inflation linked instruments - we converted RPI real rates into nominal rates using 10year breakeven inflation and the fisher equation and then compared that nominal equivalent rate to tenor bucketed iBoxx yields

2.51 This comparison was performed in order to provide comfort that instruments we were including in our allowance calibration exercise were transacted at market rates at the time. We flagged for further investigation any instruments that were more than 25bps higher than the relevant benchmark on the transaction date. This check flagged only 8 bonds and external loans for further investigation. On further investigation, we were comfortable that those bonds and loans could be included in the calibration exercise.

2.52   However, this exercise did flag 190 derivative receive or pay legs as being more than 25bps from the benchmarks. This exercise highlighted to us that given the bespoke nature of derivatives, it is difficult to make comparisons and assess if they have been incurred at market rates.

2.53   We carefully considered the arguments made by networks around inclusion or exclusion of derivatives from our calibration exercise but note that there are opposing views from networks on this point.

2.54   We are conscious that derivatives can be used to shift financing costs from one period to another and that future derivative use is very difficult to predict. The result is that we are not convinced that taking a snapshot of embedded derivatives at one point in time would give us an accurate picture of their costs or benefits over the long term.

2.55   There are also differing approaches to the use of derivatives, which would suggest that their use represents company-specific risk management decisions, the costs or benefits of which could reasonably be considered to most appropriately reside with equity investors.

2.56   In line with previous Ofgem exercises and broader regulatory precedent, we therefore propose to conduct our calibration exercise excluding derivatives.

2.57   Our estimation of forecast network debt costs involved modelling the embedded and forecast new debt of networks. In doing so, we:

- Excluded liquidity facilities, revolving credit facilities and overdrafts (as these are considered in the additional costs of borrowing, discussed in 2.19 to 2.22)
- Excluded intercompany loans from embedded debt costs but assumed they are refinanced at their maturity with 20yr fixed rate debt raised at the forecast benchmark rate for that year
- Excluded derivatives and instruments with insufficient data to model
- Excluded SHET debt costs as we are proposing the continuation of a RAV-weighted index for SHET
- Used the yield to maturity at issue for fixed rate and inflation linked bonds (rather than the coupon)
- Used OBR forecast inflation[37] to forecast inflation-linked debt payments and accretion

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[37] As at March 2020

- Used LIBOR forward curves[38] (combined with the stated margin) to forecast debt payments on floating rate debt
- Assumed all maturing debt is refinanced with 20yr fixed rate debt[39] raised at the forecast benchmark rate for that year[40]
- Assumed RAV growth is funded by a proportion of debt equal to notional gearing for each notional company
- Where notional gearing has been adjusted downwards from RIIO-1, adjust downwards the amount of refinancing or new debt assumed to reflect a matching percentage move downwards in gearing
- Added our assumption of 17bps for additional costs of borrowing to both embedded and new debt
- Added a total of £280m over the RIIO-2 period[41] to the overall network debt costs to factor in NG/Cadent debt restructuring exercise costs

2.58 Using this tool we compared various network-proposed index calibrations to forecast GD and T debt costs, in nominal terms. We estimate that the network-proposed index calibrations would materially over-compensate GD and T companies as a whole for their expected debt costs. These calibrations would therefore not meet one of our key principles for setting a cost of debt allowance, which is that consumers should pay no more than an efficient cost of debt.

2.59 We tested different interest rate and inflation scenarios. Although we tested a broader range of scenarios, the main scenarios we focussed on were the following charted interest rate scenarios (representing ± 1% on Iboxx yields and LIBOR rates):

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[38] As at 4th May 2020
[39] This is to simplify modelling rather than implying any judgement about what format of debt would be issued
[40] Flat to the forecast iBoxx GBP Utilities 10yr+ level
[41] Following the profile calculated by Ofgem

Figure 3: iBoxx Scenarios
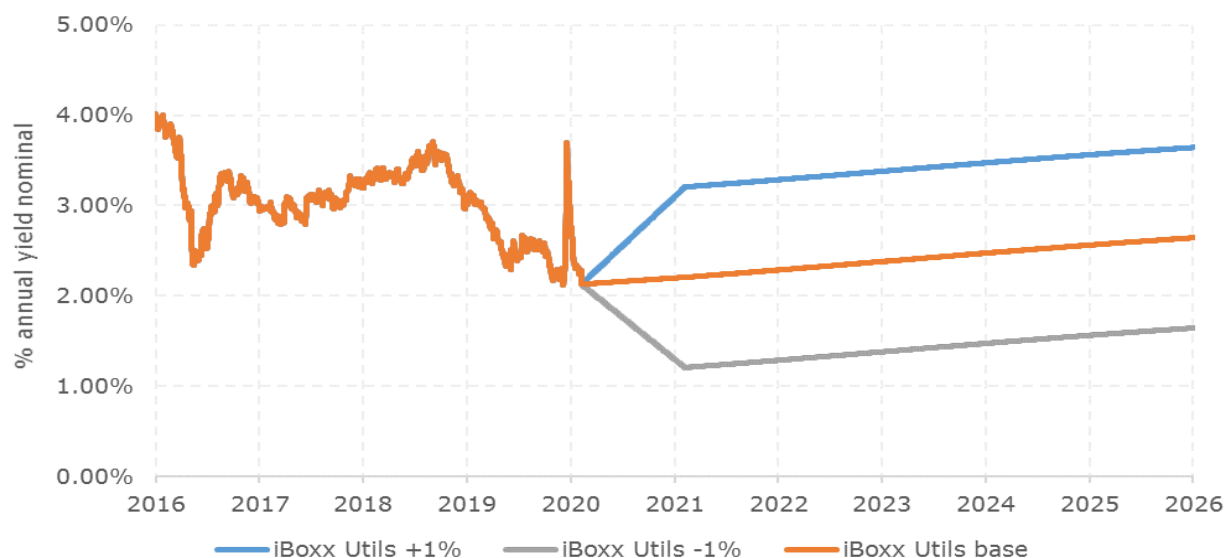
Source: Markit, Ofgem analysis

Figure 4: 6m LIBOR Scenarios
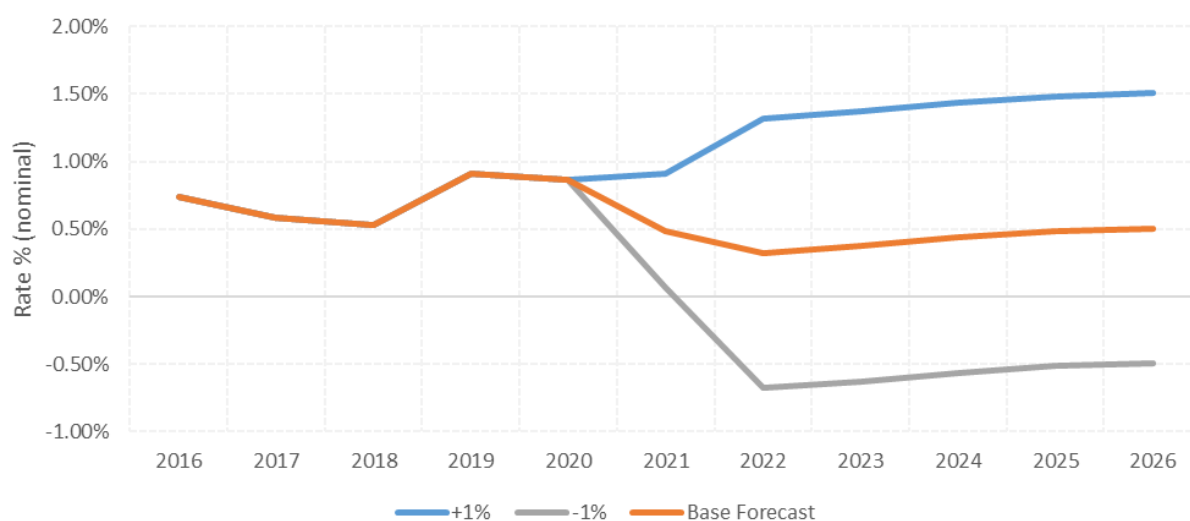
Source: LIBOR Forwards as at 11th May 2020 (Chatham Financial) and Ofgem analysis

2.60   As a proportion of embedded debt in the sector is currently RPI linked, forecast nominal network debt costs are therefore sensitive to the forecast or assumed RPI rate used. The latest OBR inflation forecasts were published on 11 March, prior to UK COVID lockdown measures coming into effect. Interim reports from the OBR indicate that there is significant uncertainty over the future course of inflation. We therefore tested the following RPI scenarios:

Figure 5: RPI Scenarios
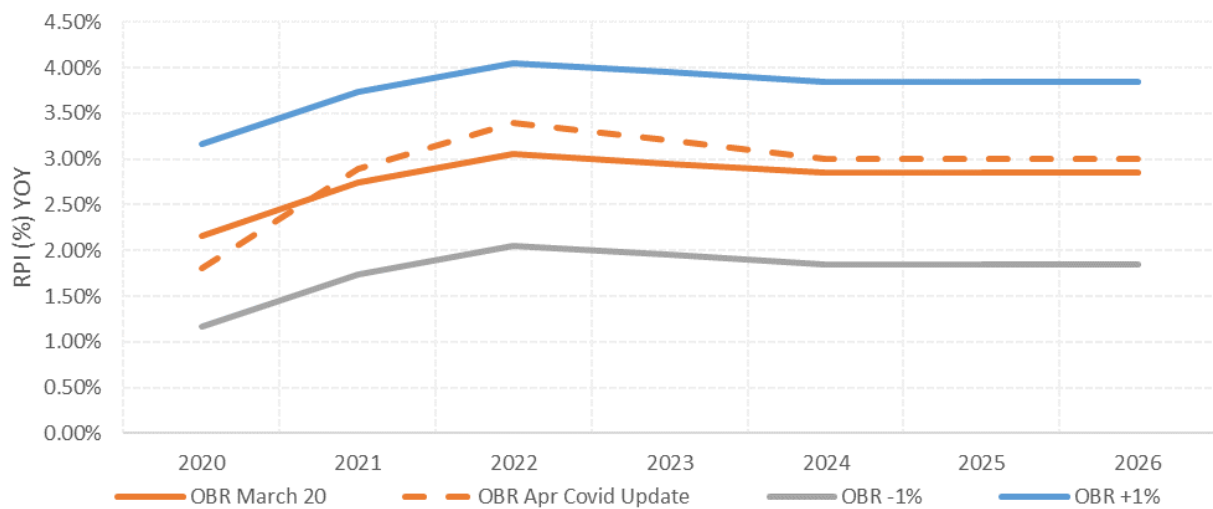
Source: Office for Budget Responsibility, Ofgem analysis

2.61 Another approach to assessing nominal sector debt costs is to assume a long term RPI assumption in all years (rather than a forecast for each particular year). We have also considered this approach and include the results using a 3% long term RPI assumption in Table 8.

2.62 The average performance of the different index calibrations compared to forecast network debt costs is presented in Table 8. Negative numbers indicate that the allowance may under-provide for forecast network debt costs; positive numbers indicate that the allowance may over-compensate networks on average.

Table 8: Index Calibrations Vs Forecast RIIO-2 Average Debt Costs[42]

Index Calibration	Illustrative UM	Baseline Totex	RPI +1%	RPI - 1%	Long term RPI (3%)	Iboxx & LIBOR +1%	Iboxx & LIBOR - 1%
10yr	-0.33%	-0.37%	-0.63%	-0.08%	-0.40%	-0.40%	-0.27%
9-13yrs	-0.21%	-0.24%	-0.51%	0.05%	-0.28%	-0.31%	-0.11%
9-13yrs+17 bps	-0.04%	-0.07%	-0.34%	0.22%	-0.11%	-0.14%	0.06%
10-14yr	-0.05%	-0.08%	-0.34%	0.21%	-0.12%	-0.16%	0.07%
10-14yr+17 bps	0.12%	0.09%	-0.17%	0.38%	0.05%	0.01%	0.24%
11-15yr	0.09%	0.06%	-0.21%	0.35%	0.02%	-0.03%	0.22%
14-18yr (NERA)	0.53%	0.49%	0.23%	0.78%	0.46%	0.38%	0.68%
15yr +68bps (NG)	1.06%	1.03%	0.76%	1.32%	0.99%	0.93%	1.20%

Source: Ofgem analysis

2.63 The 10-yr trailing average used in RIIO-1 would be expected to under-provide in all scenarios presented. In contrast, proposals from NERA and networks would be expected to over-compensate networks in all scenarios presented. We have therefore considered alternative calibrations for RIIO-2.

2.64 Although the case based on illustrative UM totex and March OBR RPI forecasts would indicate either a 9-13yr +17bps transaction costs or a 10-14yr calibration would be a reasonable match, we note that adjusting either totex or RPI assumptions could lead to these calibrations under-compensating networks on average.

2.65 We have accepted possible under-provision for cost of debt index calibrations in the past. For example, at ED1 draft determinations[43] we indicated that our modelling at that stage suggested potential under-provision. However, for that determination we were comfortable that this resulted from some conservatism in assumptions for the cost of new debt and that any remaining under-provision would be balanced by the headroom in the cost of equity estimate.

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[42] Each column changes one assumption from the illustrative UM scenario shown in the second column, which is based on illustrative totex RAV growth, March OBR inflation forecast and market implied iBoxx and LIBOR as at 11th May 2020.
[43]
https://www.ofgem.gov.uk/sites/default/files/docs/2014/07/riio-ed1_draft_determination_financial_issues.pdf
paragraphs 2.45-2.47

2.66 Although we do not believe it is necessary to calibrate the index to fully compensate networks in all potential macro-economic environments, we do not consider there to be sufficient conservatism in our current estimates to offset potential under-provision in scenarios using baseline totex or different reasonable assumptions for RPI.

2.67 We therefore consider either a 10-14yr + 17bps transaction and liquidity allowance or an 11-15yr trailing average would be more appropriate calibrations.

2.68 Economically, the results of an 11-15yr trailing average and a 10-14yr +17bps transaction and liquidity allowance are very similar. However, we prefer the transparency of adding the additional costs of borrowing allowance on top of the index allowance rather than incorporating it into the trailing average calibration.

2.69 Considering all of the factors mentioned above, we propose that an extending 10-14yr trailing simple average of the iBoxx GBP Utilities 10yr+ index plus 0.17% for additional costs of borrowing is used to calculate annual debt allowances for all GD and T networks other than SHET.

2.70 We will continue to monitor market conditions as well as inflation and interest rate forecasts and their impact on our network debt cost forecasts and index calibration up to Final Determinations.

2.71 For SHET, we propose a RAV-weighted index which is similarly updated using a 10-14yr trailing average plus 0.17% for additional costs of borrowing (rather than the 10yr trailing average used for RIIO-1).

2.72 In line with RIIO-1 practice, the debt allowance will be updated for each forthcoming financial year in November with out-turn iBoxx data up to the end of October. The proposed cost of debt indexation model, which has now been combined with the proposed equity indexation model (combined the "WACC allowance model.xls") is published alongside this draft determination.

Deflating the Index to a CPIH real allowance

2.73 We stated in the SSMD that we would propose a method for deflating nominal iBoxx yields to CPIH real allowances at Draft Determinations.

2.74 We noted that none of the respondents to the SSMC preferred option (i), which was to continue using RPI breakeven rates and then to adjust for an assumed

RPI/CPIH wedge. All respondents preferred the simplicity of deflating the nominal index in one step, using a single measure of inflation.

2.75 However, there were differing views from respondents on whether that single measure of inflation should be the Bank of England inflation target, the OBR 5yr forecast for CPI or outturn CPIH. We have considered the merits and challenges of each of these measures and consider that outturn inflation is not appropriate for deflating long term bond yields as it is not a measure of long-term inflation expectations. While using the Bank of England inflation target of 2% has the benefit of simplicity we have concerns that it is also not a measure of expected inflation (it is a target but may not represent market participants' expectations). Although the OBR's 5yr forecast has tended to be close to the Bank of England's target of 2%, it is notable that the OBR's Coronavirus reference scenario (which is not an official forecast) indicates 2024 CPI slightly higher than 2%.

2.76 Given significant uncertainty surrounding future inflation due to Brexit and Coronavirus, we believe it is important to attempt to capture long-term expected inflation because this is what will feed into nominal bond yields.

2.77 As there are not long-term forecasts of CPIH available we propose using the OBR 5yr forecast of CPI. If, over the course of RIIO-2 the OBR begin producing long term forecasts for CPIH we propose switching to using OBR 5yr CPIH forecasts.

3. Allowed return on equity

Section summary

In this section we summarise Business Plan submissions with regards to baseline equity returns for ET, GT and GD during RIIO-2. We provide an updated view and propose baseline returns of 3.95% at 60% notional gearing, alongside a proposed ex-post adjustment mechanism, before seeking views on the underpinning analysis and proposals.

Setting a baseline allowance for the cost of equity	
Purpose	Returns to equity investors remunerate their investment in network services and comprise a baseline allowance plus performance incentives. In this section we outline the steps we have taken to estimate the baseline allowance, before summarising the package of financial incentives for RIIO-2.
Benefits	Accurate remuneration for equity investors will secure network investment during RIIO-2 and help keep consumer charges in line with efficient costs.

Business Plan submissions and the Call for Evidence

3.1   Network companies generally submitted plans using both their own proposals and the SSMD working assumptions, as shown below in Figure 6.

Figure 6: Baseline equity returns (CPIH real), Business Plan submissions relative to the Sector Specific Methodology Decision
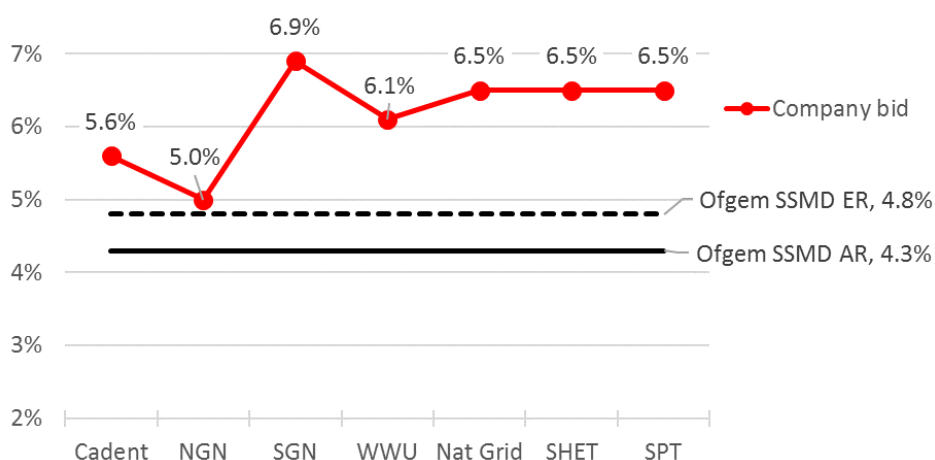
Source: Ofgem analysis

3.2   To support their views, network companies referred to papers from their consultants (as listed at Table 2 above). We provide a detailed summary and response to issues raised within Appendix 3. In the sections below we address key issues for each section.

3.3   In response to our Call for Evidence on Business Plans,[44] we received submissions from other stakeholders, Citizens Advice[45&46] and Centrica[47], regarding returns to equity.

Step 1 - The Capital Asset Pricing Model evidence

Risk-free rate and equity indexation

Business Plan submissions

3.4   Generally, submissions do not focus on the risk-free rate. For example, NGN agreed with proposals to implement equity indexation subject to considering further the detailed calibration. Cadent's plan (p177) indicates that the use of real gilts, rather than nominal as some network companies preferred[48], is a small reconciling item (0.05%) between its view on the cost of equity (5.6%) and the Ofgem SSMD working assumption (4.8%).

3.5   NGN and SGN refer to a report from Oxera dated November 2019.[49] Therein, Oxera refer to updated data on both nominal and real gilts to derive a CPIH-real range for the risk-free rate (-1.2% to -0.79%) which is lower than the SSMD working assumption (-0.75%). WWU refer to a report from NERA dated March 2019, which advises that Ofgem must ensure it draws on unbiased estimates of CPI or RPI-CPIH wedge to fulfil its commitment to value neutrality. These reports from Oxera and NERA each address the proposed indexation policy without highlighting material concerns or challenges. Neither report proposes a different implementation approach.

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[44] https://www.ofgem.gov.uk/publications-and-updates/call-evidence-electricity-transmission-gas-transmission-gas-distribution-and-electricity-system-operator-business-plans-riio-2
[45] https://www.ofgem.gov.uk/system/files/docs/2020/02/ca_response_to_ofgem_call_for_evidence_on_et_gt_gd_and_eso_bps_for_riio-2_-_v2.pdf
[46] https://www.ofgem.gov.uk/system/files/docs/2020/02/ca_evidence_riio-2_cost_of_capital_final_report.pdf
[47] https://www.ofgem.gov.uk/system/files/docs/2020/02/centrica_response_-_riio-2_finance_final.pdf
[48] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=27
[49] https://www.oxera.com/wp-content/uploads/2018/01/Cost-of-equity-for-RIIO-2-Q4-2019-update.pdf

Consultation position: Step 1 Ofgem view on risk-free rate

Allowance parameter	Consultation position
Risk-free rate	To implement the approach described in the SSMD. We seek stakeholder views on an excel model, published alongside these Draft Determinations, which demonstrates equity indexation for RIIO-2. We propose to retain some discretion during RIIO-2 to refine the calculation in light of difficulties estimating CPIH-real gilts using market data, as reflected in a recent HM Treasury consultation.[50]

3.6 We publish alongside these Draft Determinations, a model ("WACC allowance model.xlsx") to demonstrate our proposed implementation approach in line with SSMC and SSMD. This will allow NGN and other stakeholders to review the proposed detailed implementation, and to suggest any changes prior to Final Determinations. This model implements the approach we describe in paragraph 4.2. Table 9 displays our latest estimates for risk-free rates.

Table 9: Risk-free rate and the forward curve, 20yr tenor, as of May 2020

Component	2022	2023	2024	2025	2026	Average	Ref	Source
Risk-free rate (RPI, spot)	-2.37%	-2.37%	-2.37%	-2.37%	-2.37%	-2.37%	A	Bank of England
Uplift (RPI)	0.02%	0.05%	0.09%	0.14%	0.19%	0.10%	B	Bank of England
Risk-free rate (RPI, forward)	-2.36%	-2.32%	-2.29%	-2.24%	-2.18%	-2.28%	C	C = A+B
Risk-free rate (CPIH, spot)	-1.58%	-1.58%	-1.58%	-1.58%	-1.58%	-1.58%	D[51]	D = (1+A) * (1+0.8127%)-1
Uplift (CPIH)	0.02%	0.05%	0.09%	0.14%	0.19%	0.10%	E	E = F - D
Risk-free rate (CPIH, forward)	-1.57%	-1.53%	-1.49%	-1.44%	-1.39%	-1.48%	F	F = (1+C) * (1+0.8127%)-1

Source: Ofgem analysis of Bank of England data

Rationale for consultation position

3.7 Stakeholders did not raise material objections to equity indexation and we continue to believe that the benefits of equity indexation outweigh the drawbacks. We also believe that using a one-month averaging period has theoretical and practical benefits, and would also allow rising rates to be reflected faster than a 6-month or 12-month averaging period, given our proposal to use observed rather than forecast market values. We revisited whether to retain our proposed

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[50] https://consultations.ons.gov.uk/rpi/2020/
[51] The value 0.8127% is derived above in Table 3

approach of using a 1-month average (October) rather than a 12-month average. The difference is typically very small between these approaches, based on the 22 years to October 2019. We also considered again the relevant tenor and continue to consider that a 20-year horizon is appropriate, given its stability.

3.8 We continue to believe that using real gilts rather than nominal gilts, is simpler, because it avoids the need to adjust for an inflation risk premium. We recognise that updating equity allowances is novel and that stakeholders are keen to ensure any implementation avoids value leakage. In particular, we see that our proposed method relies on RPI gilts, and that HM Treasury has been consulting on the definition of these, indicating changes are likely in the coming years. Therefore, we propose to retain scope to reflect these issues, such that during each November in the RIIO-2 period we will publish an updated calculation model during our Annual Iteration Process making as few changes as necessary to reflect our best estimate of CPIH-real risk-free rates. Some discretion during RIIO-2 seems necessary to secure value neutrality, as advocated by network companies and NERA.

Consultation question on risk-free and equity indexation

FQ4. Do you have any views on the model to implement equity indexation, as published alongside this document, (the "WACC allowance model.xlsx") or on the annual update process?

Total Market Returns (TMR)

Business Plan submissions

3.9 Submissions highlight TMR as an area of material difference between companies' views on the cost of equity and Ofgem's. For example, Cadent's Business Plan (page 177) implies that TMR issues explain approximately half of the difference between its view on the cost of equity (5.6%, CPI real) and the Ofgem SSMD (4.8%, CPIH real).

3.10 NGN and SGN refer to a report from Oxera dated November 2019[52], to support arguments that the SSMD range for TMR (6.25% to 6.75%, CPIH-real) should be higher (referring to Oxera's range of 7.0% to 7.5%, CPIH-real).

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[52] https://www.oxera.com/wp-content/uploads/2018/01/Cost-of-equity-for-RIIO-2-Q4-2019-update.pdf

3.11 After the Business Plan submission deadline (9th December 2019) on 7 February 2020 NGET supplemented its Business Plan submission by referring us to a report it published (that week) on its website.[53] In that report, NGET focus on the issue of how real returns are derived from nominal returns, under various assumptions for inflation. NGET refer to inflation measurement as the primary issue with the SSMD working assumption for TMR (6.25% to 6.75%, CPIH-real), as argued by network companies or their advisors NERA, Oxera and Frontier Economics, and hence the main reconciling item between SSMD and Oxera's recommended TMR (7.0% to 7.5%, CPIH-real). Further, NGET and NGGT estimate materially higher values than Oxera, proposing a TMR range from 7.30% to 8.30% (CPIH-real).

Consultation position: Step 1 Ofgem view on TMR

Allowance parameter	Consultation position
Total Market Returns	TMR range of 6.25% to 6.75% in line with SSMD.

Updated analysis

3.12 Submissions on TMR generally fail to address or improve the analysis presented up to this point in SSMC and SSMD.

3.13 For example, Oxera's view (7.0% to 7.5%) appears heavily influenced by its Dividend Discount Model (DDM), and its view on how to account for inflation. However, Oxera's DDM analysis follows the Bank of England (BoE) methodology, which focuses on changes rather than levels, which we noted in SSMD is less appropriate for our purposes.[54] Oxera do not address in detail this issue or the alternative specification put forward by CEPA as presented in SSMC.[55]

3.14 Similarly, NGET's paper on inflation focuses on one measure, often RPI, rather than of the 'best available' measure(s). In doing so, NGET add the forward looking RPI-CPI wedge to the historic real return, which therefore embeds the forecast RPI-CPI differential into 'historic' (sic) returns.[56] This assumes, incorrectly in our view, that RPI best reflects investors' current expectations. We continue to

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[53] https://www.nationalgridet.com/document/132971/download
[54] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=38
[55] https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=29
[56] https://www.nationalgrid.com/uk/electricity-transmission/document/132971/download#page=53

disagree that RPI is the best measure of inflation expectations, as noted in SSMD.[57]

3.15   Both Oxera and NGET rely on arithmetic averaging, with reference to research by Cooper (1996).[58] However, this reliance does not address the fact that most investment professionals focus on the geometric return over the investment horizon. Further, Blume (1979)[59] has shown that if the holding period is longer than one year, the arithmetic mean of one-year returns is an upwards-biased measure of the true expected return. We remain unconvinced that arithmetic averaging, particularly if it is unadjusted, is more reliable than adjusting geometric means upwards, in line with our SSMD view.[60]

Competition and Markets Authority (CMA) price determination for NERL

3.16   Since receiving Business Plan submissions, we made representations to the CMA on a price determination for NATS En-route Limited (NERL).[61] Recognising that TMR is of cross-sector importance, we referred the CMA to TMR issues identified during the RIIO-2 process, noting that the issues brought to the CMA appeared largely identical and that NERA provided similar advice to network companies and NERL.[62]

3.17   The ENA also made representations to the CMA on TMR[63] noting its view that the CMA's work could have a significant impact on other sectors. We agree with the ENA in this respect. Reflecting this, the ENA's submission argues that TMR estimation is the first alleged error by the Civil Aviation Authority (CAA) when estimating the cost of capital for NERL. The ENA noted that the CAA's estimate (of 5.4% RPI-real) aligned the CAA with the SSMD working assumption (of 6.25% to 6.75% CPIH real), while highlighting the UK Regulator's Network (UKRN) as a common source of evidence for both regulators.[64] In addition to the ENA's

[57] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=36

[58] http://faculty.london.edu/icooper/assets/documents/ArithmeticVersusGeometric.pdf

[59] Blume, M, 'Unbiased estimators of long-run expected rates of return', Journal of the American Statistical Association, 1979.

[60] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=37

[61] https://www.gov.uk/cma-cases/nats-en-route-limited-nerl-price-determination

[62] https://assets.publishing.service.gov.uk/media/5e0f650340f0b6280cec1aa0/Ofgem_representation_letter__Redacted_---.pdf

[63] https://assets.publishing.service.gov.uk/media/5e0f645940f0b6281228772f/ENA_submission.pdf

[64] https://assets.publishing.service.gov.uk/media/5e0f645940f0b6281228772f/ENA_submission.pdf

submission, the CMA also considered other evidence from Oxera and Professor Alan Gregory that the CAA's TMR estimate was too low.[65]

3.18 On 24th March the CMA published it provisional findings, including its view on TMR[66] alongside its own analysis of the issues raised, focusing on inflation. The CMA's analysis reflected arguments that we made in the SSMD, for example that the formula effect has almost doubled since 2010[67] and that the primary dataset on returns from Dimson Marsh Staunton (DMS) has changed each year to rely increasingly on CPI data, including for back-casting.[68]

3.19 On an historical ex-post basis, the CMA conducted its own analysis, including on the best inflation measures for the first half of the 20th century, concluding that it is appropriate to use a Consumption Expenditure Deflator (CED) for that period. On that basis the CMA estimated real returns, on a CED/CPI basis, in the range 6.1% to 6.9%. After considering other approaches, and taking the evidence in the round, the CMA concluded that a range of 5% to 6% on an RPI-real basis, is reasonable.

Rationale for consultation position

3.20 We are of the view that submissions on TMR generally fail to address or improve the analysis presented in SSMC and SSMD, and therefore our working assumption for TMR remains. The issues we identify at SSMD[69], including on inflation measurement and averaging, continue to underpin the failings in company submissions/arguments.

3.21 The CMA in NERL considered the same inflation claims made by network companies in various RIIO-2 submissions and also considered various other estimation issues before arriving at a similar range as that we set out in the RIIO-2 SSMD. Given the TMR is not sector specific, the CMA's provisional findings are a relevant consideration for our RIIO-2 price control proposals. We agree with the

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https://assets.publishing.service.gov.uk/media/5e1f2d2740f0b65dbc5d8269/Anglian_Water__Northumbrian_Water__and_Wessex_Water_NATS_submission.pdf
66 https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=180
67
https://assets.publishing.service.gov.uk/media/5e7a266cd3bf7f52f03c8a06/Appendices_and_glossary_PFs.pdf#page=22
68
https://assets.publishing.service.gov.uk/media/5e7a266cd3bf7f52f03c8a06/Appendices_and_glossary_PFs.pdf#page=27
69 https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=34

CMA's reasoning, which is similar to our own, that various reasonable methods of accounting for inflation tend to result in a similar impression for real TMR. We also note that the CMA's use of other inflation measures, such as CED, provide a cross-check on the approach taken by the Bank of England, yielding a similar result.

3.22 Noting the CMA proceedings are ongoing, and that the 17 of November 2020 is the statutory deadline for a determination to be sent to the CAA, we will consider the CMA's final view alongside stakeholder responses to these draft determinations, prior to making final determinations for RIIO-2.

3.23 Given our updated analysis, and the consistency of our work with the CMA's provisional findings in the NERL appeal, we remain of the view that a TMR range of 6.25% to 6.75% (CPIH-real) is appropriate for RIIO-2 price controls.

Equity beta and asset beta

Business Plan submissions

3.24 NGN and SGN refer to work by Oxera dated November 2019. In its report, Oxera updates its previous recommendation from an equity beta range of 0.93-0.98 as per its February 2018[70] report, to a new lower range of 0.88-0.95, with both ranges stated at 60% gearing.[71] The change in Oxera's recommendation reflects a lower asset beta range (0.38 to 0.41) compared to its previous report (0.40 to 0.42) – both ranges assume debt beta of 0.05. In both reports, Oxera placed weight on European comparator companies, more so than water networks in England and Wales. In both reports, Oxera recommend selecting a point estimate from the top half of the wider ranges it identified, which were 0.38 to 0.42 (February 2018) and in 0.36 to 0.41 (November 2019). In its November 2019 report, Oxera note three arguments for this:

- That CAPM tends to underestimate the required equity return for holding equity with beta less than 1;
- Evidence of systematic risk factors not being picked up in the CAPM market beta (policy and regulatory risk); and
- Evidence that the level of political and regulatory risk has increased over time.

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[70] https://www.oxera.com/wp-content/uploads/2018/07/ENA-cost-of-equity_2018-02-28.pdf.pdf
[71] https://www.oxera.com/wp-content/uploads/2018/01/Cost-of-equity-for-RIIO-2-Q4-2019-update.pdf#page=54

3.25 SPT argue that Ofgem's approach for estimating beta has not been properly justified and is technically flawed, referring to supporting work by NERA. In a report for SPT dated November 2019, NERA update earlier work for SPT (April 2019), arriving at the same ranges for equity beta (0.88 to 0.98) and asset beta (0.38 to 0.42, assuming a debt beta of 0.05). NERA also note a lower asset beta range of 0.35 to 0.39, when assuming a debt beta of zero. The low end of NERA's asset beta range reflects a relative risk analysis between SPT and NG plc, which NERA infer after decomposing NG's beta for US and GB operations, before arguing that SPT's risk is at least as high as NG plc's beta which NERA estimate has a midpoint of 0.38. The high end of NERA's asset beta range reflects relative risk analysis with European comparators, where NERA conclude that SPT face similar risk as Italian and Spanish networks, whose asset beta is around 0.42. NERA also argue that "SPT faces greater risks than other energy networks in relation to complexity of investment, competition and asset stranding risks from uncertainty over future flows on transmission networks".[72] SPT's Business Plan argues "TOs… face greater risks than most other energy networks" for the same reasons.[73]

3.26 NGET refer to work by NERA dated April 2018[74] and March 2019[75] noting that NERA's April 2018 report recognised asset betas for UK network companies had ranged from 0.3 to 0.4 (assuming zero debt beta) but with National Grid's group beta in the upper half of the range. NERA's March 2019 report proposed a range for asset beta from 0.40 to 0.45 (assuming zero debt beta) recognising information from European companies and the effect of disaggregating National Grid's Group beta. NGET also refer to asset beta values that were included in Ofgem's SSMD range between 0.37 to 0.46 when MAR and fair value of debt adjustments are not used. Based on these asset betas and assuming notional RAV gearing of 60%, NGET estimate a notional equity beta of 0.9 to 0.95.

3.27 To supplement its views on beta, NGET also published, alongside its Business Plan, two reports by Frontier dated 9 January 2020.

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[72] https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_9_SPT_WACC_report.pdf
[73] https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_25_Finance.pdf#page=16
[74] "RIIO-T2 Beta and Risk Assessment", NERA, prepared for National Grid, 30 April 2018. File name "…Appendix 3…" as published here:
https://www.ofgem.gov.uk/system/files/docs/2018/06/tos_sos_and_ena_responses_riio-2_frameowrk_consultation.zip
[75] "Review of Indepen report recommendations on beta estimation" prepared for National Grid. As published here in the NGET NGG folder: https://www.ofgem.gov.uk/system/files/docs/2019/05/responses_f_-_r.zip

3.28 In the first report,[76] Frontier conduct two types of decomposition analysis in an attempt to estimate the beta for pure play GB regulated energy networks. The first decomposition approach, which Frontier call "direct beta decomposition", decomposes betas for SSE and National Grid, concluding that a pure play asset beta based on NG data is in the range 0.30 to 0.43, while SSE data implies a range 0.44 to 0.50. The second decomposition approach, which Frontier call "full information beta estimation", shows asset betas for GB/European regulated energy networks are in the range 0.39 to 0.45 (assuming a debt beta of 0.1) or 0.36 to 0.43 (assuming debt beta of 0.05).[77]

3.29 In the second report,[78] Frontier address two elements of the SSMD working assumption with regards to gearing measurement, the Market to Asset Ratio adjustment and the Market Value Factor adjustment. Frontier conclude that both have the effect of decreasing the estimate of the cost of equity and result in an estimate that is, in its view, too low.

Updated analysis

3.30 Figure 7 below highlights SSE's separation from four comparator stocks.

Figure 7: Raw equity betas to 11th May 2020, 5-year estimation windows
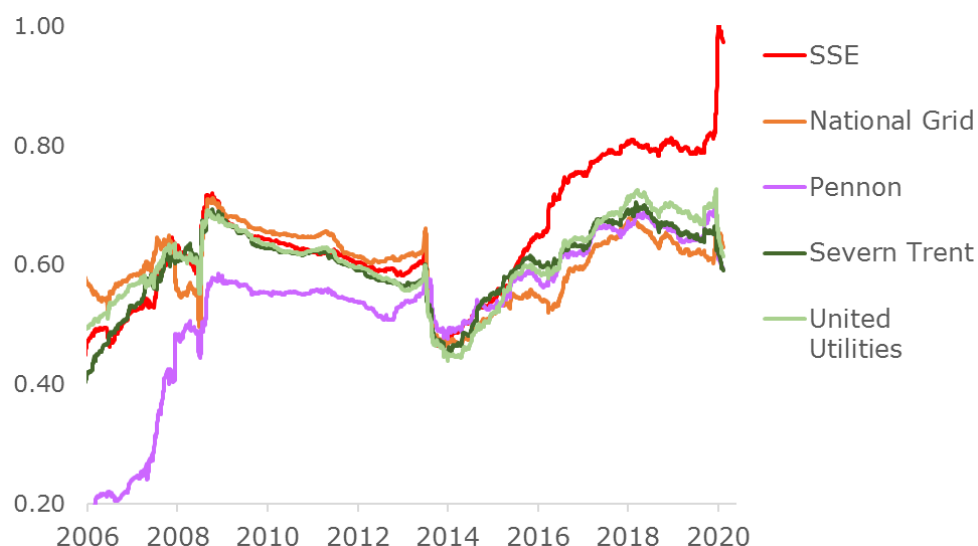
Source: Ofgem analysis of Bloomberg share price movements

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[76] "Beta decomposition, report for National Grid and SSE" 9th January 2020, https://www.nationalgridet.com/document/132956/download
[77] See Figure 9 here: https://www.nationalgridet.com/document/132956/download#page=22
[78] "Review of Ofgem's RIIO-2 Beta estimation, De-gearing and re-gearing of betas" 9th January 2020, https://www.nationalgridet.com/document/132961/download

3.31 SSE's departure from the other four companies reflects its business profile, with greater exposure to retail and generation businesses, and therefore the associated demand risk. Table 10 below shows that SSE has the lowest proportion of revenue and assets attributable to UK regulated networks as a percentage of its total business. In contrast, SVT and UU have much higher proportions of their businesses exposed to UK regulated network assets, and in the case of UU, it can be presented as a long-term pure-play network company.

Table 10: Business profiles. Average proportions, 5 years ending March 2019

Averaging period	SSE	NG	PNN	SVT	UU
UK regulated networks: proportion of revenue	6%	36%	39%	89%	100%
UK regulated networks: proportion of operating income	69%	51%	80%	94%	100%
UK regulated networks: proportion of total assets	34%	42%	62%	97%	100%

Source: Ofgem analysis of Bloomberg business segmentation data

3.32 Given the uncertainty of any beta estimate, we consider a range of estimation approaches and averages. Table 11 presents raw equity beta estimates for SSE, National Grid plc (NG), Pennon (PNN), Severn Trent (SVT) and United Utilities (UU).

Table 11: Raw equity betas to 11th May 2020 using OLS estimation

Estimation window	Averaging period	SSE	NG	PNN	SVT	UU	Average	Average (exc SSE)	Average of PNN, SVT & UU
2-year	Spot	1.05	0.63	0.51	0.54	0.56	0.66	0.56	0.54
2-year	2-year	0.68	0.63	0.61	0.60	0.63	0.63	0.62	0.61
2-year	5-year	0.78	0.64	0.65	0.65	0.68	0.68	0.66	0.66
2-year	10-year	0.65	0.58	0.59	0.59	0.59	0.60	0.59	0.59
5-year	Spot	0.97	0.63	0.59	0.59	0.61	0.68	0.61	0.60
5-year	2-year	0.81	0.64	0.66	0.66	0.69	0.69	0.66	0.67
5-year	5-year	0.75	0.61	0.63	0.64	0.65	0.66	0.63	0.64
5-year	10-year	0.66	0.60	0.58	0.60	0.61	0.61	0.60	0.60
10-year	Spot	0.79	0.59	0.56	0.57	0.57	0.62	0.57	0.57
10-year	2-year	0.64	0.57	0.57	0.57	0.57	0.58	0.57	0.57
10-year	5-year	0.64	0.60	0.56	0.59	0.59	0.60	0.59	0.58
10-year	10-year	0.61	0.60	0.52	0.58	0.59	0.58	0.57	0.56

Source: Ofgem analysis of Bloomberg share price movements

3.33 This analysis provides similar results to those presented in SSMD[79], with the majority of the values between 0.55 and 0.70 and with SSE the notable outlier.

3.34 Combining this market data on beta with a risk-free rate of -1.48% and a TMR of 6.5%, based on Table 9 and paragraph 3.23 respectively, suggests costs of equity shown with Table 12.

Table 12: Cost of equity using observed raw equity betas (CPIH-real)

Estimation window	Averaging period	SSE	NG	PNN	SVT	UU
5-year	Spot	6.3%	3.5%	3.2%	3.2%	3.4%
10-year	Spot	4.8%	3.2%	3.0%	3.1%	3.1%

Source: Ofgem analysis using CAPM, for example SSE's 6.3% = -1.48% + 0.97*(6.5%- -1.48%), where 0.97 sourced from Table 11

3.35 In this way, raw equity betas provide direct market evidence and an insight on actual market costs for these companies. However, we recognise that market estimates relate to actual companies rather than a notional energy network licensee. Further, these estimates may not be directly comparable with each other or with the notional company because each has distinct financial risks and business profiles.

3.36 To address the impact of financial risk and to make the estimates more comparable with each other, it is common to estimate asset betas. Doing so however requires further assumptions, primarily on debt beta and the applicable level of financial gearing, both of which can be debated and form material elements of arguments made by network companies and their consultants.

3.37 Regarding debt beta, the UKRN published a report in December 2019 prepared by CEPA together with Professor Robin Mason.[80] This report highlights reasons to assume a debt beta greater than zero. In terms of sensitivities, the report highlights the relationship between asset beta, debt beta and gearing. For example, when raw equity beta is between 0.6-0.7 and when actual gearing is lower (by up to 10%) than notional gearing (60% is used), the report demonstrates that:

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[79] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=152
[80] https://www.ukrn.org.uk/wp-content/uploads/2019/12/CEPAReport_UKRN_DebtBeta_Final.pdf

- each 500bps (5%) increase in actual gearing decreases asset beta estimates by approximately 0.03; and

- each 0.05 increase in the assumed debt beta increases asset beta estimates by approximately 0.03.

3.38   In this way, uncertain estimates of debt beta and actual gearing will impact asset beta estimates, which can then impact on notional equity beta estimates. Further, the report illustrates that when actual and notional gearing are aligned, the re-geared equity beta equals the raw equity beta.[81]

3.39   After considering Business Plan submissions, supporting consultancy reports, the UKRN study and the evidence we presented at SSMD, we remain of the view that a debt beta between 0.1 and 0.15 is reasonable. Oxera's analysis supports our view that a reasonable value for debt beta can lie above zero, given the statistically significant debt beta of 0.2 which Oxera report for National Grid.[82] We consider this further below (see paragraph 3.70), in light of the interaction with gearing.

3.40   Regarding actual gearing, companies and their consultants generally encouraged us to focus on one definition: book value of net debt divided by (Market Capitalisation + book value of net debt).[83] Table 13 below presents estimates of actual gearing, including the plausible impact of the market value of debt, which we estimate using the same approach as the SSMD.

Table 13: Actual gearing estimates to 11th May 2020

Estimation window	Gearing definition	Market (fair) value or book value of debt	SSE	NG	PNN	SVT	UU
2-year	Net debt / (Net debt + Market Capitalisation)	Book value	41%	48%	46%	55%	58%
2-year		Market value	43%	50%	47%	59%	61%
5-year		Book value	33%	44%	44%	52%	55%
5-year		Market value	36%	47%	44%	57%	58%
10-year		Book value	30%	45%	44%	52%	55%
10-year		Market value	33%	48%	43%	56%	57%

Source: Ofgem analysis of Bloomberg share price movements and companies' financial accounts

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[81] https://www.ukrn.org.uk/wp-content/uploads/2019/12/CEPAReport_UKRN_DebtBeta_Final.pdf#page=23
[82] https://www.ukrn.org.uk/wp-content/uploads/2019/12/CEPAReport_UKRN_DebtBeta_Final.pdf#page=10
[83] See for example Oxera: https://www.oxera.com/wp-content/uploads/2018/01/Cost-of-equity-for-RIIO-2-Q4-2019-update.pdf#page=38

3.41   As identified by Indepen in its December 2018 report[84], there is a consistency question to address with regards to the use of market data (eg EV) in the de-gearing step while using non-market data (eg RAV) in the re-gearing step. Business Plan submissions did not identify a solution to this problem that satisfied the twin aspirations of using market data on one hand while ensuring consistency on the other. As explained in Indepen's work, when EV is 10% greater than RAV, the above estimates of gearing could be 10% too low when attempting to re-estimate the equity beta at a different gearing level for RAV (or notional gearing could be 10% too high, ie 60% instead of 55%).

3.42   It is fair to argue, as network companies have done, that a consistency adjustment could be made in either the de-gearing or re-gearing steps, hence explaining the different approach taken by Indepen compared with the SSMD. However, we note the results are similar under either approach. In any case, our primary concern is that a 10% uncertainty on gearing can flow through to 10% uncertainty in both asset beta and equity beta estimates (we observe higher impacts on equity beta at lower levels of debt beta).[85]

3.43   Oxera argue that a similar consistency issue arises for debt, in terms of inconsistent definition for actual gearing and notional gearing, given the difference between market values and book values. In any case, based on the Business Plan submissions, it appears that these consistency issues remain unresolved. We consider this below at paragraph 3.70 in light of the CMA's recent provisional findings in the NERL price control determination and its references to Modigliani Miller theory.[86]

3.44   Figure 8 below demonstrates asset beta estimates using a range of estimation windows.

Figure 8: Asset betas to 11 May 2020 and RIIO-2 proposals (debt beta 0.125) relative to Oxera arguments (debt beta 0.05)
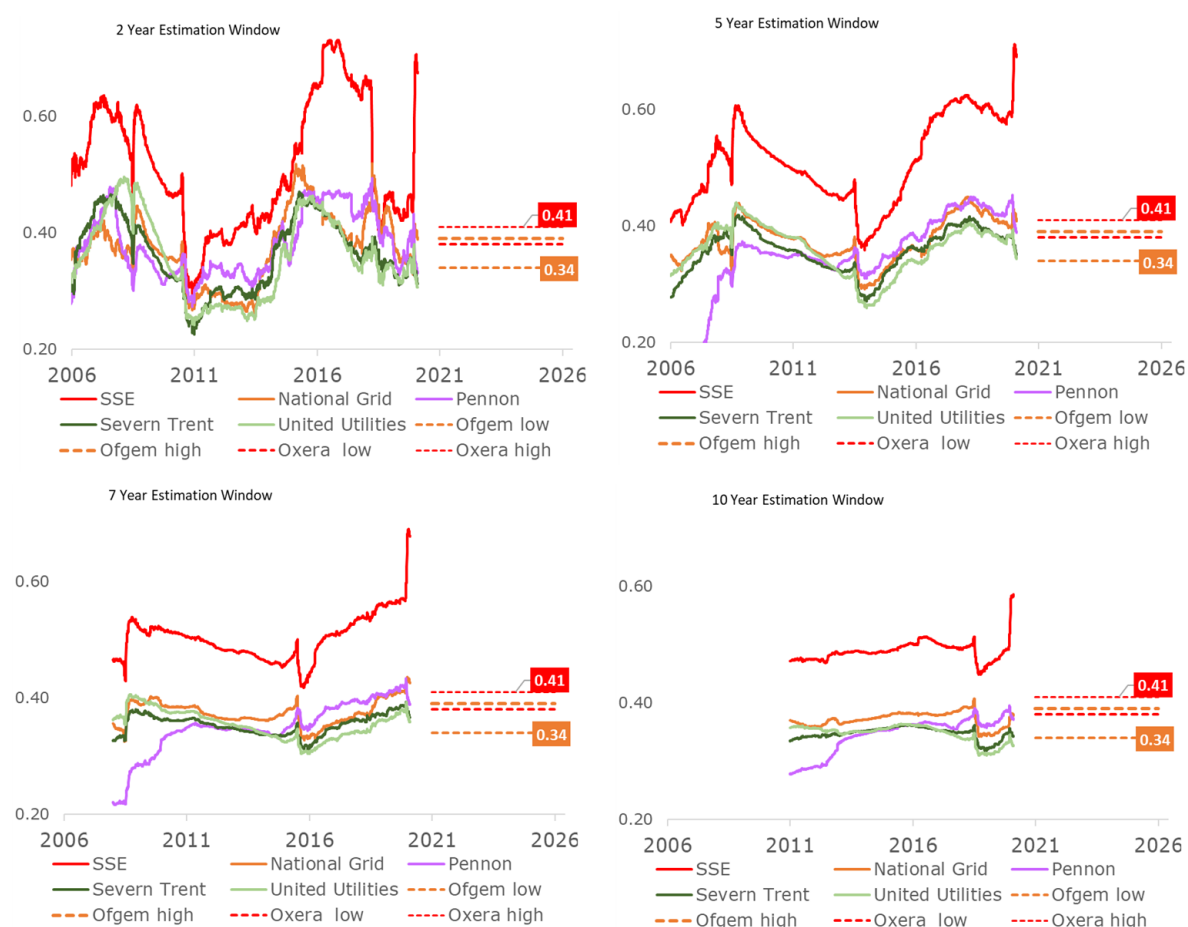
Source: Ofgem analysis of Bloomberg share price movements

3.45 Table 14 presents asset beta estimates that recognise one of the two gearing sensitivities (market value of debt impact, setting aside the issue that EV values are generally higher than RAV).

Table 14: Asset betas to 11th May 2020 using OLS estimation, (debt beta of 0.125)

Estimation window	Averaging period	Market value of debt	SSE	NG	PNN	SVT	UU	Average	Average (exc SSE)	Average of PNN, SVT & UU
2-year	Spot	No	0.67	0.39	0.33	0.31	0.31	0.40	0.33	0.32
2-year	2-year	No	0.47	0.40	0.39	0.34	0.34	0.39	0.37	0.36
2-year	5-year	No	0.58	0.42	0.43	0.38	0.38	0.44	0.40	0.40
2-year	10-year	No	0.50	0.37	0.38	0.35	0.33	0.39	0.36	0.35
2-year	Spot	Yes	0.65	0.38	0.33	0.29	0.29	0.39	0.32	0.30
2-year	2-year	Yes	0.46	0.39	0.39	0.32	0.32	0.37	0.35	0.34
2-year	5-year	Yes	0.56	0.40	0.43	0.36	0.36	0.42	0.39	0.38
2-year	10-year	Yes	0.48	0.36	0.39	0.33	0.33	0.38	0.35	0.35
5-year	Spot	No	0.69	0.41	0.39	0.35	0.34	0.44	0.37	0.36
5-year	2-year	No	0.61	0.42	0.43	0.39	0.38	0.45	0.41	0.40
5-year	5-year	No	0.58	0.40	0.41	0.38	0.37	0.43	0.39	0.39
5-year	10-year	No	0.51	0.37	0.38	0.35	0.35	0.39	0.36	0.36
5-year	Spot	Yes	0.67	0.39	0.39	0.33	0.33	0.42	0.36	0.35
5-year	2-year	Yes	0.59	0.40	0.43	0.36	0.37	0.43	0.39	0.39
5-year	5-year	Yes	0.56	0.38	0.42	0.36	0.36	0.42	0.38	0.38
5-year	10-year	Yes	0.50	0.37	0.39	0.34	0.35	0.39	0.36	0.36
10-year	Spot	No	0.59	0.38	0.37	0.34	0.33	0.40	0.35	0.35
10-year	2-year	No	0.49	0.36	0.37	0.34	0.32	0.38	0.35	0.34
10-year	5-year	No	0.49	0.37	0.37	0.35	0.34	0.38	0.36	0.35
10-year	Spot	Yes	0.57	0.37	0.38	0.32	0.32	0.39	0.35	0.34
10-year	2-year	Yes	0.47	0.35	0.38	0.32	0.32	0.37	0.34	0.34
10-year	5-year	Yes	0.48	0.37	0.38	0.34	0.34	0.38	0.35	0.35

Source: Ofgem analysis of Bloomberg share price movements and companies' financial accounts

3.46 We asked Dr Donald Robertson to provide an update on the beta study he conducted in 2018.[87] Specifically, we asked Dr Robertson to extend and update his previous work, using both GARCH and OLS, to estimate asset betas using various debt beta assumptions (0.125 and zero, hence capturing the range of, and improving comparability with, stakeholder views). Dr. Robertson's work is published alongside these Draft Determinations.

3.47 We note a particular finding from this work is the materially lower results for asset beta when using a GARCH approach rather than OLS, as demonstrated below.

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[87] https://www.ofgem.gov.uk/system/files/docs/2018/12/ofgem_dr_dec_2018.pdf

Table 15: Asset/unlevered betas, GARCH & OLS, over 5, 10 and 20-year periods

Period	Company	GARCH (debt beta = 0.125)	OLS (debt beta = 0.125)	Difference (GARCH/ OLS -1)	GARCH (debt beta = 0)	OLS (debt beta = 0)	Difference (GARCH/ OLS -1)
2000 to 2020							
	SSE	0.467	0.498	-6%	0.435	0.466	-7%
	NG	0.366	0.379	-3%	0.306	0.319	-4%
	PNN	0.283	0.295	-4%	0.223	0.235	-5%
	SVT	0.303	0.321	-6%	0.238	0.256	-7%
	UU	0.325	0.339	-4%	0.260	0.274	-5%
2010 to 2020							
	SSE	0.542	0.583	-7%	0.485	0.545	-11%
	NG	0.369	0.378	-2%	0.312	0.322	-3%
	PNN	0.360	0.368	-2%	0.304	0.312	-3%
	SVT	0.325	0.339	-4%	0.260	0.273	-5%
	UU	0.314	0.323	-3%	0.244	0.253	-4%
2015 to 2020							
	SSE	0.620	0.684	-9%	0.578	0.642	-10%
	NG	0.379	0.406	-7%	0.323	0.351	-8%
	PNN	0.364	0.384	-5%	0.309	0.328	-6%
	SVT	0.334	0.347	-4%	0.268	0.282	-5%
	UU	0.333	0.341	-2%	0.263	0.271	-3%

Source: Report from Dr Donald Robertson, page 10 columns D, F, G and I respectively

3.48 We commissioned CEPA to undertake a study on various sources of evidence on asset beta, including analysis submitted by the ENA and its advisors on European energy network comparators and the decomposition of NG and SSE's group betas. CEPA's report, published alongside this consultation supports an asset beta in the range 0.34 to 0.39. This range reflects CEPA's view on:

a) relative risk analysis

b) de-composition analysis

c) European energy network asset betas

3.49 CEPA's work on a) and b) indicates that pure-play energy networks in GB have several similar risk characteristics as pure-play GB water networks, suggesting that SVT and UU are appropriate comparators for estimating betas for pure play GB energy networks. CEPA recognise there are some different sector specific drivers of risk that are hard to compare and could for example imply a higher risk for energy networks. It appears to us that, in both qualitative and quantitative terms, PNN, NG, and SSE, can be viewed as higher risk than SVT and UU. This observation correlates with the proportions of each business that relate to regulated/unregulated activity, hence highlighting which companies could be better proxies (eg UU, SVT) for pure play energy networks (see Table 10).

3.50 CEPA's work on b) considers the theoretical merits of group beta de-composition but also the practical issues in undertaking and interpreting the analysis. CEPA concludes that it is challenging to draw robust conclusions from the decomposition analysis of SSE and NG's group beta as submitted by the energy networks' advisors, particularly given the volatility in the results over time and between companies. This supports our comments on the Frontier Economics study on beta de-composition provided in Appendix 3. CEPA's work also shows that asset betas for SSE and NG can be closely matched by weighting betas from other listed companies in proportion to adjusted operating profit (re-composition analysis). In general, CEPA's beta re-composition analysis appears consistent with a range of beta conclusions, reflecting the assumptions that must be made in order to conduct the analysis. Among those, one conclusion is that observed betas can be closely matched over the long-term using GB water (or indeed European energy) comparators. The published report from CEPA shows how it constructed asset betas to reflect the SSE and NG business profiles. The results appear to support the theory that GB water networks can provide a good proxy for GB energy networks, on the basis that the results reconcile to SSE and NG's asset betas. CEPA argues that, when estimating the risk of a pure-play GB energy network under the RIIO-2 price control, translating the evidence from SVT and UU is less challenging than translating from decomposition of NG or SSE's group beta.

3.51 For the third piece of analysis, c), CEPA refers to six companies in Europe (Enagas, Red Electrica, Snam, Terne Rete, Elia and REN) as the most representative pure-play energy network comparators available. Using this preferred sample of comparators, CEPA find evidence of asset beta that is consistent with, if not lower, than GB water networks. This indicates that evidence from the most relevant European comparators, supports, or even puts downward pressure on asset beta estimates, compared to our preferred four comparator stocks, rather than upward pressure as advocated by Frontier and Oxera in their analysis. The different results and conclusions that CEPA draw from the European comparators compared to Oxera, Frontier and other network advisors including NERA, in the large part reflect the sample companies chosen. Frontier's sample, for example, includes Trans-electrica (a Romanian network) which Frontier show has an asset beta of 0.73 (5-year estimate). CEPA exclude Trans-electric from its analysis as it fails a number of its comparator selection criteria. CEPA includes some of the companies that Oxera included in its European energy network comparator sample, but CEPA also consider a broader sample using its proposed

set of selection criteria. We refer stakeholders to CEPA's report for a full assessment of the sample companies.

3.52 CEPA's work on relative risk provides a basis for making other judgements, such as the risk difference between energy and water or between RIIO-1 and RIIO-2. For further detail, we refer stakeholders to CEPA's analysis as published alongside these draft determinations.

3.53 CEPA's advice regarding the application of MAR evidence indicates that it is possible to apply MAR evidence within Step 1, while noting there may be significant issues to address. Having considered the CEPA advice alongside company submissions it is clear that, when re-levering betas, the risk of inconsistency, as identified by Indepen, remains. The use of cross-checks (as referred to in paras 3.68 to 3.75 below) not involving the traditional de-levering and re-levering approach, is an alternative means of using market evidence to directly inform the cost of equity.[88]

Consultation position: Step 1 Ofgem view on asset and equity beta

Allowance parameter	Consultation position
Asset beta and notional equity beta	Asset beta range of 0.34 to 0.39 and a notional equity beta range of 0.66 to 0.79.

3.54 Setting aside the gearing issues that are not resolved within Business Plan submissions, Table 16 reflects our current judgement that pure-play energy networks hold similar systematic risk to pure-play water networks.

Table 16: Asset beta and notional equity beta range

Component	Low	Mid	High	Ref	Source
Debt beta		0.125		A	Ofgem judgement
Asset beta	0.34	0.365	0.39	B	Ofgem judgement
Notional gearing		60%		C	As per the SSMD working assumption
Notional equity beta	0.66	0.72	0.79	D	D = [B - (C * A)] / (1 - C)

Source: Ofgem analysis

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[88] Reflecting this, our SSMD working assumptions were informed by beta estimates that did not rely on accounting for MAR within Step 1, as shown in Appendix 5:
https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=159

Step 1 CAPM-implied cost of equity at 60% notional gearing

3.55 Table 17 summarises CAPM evidence as per the preceding sections.

Table 17: Step-1, CAPM-implied cost of equity at 60% notional gearing

Component	Low	Mid	High	Ref	Source
Risk-free rate		-1.48%		A	Table 9
Notional Equity beta	0.66	0.72	0.79	B	Table 16
Total Market Return	6.25%	6.50%	6.75%	C	Paragraph 3.23
CAPM-implied cost of equity	3.64%	4.30%	5.00%	D	D = A + B * (C-A)

Source: Ofgem analysis

Rationale for consultation position

3.56 We considered the various analytical techniques and found some common ground across the evidence. It seems quite clear for example that SSE is exposed to higher risks than regulated networks, as shown in both our qualitative (Table 10) and quantitative analysis (see Table 11, Table 14, Figure 8 and Table 15), making it a poor proxy for RIIO-2 purposes. We are therefore not persuaded to put material weight on the SSE group equity/asset beta. Market evidence for NG, PNN, SVT and UU, as presented in Table 14 suggests asset betas are in the range 0.32 to 0.43, given 5-year and 10-year estimation windows. This is further supported by Figure 8, Table 15 and by CEPA's analysis. Our analysis accords with CEPA's report in terms of the evidence tending to support a smaller range of 0.34 to 0.39. In this respect, our current interpretation and judgement reflects our proposal to put more weight on long run estimates, with estimation windows and averages of 5 and 10 years.

3.57 CEPA's work on relative risk shows that the regulatory framework for GB water networks is similar to GB energy networks and we note that a consultant for the network companies, NERA, agrees with this.

3.58 If GB energy networks are exposed to materially higher systematic risk than GB water networks, as argued by network companies, then reliable de-composition analysis should reveal this. However, Frontier's inference using "direct beta decomposition" depends heavily on whether NG or SSE is decomposed. Frontier's analysis of NG suggests an asset beta from 0.30 to 0.43, in line with both Table 16 and CEPA's analysis, and is therefore supportive of our view. In contrast,

Frontier's analysis of SSE suggests an asset beta of 0.44 to 0.50. We could not see a clear reason that the analysis on SSE should differ materially from the analysis of NG. Given the wide range of 0.30 (NG low) to 0.50 (SSE high), Frontier's approach arguably reduces clarity rather than improves it, because we would expect inferred betas for SSE's GB regulated energy networks to be similar to NG's GB regulated energy networks. It is not clear why the analysis would suggest very different results. In contrast, CEPA's analysis relies less on averaging or on isolated SSE inferences, but instead on the theoretical risk profile of the underlying businesses, which is the fundamental motivation for any decomposition approach. Further, CEPA's theory and analysis reaches similar conclusions for both the NG and SSE asset betas, in contrast with Frontier's.

3.59   Similarly, if GB energy networks are exposed to higher levels of systematic risk than GB water networks, as argued by network companies, then reliable analysis of European comparators should help reveal this. However, Frontier's findings using "full information beta estimation" depend heavily on the sample of comparators chosen, one of which is clearly an outlier (Trans-electrica, a Romanian network) which Frontier show has an asset beta of 0.73 (5-year estimate). Arguably, the inclusion of Trans-electrica would bias results upwards. In contrast, CEPA's analysis shows that a different sample of European companies, which is more reflective of transmission and distribution networks, suggests that asset betas are lower than, or in line with, our proposal as presented in Table 16.

3.60   To compare with Table 16, Oxera's asset beta range (0.36 to 0.41) can be adjusted upwards by approximately 0.03 (as implied by paragraph 3.37) to harmonise the debt beta assumption at 0.125 (rather than Oxera's 0.05). The resulting range (0.39 to 0.44) sits above most of the estimates presented in Table 14 and Table 15. Therefore, we are unable to replicate Oxera's range using similar inputs. On this basis, we were particularly unconvinced about then aiming towards the top end of that range, as argued by Oxera, to reflect alleged CAPM failings, or alleged risks that are not captured (political and regulatory risks). It was not sufficiently clear what these failings were or how we could account for them. Overall, Oxera's recommendation implies materially higher risk than market data without sufficient supporting evidence.

3.61   We agree with Frontier and Oxera that there may be other reasonable approaches to estimate and account for gearing, and that there may be no perfectly consistent method of accounting for equity and debt market values. In any event, our

analysis indicates that estimates for RIIO-2 remain in line with those provided in SSMD.

3.62 Table 18 reviews the key arguments when comparing GB energy networks with GB water networks, with a focus on comparing RIIO-2 with PR19.

Table 18: A qualitative comparison between regulated energy and water networks in GB

Energy networks may bear lower systematic risk than water networks because…	Energy networks may bear similar systematic risk as water networks because…	Energy networks may bear higher systematic risk than water networks because…
… RoRE ranges appear smaller when comparing Figure 22 with Ofwat's FD.[89] See also CEPA report for risk benchmarking	… market observations of beta are typically very similar (see Figure 8)	… of asset stranding (although CEPA suggest that it is difficult to reach a clear and unambiguous conclusion)
… Return Adjustment Mechanisms and ODI caps limit extreme outcomes. As shown in Figure 22 the return adjustment mechanism is proposed to operate at +/- 300bps	… regulatory regimes and price controls (PR19 and RIIO-2) are very similar (see CEPA's relative risk comparison)	… the perception of political interference may be greater for energy networks
… RIIO-2 involves greater use of indexation (debt, equity and RPE mechanisms limit systematic risks)	… investor value, as observed through Market to Asset ratios, is similar for both sectors (see Figure 19 and Figure 20)	… technological uncertainty – and associated opportunities and challenges – may be greater for energy networks
… Pension cost protection is considered more comprehensive for energy networks than water networks		… of market uncertainty for energy networks (eg net zero)
… energy networks appear to have lower totex:RAV ratios and lower incentive strength (see CEPA report)		
… water networks face ongoing reputational and business risks around performance (eg leakage) which may cause higher systematic risk for water networks.		

Source: Ofgem analysis

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[89] PR19 final determination figure 3.11 indicates RoRE impacts are typically larger than 5% of regulated equity (totex + ODIs + C-Mex & D-Mex). In contrast with the RoRE ranges we present in Figure 19 indicate returns are likely to fall within a 4% range, between 2% and 6% of regulated equity. See here: https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Aligning-risk-and-return-technical-appendix.pdf#page=36

3.63 Table 19 provides information on incentive strengths and Totex:RAV. Both variables inform risk comparisons, between RIIO-1 and RIIO-2, and between energy networks and water networks. Smaller values indicate lower risk. For both variables, we generally observe RIIO-2 values are lower than RIIO-1, and that RIIO-2 values are lower than PR19.[90]

Table 19: Incentive strength and plausible Totex:RAV ratios

Sector	Network area	RIIO-1 incentive strength (company share)	RIIO-2 incentive strength (company share)	RIIO-1 Totex/RAV	RIIO-2 Totex/RAV (baseline totex)	RIIO-2 Totex/RAV (Illustrative totex)
GD	East	63.0%	49.6%	10.4%	8.3%	8.7%
	London	63.0%	49.8%	12.8%	9.3%	10.9%
	North West	63.0%	49.5%	10.8%	8.7%	11.1%
	West Midlands	63.0%	49.8%	10.4%	9.2%	10.3%
	Northern	64.0%	49.8%	11.3%	9.9%	10.8%
	Scotland	63.7%	49.5%	10.3%	9.8%	11.8%
	Southern	63.7%	49.5%	10.1%	8.9%	10.3%
	Wales & West	63.2%	49.6%	10.4%	9.3%	11.5%
GT	NGGT	44.4%	36.6%	6.7%	7.4%	8.8%
ET	NGET	46.9%	39.2%	9.8%	5.7%	6.8%
	SHET	50.0%	30.9%	18.7%	8.9%	12.1%
	SPTL	50.0%	39.1%	13.2%	7.7%	11.2%

Source: Ofgem analysis

3.64 Business Plan submissions did not provide detailed evidence on systematic risk differences between energy networks or energy sectors, or detailed systematic risk comparisons between GB energy networks and GB water networks.

Equity beta questions

FQ5. In light of RIIO-2 Draft Determinations and Ofwat's final determinations for PR19, do you believe that energy networks will hold similar systematic risk during RIIO-2 to water networks during PR19?

FQ6. Is there evidence of a material difference in systematic risk between:

a) RIIO-1 and RIIO-2,

b) distribution and transmission networks,

c) gas transmission and electricity transmission,

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[90] Taking an average of outperformance and underperformance values, we note PR19 values are generally close to 50% (see here: https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Securing-cost-efficiency-technical-appendix.pdf#page=141). CEPA's analysis of PR19 Totex:RAV ratios indicates PR19 values are generally larger than RIIO-2 values presented in Table 19.

d) gas and electricity?

Step 2 - Cross-checking the CAPM-implied cost of equity

Business Plan submissions and Call for Evidence

3.65 Generally, Business Plan submissions did not focus on cross-checks.

3.66 Exceptions include NGET, NGGT and SPT, who refer to Oxera advice dated February 2018[91] and November 2019[92], and associated evidence on: asset risk premiums; individual stock Dividend Discount Models (DDM); and regulatory precedent. NGGT and NGET argue that each of these indicate equity returns should be higher than the SSMD working assumption. In its November 2019 report, Oxera also refer to: OFTO returns and Infrastructure fund discount rates. Overall, Oxera focus on DDM-implied cost of equity as its primary cross-check, reporting a cost of equity estimate of 9.3% nominal for National Grid on this basis.

3.67 In a report dated February 2020 for Citizens Advice, its consultant, HMK Advisory, reviews and updates SSMD proposed cross checks.[93]

Updated analysis

Overall WACC cross-check, and beta re-gearing impact

3.68 In March 2018, based on a recommendation from the UKRN Study,[94] we proposed to do more work to understand how we should exercise care in allowing for the impact of leverage when deriving asset beta and in re-gearing for equity beta.[95] In July 2018, we decided to look deeper at the relationship between gearing and beta risk.[96]

3.69 Receipt of Business Plans now allows us to estimate debt levels required to support RIIO-2 investment and the associated notional gearing levels, both of which are inputs to this analysis. Since 2018, additional evidence on debt beta and

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[91] https://www.oxera.com/wp-content/uploads/2018/07/ENA-cost-of-equity_2018-02-28.pdf.pdf
[92] https://www.oxera.com/wp-content/uploads/2018/01/Cost-of-equity-for-RIIO-2-Q4-2019-update.pdf
[93] https://www.ofgem.gov.uk/system/files/docs/2020/02/ca_evidence_riio-2_cost_of_capital_final_report.pdf#page=20
[94] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf
[95] https://www.ofgem.gov.uk/system/files/docs/2018/03/riio2_march_consultation_document_final_v1.pdf#page=127
[96] https://www.ofgem.gov.uk/system/files/docs/2018/07/riio-2_july_decision_document_final_300718.pdf#page=56

actual gearing provide necessary inputs which enable us to now consider further the impact of beta re-gearing in more depth.

3.70 We find that, given our combined assumptions for risk-free and TMR, common approaches to re-gearing asset betas have the effect of increasing the overall WACC estimate. The result holds, even when using high estimates of debt beta, after accounting for the impact of tax, and when using various re-gearing formulae options. The overall effect can imply that the cost of capital is approximately 10bps higher for each five percentage point increase in gearing. We also note that lower levels of debt beta exacerbate this effect, as anticipated in the SSMD,[97] making us further doubt arguments that we should assume a low debt beta.

3.71 This issue has been considered by CMA during the NERL appeal. The CMA noted in its provisional findings that a cost of capital that strictly increases with gearing is not consistent with finance theory or with how actual financing models work.[98] The CMA referred to Modigliani and Miller and their seminal paper[99] from 1958, in support of the view that the cost of capital does not vary with gearing, other than for tax reasons. The CMA also noted that actual financial markets may operate in a 'U-shape' where the cost of capital falls with gearing up to an optimal level, and then starts to rise above that optimal level.

3.72 In its provisional findings, CMA did not need to deal with a large difference between notional and actual gearing, as it assumed that notional gearing aligned with actual gearing estimates. Two of the comparator companies for our RIIO-2 analysis, UU and PNN, have actual gearing levels close to 60% (see Table 13) and hence provide an opportunity to cross-check the overall WACC estimate without material exposure to this effect.

3.73 We considered this theory in the context of the five GB comparators by estimating a cost of capital that is consistent with our other analysis. We did this by assuming a cost of debt of 1.74% combined with the market based cost of equity and actual gearing. The results are shown in Table 20.

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[97] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=51
[98] https://assets.publishing.service.gov.uk/media/5e7a266cd3bf7f52f03c8a06/Appendices_and_glossary_PFs.pdf#page=13
[99] "The Cost of Capital, Corporation Finance and the Theory of Investment". https://www.jstor.org/stable/1809766?seq=1

Table 20: WACC inference at observed gearing levels

Estimation window	Averaging period	Market value of debt	SSE	NG	PNN	SVT	UU
5-year	Spot	Market value	4.6%	2.7%	2.6%	2.4%	2.4%
10-year	Spot	Market value	3.8%	2.5%	2.5%	2.3%	2.3%

Source: Ofgem analysis. For example, SSE's WACC of 4.6% is derived using values from Table 5, Table 13 and Table 12 as follows: 1.74% * 36% + 6.3% * (1-36%)

3.74   These WACC estimates can now be used to derive a cost of equity at 60% gearing, using an assumption that the WACC is invariant to gearing. The results are shown in Table 21.

Table 21: Cost of equity inference at 60% gearing based on flat WACC hypothesis

Estimation window	Averaging period	Market value of debt	SSE	NG	PNN	SVT	UU
5-year	Spot	Market value	9.0%	4.1%	3.8%	3.3%	3.5%
10-year	Spot	Market value	6.9%	3.7%	3.5%	3.2%	3.2%

Source: Ofgem analysis. For example, SSE's 9.0% derived using values from Table 20 and Table 5 as follows: (4.6% - 60%*1.74%) / (1-60%)

3.75   At this stage, we invite stakeholder views on how to consider this cross-check further in advance of Final Determinations. For example, we could put more weight on raw equity beta estimates for UU and PNN (see Table 11) such that the notional equity beta, as per Table 16, remains in line with most applicable market data. To supplement this, we could consider aligning notional gearing with observed gearing for the preferred comparators. Further, we invite analysis on whether there is an optimal level of notional gearing, which may accord with a view that the cost of capital is a U-shaped function.

Market to Asset Ratios (MARs)

3.76   On 16 December 2019, Ofwat published its Final Determinations for the water sector price controls (PR19).[100] Given our interest in benchmarking water networks with energy networks, we monitored how share prices for Severn Trent, United Utilities and Pennon, reacted to Ofwat's decision. The reaction provides an indication on whether the settlement, particularly the allowed returns on equity provided (of 4.19% in CPIH-real terms[101]), was more or less generous than the

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[100] https://www.ofwat.gov.uk/regulated-companies/price-review/2019-price-review/final-determinations/
[101] Ofwat explain that 4.19% relates to the Appointee, which covers retail business risks, whereas 4.09% relates to the wholesale businesses. On the basis that RIIO-2 companies are not exposed to retail risks, the

market expected. By mid-February 2020, all three of these companies decided not to request a reference of Ofwat's decision to the CMA.

3.77   Figure 9 below presents MAR analysis following Ofwat's decision.

Figure 9: MAR ratios, post Ofwat's PR19 final determination[102]
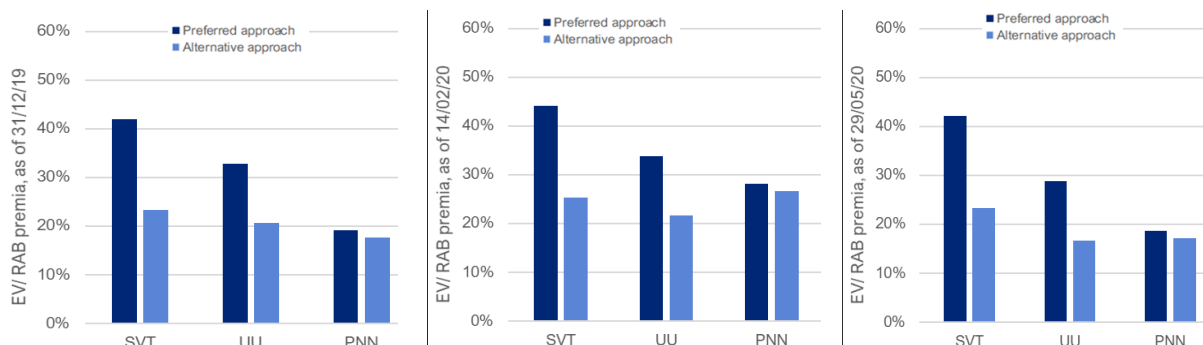
Source: CEPA analysis of Bloomberg, company accounts and Ofwat data

3.78   All three companies show premiums greater than, or near, 20%. A time-series, on a book value of debt basis, is displayed in Figure 10, indicating MAR premiums generally lie between 0% and 30% for UU and SVT.

more accurate comparison is arguably 4.09%. See pages 14 to 18 here: https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Allowed-return-on-capital-technical-appendix.pdf#page=15
[102] 'Preferred approach' incorporates market data on the value of debt. 'Alternative approach' uses book value of debt.

Figure 10: MAR ratios, 2007 to 2020
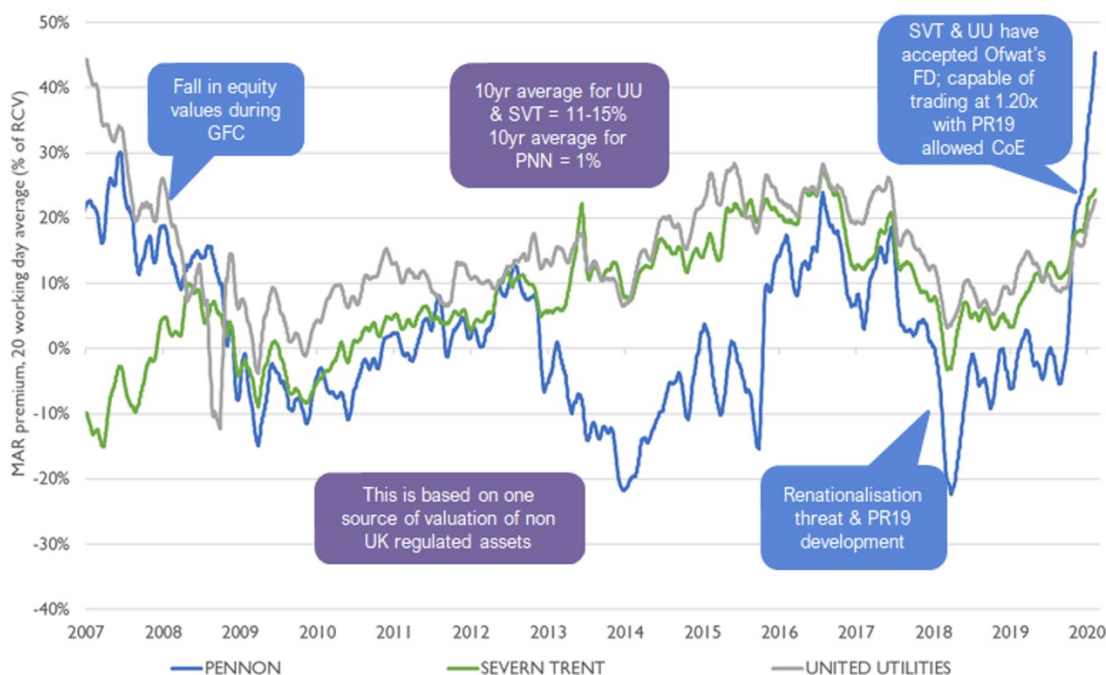
Source: CEPA analysis of Bloomberg and Barclays data

3.79 We publish CEPA's advice alongside these Draft Determinations, which includes a detailed description of its estimation approach and considerations, including estimates of the implied notional equity premiums of 50% for each company based on MAR premiums above 20%. Given this analysis, CEPA consider that:

> *"… Overall, we find it hard to reconcile the observed premiums with a material under-estimation of the cost of equity on the part of Ofwat; indeed, if anything the size of the premiums across three distinct companies is hard to reconcile with operational outperformance alone.... One interpretation is the market cost of capital parameters applied by Ofwat represent an upper limit on the corresponding estimates for the energy sector."*

3.80 CEPA's analysis reflects an underlying assumption that observed premiums are primarily driven by two variables: outperformance (on totex, outputs or debt for example); and Ofwat's allowed return on equity. For example, in isolation, if outperformance alone is sufficient to justify the premia paid, it may be argued that Ofwat's allowed return on equity aligns with each company's cost of equity. We refer to this as a "joint hypothesis problem" because understanding the observed premiums, using this model, recognises that any premium should reflect

both: expected outperformance; and the difference between the cost of, and baseline allowed return on, equity.

3.81 Table 22 infers the cost of equity and expected outperformance given inputs for the other variables.

Table 22: Using MAR and a baseline allowed return of 4.2% to inform the cost of equity and expected outperformance

Given MAR and expected out-(under-) performance, we infer the true cost of equity as follows…				Given MAR and the true cost of equity, we infer expected out-(under-) performance as follows…			
Out-(under-) performance	MAR = 1.0	MAR = 1.1	MAR = 1.2	True cost of equity	MAR = 1.0	MAR = 1.1	MAR = 1.2
-1.0%	+3.2%	+1.7%	+0.6%	5.20%	+1.0%	+3.0%	+5.1%
-0.5%	+3.7%	+2.1%	+0.9%	4.70%	+0.5%	+2.5%	+4.4%
0.0%	+4.2%	+2.6%	+1.3%	4.20%	0.0%	+1.9%	+3.7%
+0.5%	+4.7%	+3.0%	+1.7%	3.70%	-0.5%	+1.3%	+3.1%
+1.0%	+5.2%	+3.4%	+2.1%	3.20%	-1.0%	+0.7%	+2.4%
+1.5%	+5.7%	+3.9%	+2.5%	2.70%	-1.5%	+0.1%	+1.8%
+2.0%	+6.2%	+4.3%	+2.9%	2.20%	-2.0%	-0.4%	+1.1%

Source: Ofgem and CEPA analysis of stylised 20-year model, "Simple MAR application model.xlsx"

3.82 This indicates that:

- a 1.1 MAR combined with 0% expected outperformance implies a true cost of equity of 2.6% (1.6% lower than a 4.2% baseline allowed return);
- a 1.2 MAR combined with 0% expected outperformance implies a true cost of equity of 1.3% (2.9% lower than a 4.2% baseline allowed return);
- a 1.1 MAR combined with a 4.2% true cost of equity implies expected outperformance of 1.9% for a 20-year period; and
- a 1.2 MAR combined with a 4.2% true cost of equity implies expected outperformance of 3.7% for a 20-year period.

3.83 Equity analyst reports indicate potential PR19 outperformance of up to 3% for PNN, SVT and UU, but if we assume the cost of equity is 4.2%, outperformance of approximately 3.7% is needed for 20 years to explain observed premiums. That level of sustained outperformance would be exceptional, and helps justify a view that an allowed return on equity of 4.2% represents an upper limit for the water sector. If we assume that energy and water are of approximately equal risk, given

risk benchmarking discussed above (see paragraphs 3.30 to 3.64), the upper limit of 4.2% applies to GB energy networks by extension.[103]

3.84   To support consultation responses, we publish a copy of the underlying model "Simple MAR application model.xlsx" alongside these Draft Determinations.

3.85   As noted in the UKRN Study,[104] evidence from pure-play utilities is generally not subject to two other explanatory variables; control premium or winners' curse. Given the list indicated by Burns within the UKRN Study,[105] only two other explanatory variables remain: tax arbitrage and financial restructuring, neither of which, in our view, appear sufficiently credible to materially explain market observations, particularly given Ofwat's gearing outperformance mechanism.[106]

Investor bids for Offshore Transmission ownership (OFTOs)

3.86   Since 2011, Ofgem has managed the competitive tender process through which offshore electricity transmission licences are granted, with approximately £3bn raised in the first four tender rounds, and another £3.5bn[107] secured so far in tender rounds five and six.[108]

3.87   These competitive tenders have facilitated £6.5bn of funding to be secured for 23 energy infrastructure projects in the UK, each of which is subject to electricity transmission licences, as shown in Figure 10. Shareholders in these projects include: Mitsubishi Corporation, HICL Infrastructure, Chubu Electric Power, International Public Partnerships (INPP), Balfour Beatty, Equitix, 3i Infrastructure, Dalmore Capital. Various other bidders have also taken part in competitions.

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[103] As described in footnote 101, arguably the upper limit is 4.09% rather than 4.19% for both GB water networks and GB energy networks.
[104] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf#page=13
[105] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf#page=66
[106] https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Aligning-risk-and-return-technical-appendix.pdf#page=131
[107] This figure excludes East Anglia One, the last tender round six project, which is still in the early stages of the tendering process.
[108] https://www.ofgem.gov.uk/electricity/transmission-networks/offshore-transmission/offshore-transmission-tenders

Figure 11: Offshore Transmission projects

Source: Ofgem

3.88   Together, this competitive process provides evidence on the return required by equity investors, as summarised in Figure 12.

Figure 12: OFTOs – average nominal post-tax equity IRR by financial close years and gearing (weighted by project transfer value)[109]
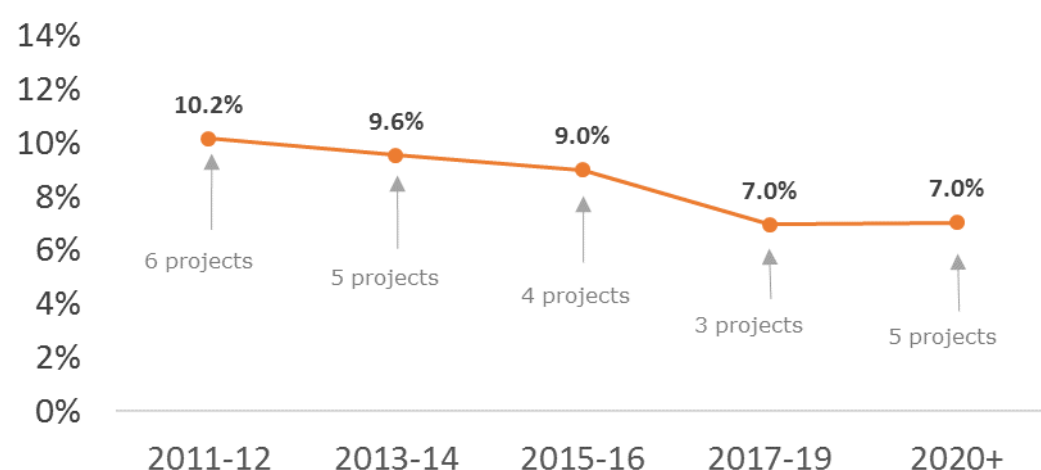
Source: Ofgem

3.89   Combining these IRRs with associated gearing levels (generally 80-90%) and consistent assumptions for TMR, risk-free and debt beta, indicates projects in

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[109] Chart now updated from SSMC such that the fourth data-point reflects Financial Close, hence the fourth data point is now displayed as 7.0% rather than 7.2%.

tender rounds three to six (i.e. when investors became familiar with the regime and its risk profile) reflect asset betas between 0.20 and 0.30, hence lower than results presented in Table 14 and Table 15. We note that the inference here can be affected by the same de-gearing sensitivities noted above, but nonetheless, we see clear investor appetite for low risk energy infrastructure assets and a reduction over time of up to 3.2%.

Investment managers' forecasts

3.90 Our SSMC[110] and SSMD[111] listed forecasts which can be used to cross check TMR and, when coupled with assumptions on risk-free and equity beta, the CAPM-implied cost of equity.

3.91 Updating the SSMD information provides a similar overall impression for this cross-check. In Table 23 below we harmonise further by using a 10-year forecast from Schroders for consistency with the other forecasts, hence explaining the largest change since SSMD. We are also mindful that a 10-year horizon may be shorter than might otherwise be ideal for RIIO-2 purposes. Overall, the levels remain lower than the 7.65% (nominal) that we referred to in SSMD. Given our interest in the change, and the overall level, we note that excluding Schroders does not materially impact on our impression.

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[110] https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=29
[111] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=39

Table 23: Professional forecasts of TMR

	May 2019				Updated: May 2020				
Author	Date	Scope	Horizon	Nominal	Date	Scope	Horizon	Nominal	Change
Schroders	Jan-19	UK	30	8.90%	Dec-19	UK	10	4.90%	-4.00%
Blackrock	Dec-18	EU	10	8.50%	Dec-19	UK	10	5.70%	-2.80%
Old Mutual	Dec-18	UK	L Term	7.99%	Dec-19	UK	L Term	7.52%	-0.47%
Nutmeg	Sep-17	UK	10+	7.80%	Not updated			7.80%	NA
FCA	Sep-17	UK	10-15	7.60%	Not updated			7.60%	NA
Aon Hewitt	Jun-18	UK	10	7.40%	Sep-19	UK	10	7.70%	0.30%
Redacted author	Nov-18	UK	10	7.19%	Not updated			7.19%	NA
Aberdeen	Dec-17	UK	10	6.90%	Dec-19	UK	10	8.60%	1.70%
JP Morgan	Sep-18	UK	L Term	6.57%	Sep-19	UK	L Term	6.90%	0.33%
Willis T W	Dec-18	UK	10	5.24%	Not updated			5.24%	NA
Vanguard	Nov-18	UK	10	5.00%	Dec-19	UK	10	5.00%	NA
Mean				7.19%				6.74%	-0.45%
Mean (excluding WTW and Vanguard)				7.65%				7.10%	-0.55%

Source: Ofgem analysis, published forecasts and discussions with publishers

3.92 On first impression, Table 23 indicates a fall, but we are conscious of a number of further caveats. For example, forecasts may not be on the same basis as May 2019 (for example, in addition to Schroders, Blackrock and Aberdeen may not be on a like-for-like basis). Further, given the impact of COVID-19 which has materialised since December 2019, these forecasts may now be out of date.

Infrastructure funds: discount rates, NAV premiums and implied Internal Rates of Return

3.93 SSMC[112] and SSMD[113] refer to six London listed infrastructure funds that invest in private finance initiatives and private utility assets, such as OFTOs. Noting the different asset and risk characteristics of these funds, two pieces of information from each fund are of interest for RIIO-2: discount rates; and the premium to Net Asset Value (NAV).

3.94 We now include a wider sample of infrastructure funds, increasing the original total from six to fourteen.[114] We also make three further analytical improvements. First, we obtain time-series data for discount rates and premium to NAV. Second, we infer an Internal Rate of Return (IRR) by combining this information. Third, we derive weighted and simple averages to help isolate fund-specific or idiosyncratic issues. Therefore, this analysis now provides, in our view, greater insight on the

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[112] https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=47
[113] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=150
[114] Or thirteen if we exclude 3i.

change in, and the level of, the underlying cost of equity over time on an equity IRR basis.

3.95   Each implied IRR is derived by assuming a simple perpetuity in future cash flows. The underlying formula is presented below, followed by the results in Figure 13.

$$\frac{Fund\ Discount\ Rate}{Fund\ Share\ Price/Fund\ NAV\ per\ share}$$

Figure 13: Infrastructure fund implied equity IRRs
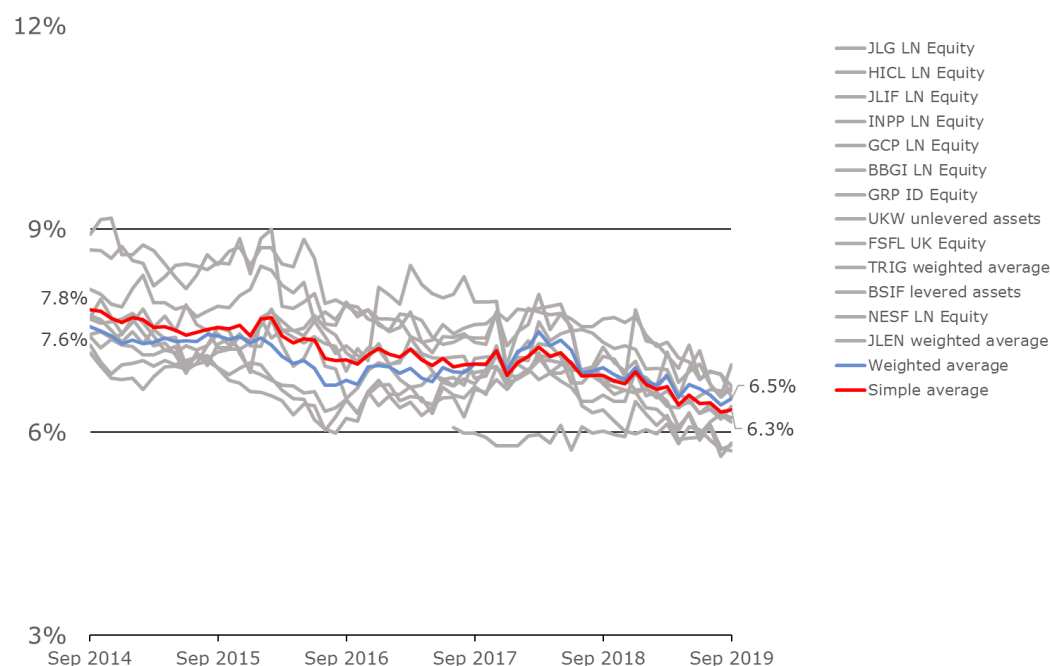
Source: Ofgem analysis of Bloomberg and published accounts

3.96   We have not attempted to present IRRs on a risk-adjusted basis, and hence acknowledge asset or financial risk could impair comparability among funds and/or direct applicability for RIIO-2. Nonetheless, we note this analysis indicates: several funds imply equity returns less than 6% nominal with an average of 6.3%; and, a fall in returns of approximately 1.5% since 2014. Further, we note that the combined value (share price * shares) of the funds is approximately £20bn as at 31 March 2020, signalling strong investor appetite for infrastructure investments.

Other cross-checks

3.97   At SSMD we said we would consider stakeholder further the other cross-checks proposed by stakeholders.[115] Business Plan submissions did not contain material additional information in these respects but we remain open to further information on cross-check approaches prior to Final Determinations.

Summary interpretation of cross-checks

3.98   Table 24 presents a summary of cross-check evidence.

Table 24: Summary evidence on four cross-checks and a cross-check hybrid

Cross-check	Nominal	CPIH-real	Source
Modigliani-Miller cost of equity inference (WACC cross-check)	5.3% to 6.2%	3.2% to 4.1%	Real values as per Table 21 for NG, PNN, SVT and UU. Nominal value derived using 2.02% CPIH assumption, for example: (1+3.2%) * (1+2.02%) – 1 = 5.3%
MAR-implied cost of equity	<= 6.31%	<= 4.2%	Real value implied in paragraphs 3.76 to 3.85. Nominal value derived using 2.02% CPIH assumption. (1+4.2%) * (1+2.02%) – 1 = 6.31%
Unadjusted OFTO implied equity IRR	7.00%	4.9%	Nominal value as per Figure 12. CPIH-real derived using 2.02% CPIH assumption. (1+7.0%) / (1+2.02%) – 1 = 4.9%
Unadjusted investment managers (TMR) cost of equity	7.10%	5.0%	Nominal value as per Table 23. CPIH-real derived using 2.02% CPIH assumption. (1+7.10%) / (1+2.02%) – 1 = 5.0%
Unadjusted infrastructure fund implied equity IRR	6.30%	4.2%	Nominal value as displayed in Figure 13. CPIH-real derived using 2.02% CPIH assumption. (1+6.30%) / (1+2.02%) – 1 = 4.2%
CAPM with 0.9 equity beta & investment managers' TMR	6.44%	4.3%	Real value calculated using risk-free rate of -1.48% and real TMR of 5.0%. Nominal value derived using 2.02% CPIH assumption. (1+4.3%) * (1+2.02%) – 1 = 6.44%

Source: Ofgem analysis

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[115] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=65

Consultation position: Step 2 cross-check implied cost of equity at 60% notional gearing

Allowance parameter	Consultation position
Step 2 cross-check implied cost of equity at 60% notional gearing	Cross-checks provide greater support for the lower half of the CAPM-implied range and consider that the strongest evidence indicates a mid-point cost of equity near or below 4.2%.

3.99 In our view, cross-checks support CAPM values around 4.2%, which is slightly lower than the mid-point of the Table 16 range. The impact of Step-2, therefore, decreases our estimate of the cost of equity from 4.3% to 4.2% CPIH-real.

3.100 Table 25 demonstrates the outcome of Step 1 and Step 2, alongside a comparison with our view as published in May 2019.

Table 25: Cost of equity, Step 1 & Step 2. May 2019 compared to July 2020, CPIH real

Component	Low	High	Low	Mid	High	Ref	Source
	May 2019		July 2020				
Notional equity beta	0.66	0.85	0.66	0.72	0.79	A	May 2019 & Table 16
Total Market Return	6.25%	6.75%	6.25%	6.50%	6.75%	B	May 2019 & 3.23
Spot risk-free rate	-0.96%		-1.58%			C	May 2019 & Table 9
Forward curve uplift	0.22%		0.10%			D	May 2019 & Table 9
Risk Free Rate	-0.75%		-1.48%			E	E = C + D
Cost of equity (step 1)	3.87%	5.63%	3.64%	4.30%	5.00%	F	F = E + A * (B - E)
Cost of equity (step 2)	4.00%	5.60%	3.60%	4.20%	4.80%	G	Judgement based on Step 1 and Step 2

Source: Ofgem analysis

3.101 We infer an equity beta of 0.71 from Step 2 for the purposes of equity indexation, as referred to at paragraphs 3.6 and 4.2.

Rationale for consultation position

3.102 The Modigliani-Miller WACC cross-check can be performed in various ways and we are open to suggestions from stakeholders on this. Our initial analysis indicates this cross check supports a cost of equity below the mid-point of the CAPM range. We will re-consider this further at Final Determinations with the benefit of stakeholder views.

3.103 The MARs cross-check is persuasive. As noted at paragraphs 3.67 to 3.74, market reactions to Ofwat's allowed return on equity of 4.19% (appointee level) is, we expect, priced into MAR values for UU, SVT and PNN. Compared to other cross-checks there are fewer comparison issues, given the consistent notional gearing of 60% and the view that systematic risk is similar for energy and water networks.

3.104 The OFTO returns shown do not include a downward adjustment for financial risk. On that basis, the unadjusted value of 4.9% seems upwardly biased, because equity returns at 80-90% gearing should be materially higher than equity returns at 60% gearing, all else equal. It seems quite plausible that an adjusted figure would support the mid-point or the low-end of the CAPM range.

3.105 There are various weaknesses with investment managers' forecasts for cross-checking the CAPM-implied cost of equity. In addition to those listed at paragraph 3.92, we are also mindful that 5.0% relates to TMR, and hence embeds an equity beta of 1.0. For RIIO-2 purposes, it is difficult to assume an equity of 1.0 and therefore this provides only weak support for the top end of the CAPM-implied range of 5.0% (see Table 17). Reasonable adjustments to account for lower risk would bring the inference towards the lower end of the CAPM range.

3.106 Infrastructure fund values are also unadjusted for risk. However, this cross-check is arguably stronger than the preceding three because market participants argue that infrastructure funds have a similar risk-return profile as network utilities (as noted in SSMD[116], see also BBGI[117]). Another benefit of this cross-check is the materiality of invested monies, which we estimate at approximately £20bn as at March 2020. We therefore find this cross-check persuasive.

3.107 The final row in Table 24 re-estimates CAPM by: replacing our proposed TMR with the investment managers' TMR; and, replacing our proposed equity beta with NGET's proposed low-end equity beta of 0.9 (see paragraph 3.26). Although this is not our preferred method or estimate for TMR or equity beta, this cross-check reflects CAPM parameter estimates from other parties. The resulting figure, 4.3%, aligns with the mid-point displayed in Table 17.

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[116] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=63
[117] https://www.bb-gi.com/media/1845/2019-bbgi-interim-results-presentation-final.pdf#page=46

Step-2 implied cost of equity consultation questions

FQ7. Do you have any views on how we should consider further the gearing impact on beta and cost of capital estimates?

FQ8. Do you agree with our interpretation of cross-checks?

Step 3 - Expected versus allowed returns

Business Plan submissions and Call for Evidence

3.108 Most submissions explicitly object to Step 3 on principled/theoretical grounds, although Cadent supplement arguments with reference to stochastic risk modelling, and NGN supplement arguments with reference to Monte Carlo modelling by Frontier.[118]

3.109 Network companies generally quantify the wedge in terms of underspending against totex allowances, while arguing that previous underspending may not be repeated in RIIO-2. NGET and NGGT estimate that a 50bps wedge can be directly translated into annual totex efficiency of 5% to 14% for each network, with NGGT estimating a figure of 7% for its gas transmission business. SHET estimate that totex efficiency would need to be around 15% to deliver 50bps additional return on equity. Cadent estimate that a 3.7% totex underspend, coupled with a 50% incentive strength, would achieve 0.5% notional equity returns.

3.110 In January 2020, the RIIO-2 Challenge Group (CG) published its independent review of RIIO-2 Business Plans. In its report the CG noted that "there is little evidence to support the universal rejection of the 0.5% outperformance assumption" while noting that several plans demonstrate financeability at 4.3% return on equity.[119] The CG also report RIIO-1 performance, as presented in RIIO-2 Business Plans.

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[118] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A31-NGN-RIIO-2-Outperformance-Wedge.pdf
[119] https://www.ofgem.gov.uk/system/files/docs/2020/01/riio-2_challenge_group_independent_report_for_ofgem_on_riio-2_business_plans.pdf#page=50

Figure 14: RIIO-1 performance from RIIO-2 Business Plans

	NGET	SPT	SHET	NGGT	Cadent	NGN	SGN	WWU
Outputs	Met all targets	Met all targets	Some targets missed	Some targets missed	Some targets missed	Met all targets	Some targets missed	Met all targets
Totex	20% under-spend	3% under-spend	4% under-spend	17% over-spend	7% under-spend	12% under-spend	15% under-spend	19% under-spend
RORE	10.5%	9.4%	9.1%	7.2%	9.2%	11%	11.1%	9.4%

Source: RIIO-2 Challenge Group[120]

3.111 In a report for Citizens Advice, HMK Advisory suggest expected outperformance of 0.5% understates significantly the evidence from previous years, which it estimates at 3% on a weighted basis.[121] HMK recommend a more formulaic, predictable adjustment based on historical levels of outperformance, suggesting 50% of observed outperformance is reasonable (ie 50% of 3%).[122] Citizens Advice support this, suggesting that it should help ensure that incentive mechanisms are not unduly impacted and that actual returns for a well-run company would not fall below allowed returns.[123]

3.112 Centrica note that all companies except NGGT can expect to underspend RIIO-1 allowances by between 3.3% and 21%, while comparing this to proposed efficiency gains for RIIO-2 as shown in Figure 15: Forecast RIIO-1 underspend and proposed RIIO-2 efficiency gains.

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[120] https://www.ofgem.gov.uk/system/files/docs/2020/01/riio-2_challenge_group_independent_report_for_ofgem_on_riio-2_business_plans.pdf#page=18
[121] https://www.ofgem.gov.uk/system/files/docs/2020/02/ca_evidence_riio-2_cost_of_capital_final_report.pdf#page=30
[122] https://www.ofgem.gov.uk/system/files/docs/2020/02/ca_evidence_riio-2_cost_of_capital_final_report.pdf#page=31
[123] https://www.ofgem.gov.uk/system/files/docs/2020/02/ca_response_to_ofgem_call_for_evidence_on_et_gt_gd_and_eso_bps_for_riio-2_-_v2.pdf#page=35

Figure 15: Forecast RIIO-1 underspend and proposed RIIO-2 efficiency gains

Company	Forecast under-spend (%)	Proposed efficiency gains
Cadent	3.3 – 12.0	0.94% gain per annum
NGN	11.6	0.5% gain per annum
NGET	21.0	1% gain per annum
NGGT	-9.9	1.1% opex gain and 0.8% capex gain per annum
SGN	13.4 – 18.8	1% gain per annum
SPT	3.0	1% gain per annum
SSEN	6.0	£100m efficiency saving overall (circa 0.3% of Totex
WWU	19.0	0.5% gain per annum

Source: Centrica[124]

Updated analysis

Frontier paper on expected underperformance

3.113 The Frontier paper (Outperformance Wedge) published by NGN, is designed to move the debate forward through Monte Carlo simulation analysis for a notional GDN.[125] Frontier assume:

- Neutral totex (no expected over or under-spending);
- ODI targets at upper quartile levels cannot be met by an average firm;
- Downside-only instruments can lead to underperformance (eg Guaranteed Standards of Performance (GSOP)).

3.114 After combining these assumptions with other model parameters, including probability distributions and assumed correlations, Frontier conclude that average GDNs in GD2 should expect to underperform by 27bps.

3.115 Frontier's work is a helpful contribution, which we recognise as a plausible framework for further work.

3.116 However, Frontier's work suffers from a number of issues, particularly on how the inputs reconcile with actual data, including observed returns. The clearest example

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[124] https://www.ofgem.gov.uk/system/files/docs/2020/02/centrica_response_-_riio-2_finance_final.pdf#page=2
[125] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A31-NGN-RIIO-2-Outperformance-Wedge.pdf

is the treatment of totex, which is, as acknowledged in the report, a clear determinant of Frontier's findings. We demonstrate below how Frontier's neutral totex assumption contrasts with available evidence.

3.117 Other input assumptions are difficult to reconcile with a notionally efficient GDN. For example, we note that Frontier's result (27bps underperformance) is in part driven by underperformance against licence conditions, including GSOP (5.4bps underperformance) and Emergency response times (5.4bps underperformance).[126] Available evidence indicates these are not realistic assumptions and GDNs should meet minimum levels of performance as a basic level of service to their consumers.

3.118 Frontier's work would benefit from closer alignment to verifiable data, and alignment with emerging incentives for GD2 as published alongside these Draft Determinations. Frontier's work exclusively relates to the GD sector, and hence it is not readily deployable for GT or ET. We note Frontier do not suggest their inference read-across to the transmission sectors.

3.119 As currently presented, because of the data and input assumptions used, we could not place any weight on Frontier's findings.

Analysis 1: Database on totex performance from 2000 to 2020

3.120 We continue to believe that Step 3 is distinct from, and broader than, performance against totex allowances. However, we recognise that analysis of historical or future levels of under or over-spending against totex allowances could inform expected outperformance for RIIO-2. Given stakeholders' focus on totex-related inferences, we have sought to provide analysis on that basis. We have however attempted to control for factors that are specific to RIIO-2, in order to generate a forward-looking expectation.

3.121 We therefore collected available totex information (allowed and actual) from four sectors (gas, electricity, water and aviation) over a 20-year period (2000 to 2020) covering 24 price controls. This analysis can provide insight when considered alongside reasonable assumptions[127] for RIIO-2, including:

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[126] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A31-NGN-RIIO-2-Outperformance-Wedge.pdf#page=44
[127] Note we re-consider these assumptions later, and remain open to stakeholder views, but for the purposes of creating an isolated inference for further consideration, these assumptions are helpful.

- The correlation between totex performance and non-totex performance is negligible (or, if positive, we note any estimations are understated);

- The degree of information asymmetry across regulators and over time, is similar;

- The method for setting cost allowances across regulators and over time, is similar;

- Other changes for RIIO-2 have a negligible relationship with expected under- or over-spending (for example, changes to incentive strengths);[128] and

- That a large dataset should overcome any biased irregularities in the data, such as lumpy expenditure profiles, one-off observations, isolated price controls, regulator error or mistakes; or non-repeatable underspends (or overspends).

3.122 Together, the database, which we publish alongside this consultation, provides a total of 943 observations (licensee-years) across the sample. To present the results, we use a histogram for the observed ratio between actual totex and allowed totex, which we present on a price control basis, the average ratio for the price control period, rather than an annual ratio. Presenting in this (eg the 5-year under-or-overspend), rather than an annual basis (ie the 1-year under-or-overspend), is preferable given the objective of making an inference for a new price control period, and the risk of comparing lumpy actuals with smooth allowances. The number of observations therefore reduces by almost a factor of 5, (because most price controls have been 5-year periods) from 943 to 210. To simplify, the histogram uses intervals of 0.05. For example, the value 0.95 captures results between 0.925 and 0.975 (underspends from 7.5% to 2.5%). The results are presented in Figure 16 below.

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[128] We address this assumption later sections, including Analysis 2.

Figure 16: Histogram of totex spending variances from 2000 to 2020
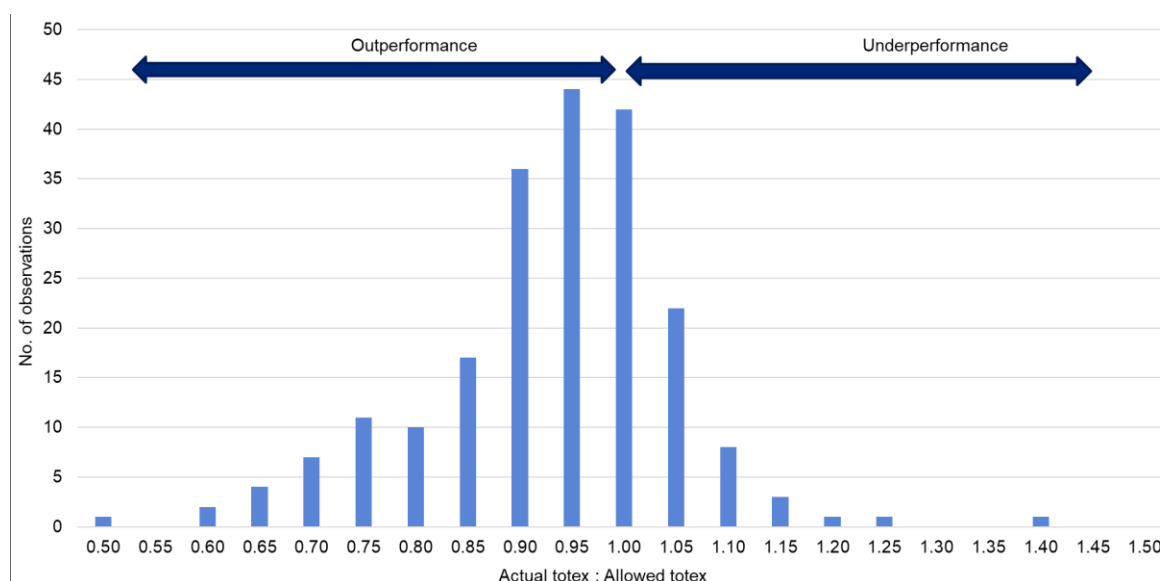
Source: Ofgem analysis of totex database, "AR ER database.xlsx"

3.123 The histogram demonstrates a tendency towards underspending, with most observations falling into the 0.90 to 1.00 categories, with a sample mean of 0.93. This indicates an average underspend of approximately 7% (1-0.93).

3.124 We tested the robustness of Figure 16 in various ways and found that the overall impression remains similar. For example, Figure 16 is not sensitive to removing any one: sector; time period; price control; licensee; or, company. We considered the degree to which each price control puts weight on company views of expenditure, and the degree to which incentives may impact on this. For example, some price controls rely more heavily on company views than others, and we recognise that incentive properties are not precisely equivalent in each price control. We also considered whether the database is suitable for making a RIIO-2 inference, given: sector-specific distributions; sector-specific policies; price-control-specific policies; period-specific effects; one-off results; one-off price controls; or, totex:RAV estimates. We considered various sources of data for the water sector, including slight variations in public data and recent submissions by Ofwat to the CMA as part of the PR19 appeals; we find that the histogram is similar when using different data sources.[129] Further, the histogram is similar when annual observations are used rather than price control observations.

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[129] Ofgem submit a similar histogram to the CMA which includes 79 observations for the water sector: https://assets.publishing.service.gov.uk/media/5eb16056e90e0723aef8056c/008_-_Reference_to_the_PR19_final_determinations_Risk_and_return__response_to_common_issues__002_.pdf#page=33

Therefore, overall, we believe the sample is sufficiently reliable for our draft determinations.

3.125 To provide a RIIO-2 inference, in terms of notional equity returns, the database can be combined with three additional variables. First, following Cadent's approach, RIIO-2 incentive strengths an be incorporated, as presented at Table 19. Second, in line with Frontier's approach, a RIIO-2 ratio of totex to RAV should further improve the accuracy of the estimate, as forecast in Table 19. Third, using a RIIO-2 notional gearing level of 60% provides an estimate that is more applicable and consistent with our other analysis for RIIO-2. We use these three inputs to calculate an equity return at each level of over- or underspend, before calculating a weighted average RoRE using a probability distribution derived from Figure 16. This approach is in line with popular practice that an expectation should reflect probability-weighted outcomes. Outputs from this analysis are demonstrated in Table 26.

Table 26: Expected outperformance for RIIO-2 based on totex database

		Incentive strength (company share)				
		30%	35%	40%	45%	50%
Totex:RAV ratio	6%	0.32%	0.37%	0.42%	0.47%	0.53%
	7%	0.37%	0.43%	0.49%	0.55%	0.61%
	8%	0.42%	0.49%	0.56%	0.63%	0.70%
	9%	0.47%	0.55%	0.63%	0.71%	0.79%
	10%	0.53%	0.61%	0.70%	0.79%	0.88%
	11%	0.58%	0.67%	0.77%	0.87%	0.96%
	12%	0.63%	0.74%	0.84%	0.95%	1.05%

Source: Ofgem analysis of totex database coupled with RIIO-2 assumptions. Values can be approximated using the following formula: $(1-R) * T * I / (1 – G)$. Where R = actual:allowed ratio of 0.93, T = Totex:RAV ratio, I = Incentive strength, and G = notional gearing of 60%.

3.126 This analysis contrasts with submissions by NGET, NGGT, SHET, and, to a lesser extent, Cadent (see paragraph 3.109 above) in terms of the implied totex underspend, where NGET and NGGT suggest 5 to 14% annual efficiency, and SHET suggest 15% totex efficiency. In contrast, we estimate a totex underspend of approximately 2-4% would deliver expected outperformance of 0.25% on equity. We are also mindful that one of the underlying assumptions contrasts with available evidence: that the correlation between totex performance and non-totex performance is negligible. Available evidence suggests a materially positive relationship (see Figure 17 below for example). We agree with Frontier that

expected outperformance is driven, at least in part, by non-totex incentive mechanisms. On this basis Table 26 understates expected outperformance.

Figure 17: RIIO-1 RoRE, operational performance, totex and non-totex
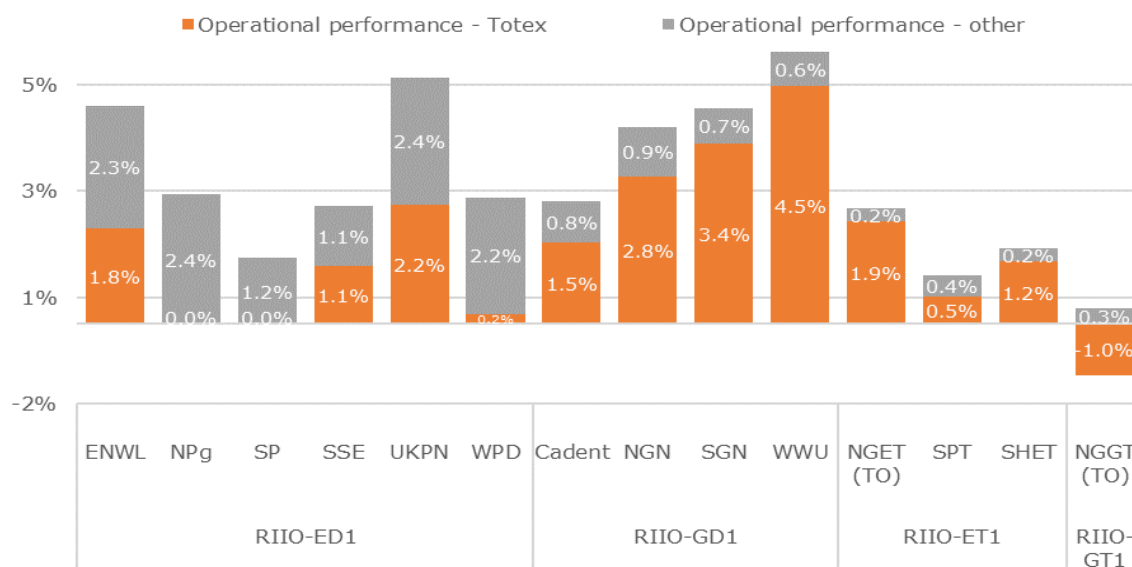
Source: Ofgem analysis of company submitted data (see RFPRs) for RIIO-1[130]

3.127 Our analysis of historical data clearly shows that network companies have, more often than not, spent less than allowances, and beaten performance targets, set by respective regulators. More importantly, this observation holds true across sectors and over time, spanning a diversity of regulatory approaches, 24 price control reviews, almost 50 licensees, over a 20-year period. We believe that this provides a strong basis for our conclusion that, despite the measures included in our proposed RIIO-2 price controls, companies (on average) have the scope to outperform, and investors can have a reasonable expectation of outperformance. We therefore believe that this analysis strongly supports an adjustment, and that an expectation of 0.25% for RIIO-2 is cautious, grounded firmly in verifiable data, and consistent with the RIIO-2 incentive framework.

3.128 On this analysis, expected outperformance, at the 60% notional gearing level, should be greater than 0.25% for RIIO-2. To support stakeholder responses, we publish alongside these draft determinations the associated database on totex performance ("AR ER database.xlsx").

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[130] https://www.ofgem.gov.uk/publications-and-updates/regulatory-financial-performance-annex-riio-1-annual-reports-2018-19

Analysis 2: Re-presenting RIIO-1

3.129 An alternative method of informing RIIO-2 expected outperformance is to re-present historical returns in a RIIO-2 context. This can be achieved by modifying observed returns to make values more informative for RIIO-2. For example, the following adjustments can be made to RIIO-1 RoREs:

- Excluding items not relevant for RIIO-2: equity return on RAV & Information Quality Incentive (IQI)
- Excluding debt and tax performance
- Excluding Real Price Effects
- Replacing RIIO-1 incentive strengths with RIIO-2 incentive strengths
- Replacing RIIO-1 notional gearing(s) with a RIIO-2 benchmark level of 60%
- Replacing RIIO-1 Totex:RAV ratios with RIIO-2 levels
- Excluding non-totex incentives from RIIO-1 results

3.130 The results are presented in Figure 18 below.

Figure 18: Re-presenting RIIO-1 RoRE outperformance for RIIO-2 purposes
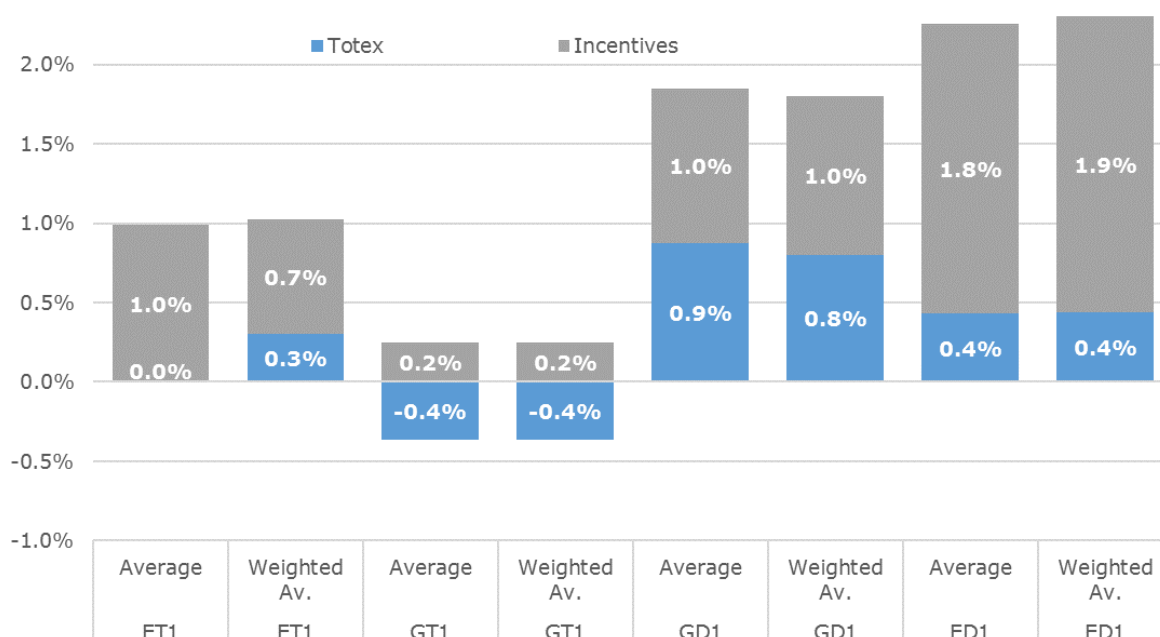
Source: Ofgem analysis of company submitted data (see RFPRs) for RIIO-1[131], Residual outperformance.xlsx

3.131 By re-presenting RIIO-1 RoRE in this way, the values are more informative for RIIO-2, given the greater consistency with the RIIO-2 framework. To generate

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[131] Ibid

these results, we've used the latest information available for RIIO-1, as provided by company submitted Regulatory Financial Performance Reports (RFPRs).[132] We note that the results presented in Figure 18 are sensitive to company forecasts for the last two years or RIIO-1: the expected outperformance would be larger if we use only outturn data for the first six years of RIIO-1, given that some companies forecast overspends during the two years ending 31 March 2021.

3.132 This analysis generally supports expected outperformance levels above 0.25% for RIIO-2. To support stakeholder responses, we publish alongside these draft determinations the associated backup analysis ("Residual outperformance.xlsx").

Analysis 3: Market-to-Asset ratios

3.133 In Step 2, as outlined at paragraphs 3.76 to 3.85 above, MAR information can simultaneously inform estimates for the cost of equity and expected performance. For example, Table 22 makes an inference that outperformance in the water sector would need to be approximately 3.7% for a 20-year period, given a MAR of 1.2 and 4.2% for the cost of and allowed return on equity. Using the same approach, MARs for National Grid and SSE can be estimated to support similar inferences for the energy sector.

3.134 Figure 19 below presents MAR analysis for National Grid and SSE, alongside water companies SVT, UU and PNN.

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[132] Ibid

Figure 19: Recent MAR ratios, as of 29 May 2020, for listed companies holding water and energy network assets[133]
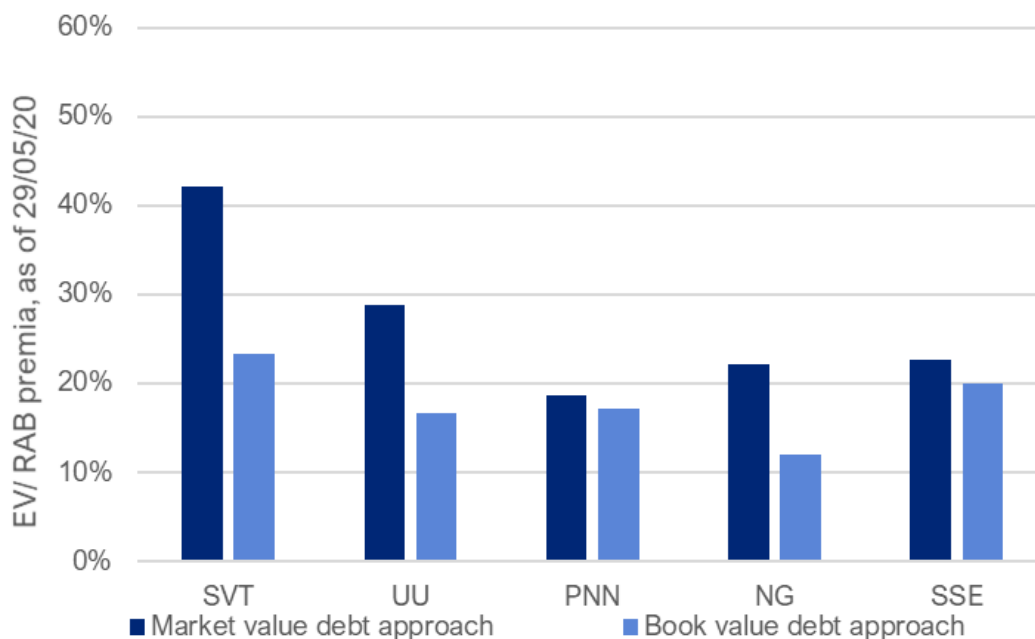
Source: CEPA analysis of Bloomberg, company accounts and Ofwat data

3.135 We continue to observe premiums above or near 20% for water companies and in the 10-20% range for energy companies. Therefore, if we assume a similar cost of (and return on) equity of 4.2% across the companies and a MAR greater than 1.1, the expected outperformance for National Grid and SSE must be: >1.9% for a 20-year period, as per Table 22.

3.136 It can be argued that NG and SSE are unrepresentative of the energy sector. For example, any expected outperformance for NG and SSE may be unique to those companies, and/or offset by expectations of underperformance for other companies/networks. However, we are not persuaded by this for two reasons. First, NG and SSE perform broadly in line with peer networks. Second, MAR multiples for private companies, including Cadent and SGN, have in the recent past tended to be near or above 20%, as shown in Figure 20 below.

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[133] 'Preferred approach' incorporates market data on the value of debt. 'Alternative approach' uses book value of debt.

Figure 20: Recent MAR ratios for private companies holding water and energy network assets
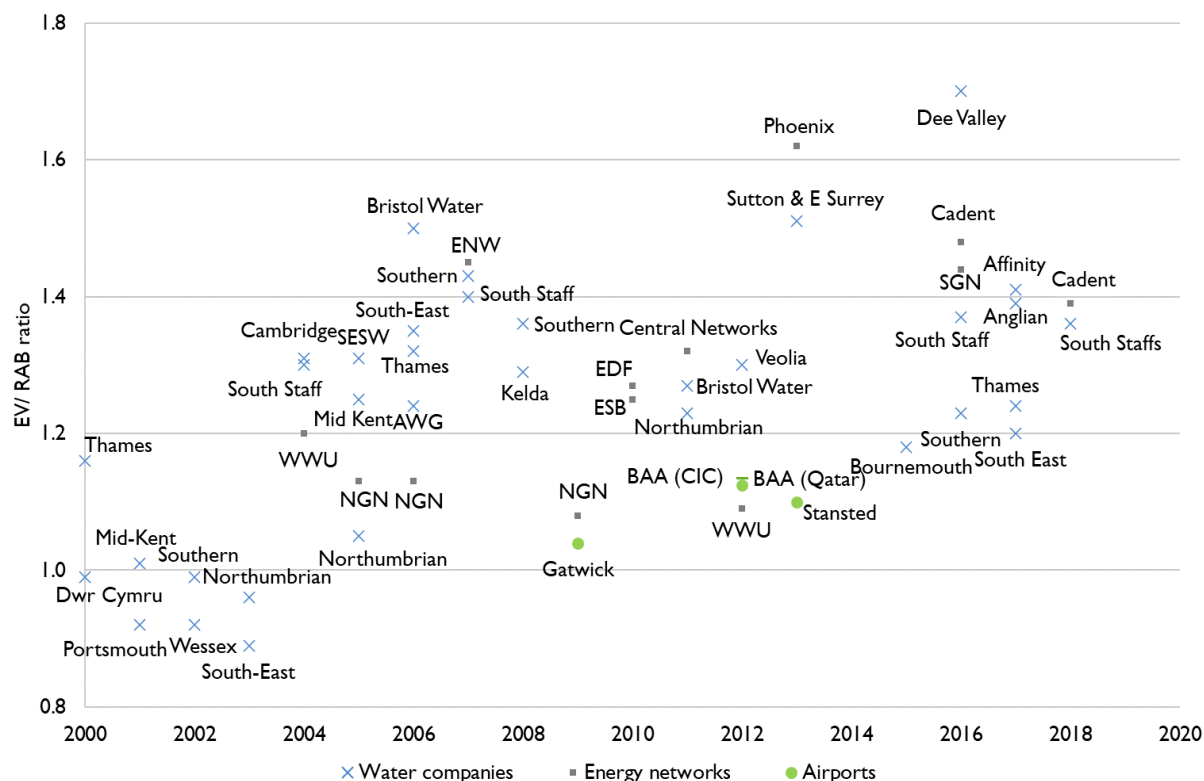
Source: CEPA analysis of Inframation News, Utility Week, Bloomberg, Reuters and assorted news sources.

3.137 Further analysis of these MAR premiums, including on a time-series basis for NG and SSE, and clarification of the estimation approach, is provided within the CEPA report, including how non GB-regulated activities have been taken into account.

3.138 We accept that estimating and interpreting MAR premiums is subject to uncertainty, and are mindful that inferences reflect assumptions and periods chosen. However, in the context of RIIO-2, expected outperformance of 0.25% is, using the stylised model presented above, equal to a MAR of approximately 1.0135. Clearly, an implied premium of 1.35% is a cautious interpretation of market evidence indicating premiums of 10% or greater. Therefore, we believe that expected outperformance of 0.25% is a fraction of the outperformance that is reasonably derived from MAR evidence. To support stakeholder responses, we publish alongside these draft determinations the associated supporting analysis ("Simple MAR application model.xlsx").

Overall estimate of Expected Outperformance at 60% gearing

3.139 Given these three analytical approaches and using our regulatory judgement, we consider that equity investors should expect at least 0.25% in outperformance returns, in addition to the baseline allowed return on equity. We explain further rationale and considerations in the following sections.

Alternative policies to Step 3

3.140 Noting that Business Plan submissions continue to object to the SSMD approach, we considered the following policy alternatives.

   a) Set neutral cost and performance targets;
   b) Lower incentive strengths;
   c) Asymmetric incentives or incentive strengths; and
   d) Competed, fixed or zero pot for incentives.

3.141 Regarding a), we have re-considered this in the context of setting new cost and performance targets for RIIO-2, considering our updated analysis and review of Business Plans. In addition to the principle we described in SSMD,[134] we consider that information asymmetry inherently means that a) is improbable. We are also mindful of contradictory arguments which advocate a), but simultaneously assume that an economic rent must be earned by monopoly companies. It is difficult to see a basis for the latter, given the difficulties achieving a). Further, a) assumes that there is no information asymmetry between Ofgem and network companies: this does not appear to be a reasonable assumption for us to make.

3.142 Regarding b), we accept that lower incentive factors would partially address the impact of totex-based information asymmetry. Notwithstanding this, an incentive strength of 0% (i.e. pass-through) would be required to fully address totex-based information asymmetry. We do not consider this a viable alternative given our desire to retain cost incentives.

3.143 Regarding c), we accept that larger incentive factors (or penalties) for underperformance could offset any information-based asymmetry effects. However, we believe that this approach may only work partially, and would be

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[134] Paragraph 3.270 here: https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=71

more indirect than our preferred option as it would seek to use another mechanism to address what is, in our view, a baseline issue.

3.144 Regarding d), we note similar ideas were considered within the framework consultation.[135] These approaches could limit the consumer impact of information asymmetry at some level, but they could also have a greater impact on company behaviour than our preferred option.

Other considerations for Step 3

3.145 The UKRN Study found that there is a legitimate, albeit limited, case for aiming up, hence justifying one reason why the allowed return could differ from the cost of equity.[136] In the SSMD, we considered stakeholder arguments on this, noting that we were not convinced.[137] The CMA, in its provisional findings for NERL, also considered arguments for departing from the mid-point of its cost of capital range, including the case for aiming up, and potential asymmetries in the broader price control settlement.[138] In its provisional findings for NERL, the CMA did not take a view with regards to appropriate approaches in other sectors. However, we note that the CMA's view aligns with the UKRN Study: that any aiming up might only need to be small to be effective given that it would apply to assets already in place as well as promoting new investments.

3.146 Arguably, a major flaw in aiming-up arguments is an assumption that doing so will lead to more investment. We are not convinced this is necessarily the case. For RIIO-2, we propose companies retain a proportion of underspends, with GD companies near 50% and some transmission companies closer to 30% (see Table 18 above). Therefore, a rational company would consider the trade-off between investing to earn a return above its cost of capital, say 0.5% above its cost of capital under the aiming-up thesis, versus the reward for not investing at all. The trade-off between the two incentives means it would take many years for the surplus earned under aiming up (say 0.5% above the cost of capital) to outweigh the benefit of underspending, as remunerated through the incentive. A simplistic example implies a payback of 100 years (50%/0.5%) or 60 years (30%/0.5%).

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[135] https://www.ofgem.gov.uk/system/files/docs/2018/03/riio2_march_consultation_document_final_v1.pdf#PAGE=106
[136] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf#page=15
[137] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=73
[138] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=210

Hence, in the context of RIIO-2, we doubt the effectiveness of reasonable aiming up unless allowances are sufficiently protected by ex-post adjustments.

3.147 Given our other decisions for RIIO-2, we considered whether other mechanisms may address, at least in part, expectations of outperformance, and particularly the information asymmetry basis. Within this, we considered the following policy comparisons between RIIO-2 and other price controls, with a focus on RIIO-1.

Table 27: RIIO-2 considerations regarding expected outperformance

Policy area	Cost or performance	RIIO-2 considerations regarding expected outperformance
Company view of totex	Cost	Totex allowances are influenced by company views, although perhaps less explicitly for RIIO-2 than RIIO-1 given the absence of the IQI mechanism. Early indications were provided for RIIO-2 that companies would retain a share of any underspends. Therefore, we see RIIO-2 as comparable with previous price controls in this respect.
Incentive strength, totex:RAV and notional gearing	Cost and performance	We have in our RIIO-2 analysis controlled for these effects.
Price Control Deliverables (PCDs)	Cost	RIIO-2 will incorporate stronger links between allowances and outputs. This could reduce the impact of information asymmetry as final allowances will be subject to additional ex-post information and assessment.
Uncertainty Mechanisms	Cost	For the transmission sectors in particular, cost allowances for RIIO-2 could heavily depend on in-period decisions. This could reduce the impact of information asymmetry as allowances can be determined closer to expenditure being incurred.
Frontier efficiency and benchmarking	Cost	We considered whether methods to set allowances for RIIO-2 are distinctly different from other price controls including RIIO-1. In our view, the approach we're proposing to take in RIIO-2 is sufficiently similar to allow expected outperformance and information asymmetry to remain.
Business Plan Incentive (BPI) and Information Quality Incentive (IQI)	Cost and performance	The IQI was used during RIIO-1 but not RIIO-2 whereas the BPI is used in RIIO-2 but not in RIIO-1. We considered the net effect of these in terms of information asymmetry and currently believe that the impact of both may be similar.
Length of control period	Cost and performance	RIIO-2 is three years shorter than RIIO-1, hence information asymmetry may have a smaller impact. We note that most price controls are 5 years in length, making RIIO-2 more comparable with other price controls.

Policy area	Cost or performance	RIIO-2 considerations regarding expected outperformance
Outcome Delivery Incentives (ODIs) and Return Adjustment Mechanism (RAM)	Cost and Performance	Unlike RIIO-1 and most other price controls, RIIO-2 performance incentives are supported by caps and collars and a RAM. We considered the subsequent interaction with information asymmetry and consider that unforeseen returns are much less probable. However, the baseline is unaffected by caps, collars or RAMs, each of which address unforeseen rather than expected returns. We also considered whether any downside asymmetry in ODIs would off-set expectations of outperformance. Overall, we do not believe that downsides on ODIs are likely to perfectly neutralise expectations of outperformance.

Source: Ofgem analysis

3.148 For the avoidance of doubt, Step 3 is not designed to entirely or perfectly capture future outperformance. Therefore, investors can still expect to earn returns above the cost of capital, if companies perform well. We have sought to ensure that incentive properties will remain for individual companies and sectors. For these reasons, we do not consider that there is a binary choice between the benefit of incentives and accounting for expected outperformance or information asymmetry.

Ex-post adjustment

3.149 The principle behind Step 3, to address information asymmetry, is not new. Indeed, other price controls address information asymmetry in various ways, for example RIIO-1 uses an IQI mechanism. Further, academics have long advised that regulators should discharge their duties in light of their information deficit.[139]

3.150 In line with good regulatory practice, our view is that our approach to Step 3 reflects a transparent implementation of the UKRN Study, as set out in RIIO-2 consultations since March 2018.[140]

3.151 To maintain high confidence in the regulatory regime, and given submissions from companies and their consultants, we re-considered the SSMD methodology, in search of potential improvements that could simultaneously satisfy the following three objectives:

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[139] See for example, Jean-Jacques Laffont and Jean Tirole, A Theory of Incentives in Procurement and Regulation, MIT Press, 1993, and: https://bfi.uchicago.edu/news/regulation-and-market-power/
[140] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf#page=68

- maintaining high confidence in the regulatory regime;

- fairness for companies and investors; and

- fairness for consumers.

3.152 In this context, we welcome suggestions that could address expected outperformance uncertainty, and seek stakeholder views on the following proposal.

<u>An ex-post top-up if outperformance does not materialise as expected</u>

3.153 Our proposed addition to SSMD is to provide, at the close-out of RIIO-2 if realised outperformance is less than expected (eg 0.25% at 60% gearing), an additional allowance, up to the original value of expected outperformance (eg up to 0.25% at 60% gearing). See Table 28 below for example calculations.

Table 28: An ex-post adjustment mechanism, examples for gas licensees

Step 2: cost of equity mid-point	Step 3: Baseline allowed return on equity given Expected Outperformance of 25bps	Realised out-(under-) performance	RIIO-2 RoRE, pre close-out	Ex-post top-up at RIIO-2 close-out	Final RoRE
A	B	C	D = B + C	E = Min(0.25%, Max(0.25% - C, 0))	F = D + E
4.20%	3.95%	+0.35%	4.30%	0.00%	4.30%
		+0.25%	4.20%[141]	0.00%	4.20%
		+0.15%	4.10%	0.10%	4.20%
		+0.00%	3.95%	0.25%	4.20%
		-0.05%	3.90%	0.25%	4.15%
		-0.15%	3.80%	0.25%	4.05%

Source: Ofgem analysis

3.154 We propose:

- to calculate a mechanism for each of two groups: gas licence holders, NGGT, Cadent, SGN, NGN and WWU; and, electricity transmission licence holders, NGET, SHET and SPT. These groups reflect notional gearing levels of 60% and 55% respectively, in addition to the comparable RoRE ranges as shown in Figure 22 below;

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[141] For example, an outturn RoRE of 4.20% arises when a Baseline allowed return of 3.95% is added to realised outperformance during RIIO-2 of 0.25%. In this example, the realised outperformance is equal to ex-ante expectations of 0.25%. No top-up is due when outperformance meets or exceeds this level.

- to implement based on average performance rather than individual licensee performance, such that column C reflects a simple average of the relevant group;
- to operate this mechanism at the close-out of RIIO-2 rather than annually, given our final view on Uncertainty Mechanisms (UMs), Price Control Deliverables (PCDs), Licence Obligations (LOs) and after applying the Return Adjustment Mechanism (RAM);
- that RAM operates at pre-defined thresholds +/-300bps as described below, whereas the ex-post adjustment operates within a pre-defined boundary, from zero up to expected outperformance (ie 0.25% for gas licensees);
- to exclude from column C: the Business Plan Incentive (BPI); debt performance and tax performance.

Alignment with stated objectives

3.155 These proposals should reinforce stakeholder confidence in the regulatory regime. We remain committed to remunerating the cost of equity and the cost of capital for efficient licensees. Our proposed ex-post mechanism means that investors are protected from our estimate of Expected Outperformance: if Outperformance does not materialise on average then a top-up will increase returns to the cost of equity level. This is in line with our decision as set out in July 2018 to distinguish between allowed and expected returns.[142]

3.156 Further, the ex-post mechanism can only increase returns as highlighted in Table 28. This means that the underlying risk of Step 3 is borne by consumers, such that if we are mistaken about information asymmetry, or if (on average) licensees do not beat RIIO-2 targets, equity investors are kept whole.

3.157 We consider that our proposals are fair to companies and investors. As shown in Table 28, investors in gas licensees could only earn less than 4.2% if a licensee underperforms or if performance falls below the average gas licensee. Implementing the adjustment based on average outperformance reflects a portfolio assumption, as typically assumed when estimating a cost of, or return on, equity. A weighted average would introduce extra complexity, which we do not consider is particularly beneficial.

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https://www.ofgem.gov.uk/system/files/docs/2018/03/riio2_march_consultation_document_final_v1.pdf#page=85

3.158 Implementing the adjustment after all other mechanisms at the close out of RIIO-2 provides clarity on the marginal incentive, even when approaching the downside RAM threshold of -300bps. The ex-post mechanism only operates when average performance falls below expectations, and therefore the framework for positive returns is as simple and predictable for investors, including when approaching the upside RAM threshold of +300bps, as it would be without any ex-post mechanism at all.

3.159 In the event of a top-up, each licensee would receive the same top-up allowance as other licensees in the same group, in equity percentage terms, at the next available Annual Iteration Process, after close out, in a one-off fast-money settlement.

3.160 We consider that our proposals are also fair for consumers. By setting the baseline allowed return below the expected return, we protect consumers from information rents. Implementing an ex-post mechanism with reference to average performance maintains the marginal incentive for each licensee and company. We proffer that the cost to consumers of underwriting the ex-post mechanism is small because the probability of a top-up being needed is small, in our view.

Interaction between the RAM and this ex-post adjustment proposal

3.161 The RAM guards against unexpected outsize or windfall returns whereas the proposed ex-post adjustment guards against an uncertain estimate of expected outperformance. We noted in SSMD[143] a concern regarding an overlap or duplication between RAM and our proposals to distinguish between expected and allowed returns. We considered this again in the context of the ex-post adjustment. As presented below in Figure 21, the measures target different parts of the statistical distribution.

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[143] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_core_30.5.19.pdf#page=138

Figure 21: Stylised statistical distributions overlaid with RIIO-2 policy proposals
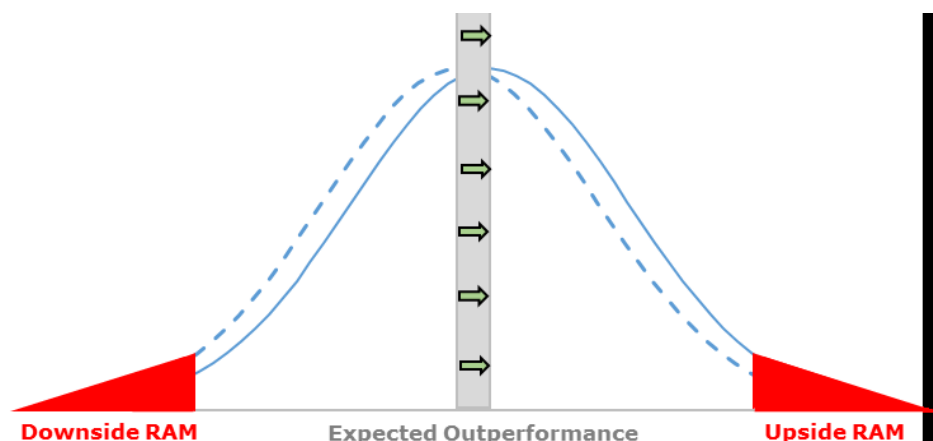
Source: Ofgem analysis

3.162 The principle behind 'allowed returns' addresses ex ante expectations to set the most appropriate baseline return, having regard to the systemic nature of information asymmetry and other potential sources of return. By proposing this ex-post mechanism as set out above, we address the uncertainty of expected outperformance in isolation. In contrast, the RAM operates only as a failsafe mechanism when outturns deviate substantially, (more than 300bps from baseline allowed returns) from expectations.

3.163 We are therefore comfortable that the mechanisms are complementary.

Consultation position: Step 3 baseline allowed return on equity

Allowance parameter	Consultation position
Step 3 allowed return on equity	Based on Steps 1, 2 and 3, for 60% gearing, baseline allowed returns on equity at 3.95% (CPIH-real), while supplementing this with an ex-post adjustment mechanism to protect investors if expected outperformance of 0.25% does not materialise. We seek stakeholder views on our overall judgement and the proposed ex-post adjustment.

3.164 Taking the above considerations in the round, as shown in Table 29, we:

- consider that the cost of equity falls within the 3.60% to 4.80% range, with a mid-point of 4.20%, at 60% notional gearing;
- propose that, at 60% notional gearing, expected outperformance of 0.25% is reasonable, and when deducted from 4.20%, justifies a baseline allowed return of 3.95%, which remains within the cost of equity range;

- propose an ex-post adjustment mechanism so that investors are protected if expected outperformance does not materialise.

Table 29: Baseline allowed return on equity at 60% notional gearing. May 2019 compared to July 2020, CPIH real

Component	Low	Mid	High	Low	Mid	High	Ref	Source
	May 2019			July 2020				
Cost of equity (step 1)	3.87%		5.63%	3.64%	4.30%	5.00%	A	Table 25
Cost of equity (step 2)	4.00%	4.80%	5.60%	3.60%	4.20%	4.80%	B	Table 25
Expected Outperformance	0.50%			0.25%			C	Ofgem judgement
Baseline allowed return on equity	4.30%			3.95%			D	D = B − C

Source: Ofgem analysis

3.165 Note, we benchmark in this chapter at the 60% notional gearing level. However, we agree with network companies that equity costs and returns should increase (or decrease) as gearing increases (or decreases). To translate equity costs and returns from one gearing level to another, we propose to deploy a well-known principle that capital costs and returns are unaffected by gearing. Two academics led early thinking on this principle in 1958, Franco Modigliani and Merton Miller, and hence this principle is often referred to as the Modigliani-Miller theorem, as noted above at paragraph 3.71. In the context of RIIO-2, we demonstrate this principle in the following chapter.

Rationale for consultation position

3.166 Table 30 summarises the results of the analytical approaches for expected outperformance.

Table 30: Expected Outperformance for RIIO-2

Analysis	Source	Inference	Source
1	Totex database and non-totex correlation	> 0.25%	3.128
2	Re-presenting RIIO-1	> 0.25%	3.132
3a	Market to Asset Ratios >= 1.1	>= 1.9%	Table 22
3b	Market to Asset Ratios >= 1.2	>= 3.7%	Table 22

Source: Ofgem analysis

3.167 All three approaches are forward looking, including not just the RIIO-2 period - up to 20 years in the case of analysis 3. Similarly, all three approaches reflect developed thinking on the RIIO-2 settlement. Analyses 1 and 2 are normalised in

terms of: totex to RAV; incentive strength; and, 60% notional gearing. Analysis 3 also reflects the combined consultation positions for RIIO-2 to date, including a working assumption of 0.5% at SSMC and SSMD for expected outperformance. Our interpretation of each is as follows:

- Analysis 1 reflects the largest dataset available on (totex) cost performance. When combined with simple assumptions (see paragraph 3.121), it provides an illustrative expectation for RIIO-2. In our view, the inference drawn is conservative, and robust to reasonable tests and sensitivities, and can imply a minimum expectation given the observed positive correlation between totex and non-totex performance.
- Analysis 2 reflects a view that RIIO-1 is the best proxy for RIIO-2. It focuses on the energy sector, reflects the same network areas with generally consistent management, ownership, and information, each of which should inform investor expectations for RIIO-2.
- Analysis 3 directly reflects prices paid by equity investors. The "price of tomatoes" logic should therefore apply, as follows[144]:

"When you shop for a salad, all you care about is the price of tomatoes. Whether tomatoes are expensive because the trucks got stuck in bad weather or because of an irrational bubble in the tomato futures market makes no difference to your decision."

3.168 We considered alternative policies (see paragraph 3.140), various other considerations (see Table 27), and now propose an ex-post adjustment if outperformance fails to materialise. In our view, this mechanism best meets our three stated objectives, without its benefits being outweighed by unintended consequences.

3.169 We therefore believe that our proposals are proportionate and reasonable. We also note findings from the National Infrastructure Commission:

"The regulatory system was designed so that companies would have to reveal their information advantage in order to benefit from it, so that the benefits could be eliminated over time. However, the true cost of capital is never fully revealed, while with rapid technological

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[144] This quote can be traced back to an article by John H. Cochrane, published in The Journal of Finance, Vol 66, August 2011, pp1047-1108.

> *change new information asymmetries can arise faster than regulators*
> *can offset them with the traditional approach. In future price controls,*
> *regulators should therefore seek to take direct account of the fact*
> *that their best estimate of costs, based on the information available*
> *to them, is likely to be biased in the interests of the companies, and*
> *'aim off' for this effect. If regulators overlook these asymmetries,*
> *they cannot regulate efficiently to reduce costs for consumers."[145]*

3.170 We recognise that the CMA appeals regarding NERL and water companies could have a read across to our ongoing considerations for RIIO-2.[146&147] We welcome views from stakeholders on the read across of these appeals, which we will consider alongside all available evidence in advance of making final determinations for RIIO-2.

3.171 We considered estimation issues in the round. Specifically, we considered whether our mid-point estimates of beta and/or TMR, as informed by Step 1 and Step 2, were marginally too high or low. For example, an asset beta of 0.365, given risk benchmarking and the results displayed in Table 14 for SVT and UU, may be too high. Similarly, we may not have captured the net change in the systematic risk of our emerging RIIO-2 determinations within this 0.365 value. We are also conscious of the upward-sloping WACC issue (see paragraph 3.70) and our approach to benchmark at a 60% gearing level, which is typically higher than observed gearing as shown in Table 13. On a CAPM basis, assuming all else equal and an expected outperformance value of 0%, the following list demonstrates our in-the-round analysis:

- an asset beta of 0.347, 5% below 0.365 but in line with Table 14 and Table 15, particularly the 10-year estimation window, would imply a cost of equity of 3.95%;
- an equity beta of 0.68, 4% below 0.71 but above most results for SVT and UU shown in Table 11, would imply a cost of equity of 3.95%; and
- a TMR of 6.0%, 8% below 6.5% but above most professional forecasts presented in Table 23 after accounting for 2% CPIH inflation, would imply a cost of equity of 3.94%.

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[145] https://www.nic.org.uk/wp-content/uploads/NIC-Strategic-Investment-Public-Confidence-October-2019.pdf#page=15
[146] https://www.gov.uk/cma-cases/ofwat-price-determinations
[147] https://www.gov.uk/cma-cases/nats-en-route-limited-nerl-price-determination

3.172 Therefore, overall, an allowed return of 3.95% reflects our current regulatory judgement and consideration of available evidence.

Step-3 allowed return on equity consultation questions

FQ9. What is your view on the overall in-the-round assessment of allowed returns to equity? Is our judgement of 3.95% at 60% notional gearing reflective of the combined analysis through Steps 1, 2, and 3?

FQ10. What is your view on the expected outperformance estimate of 0.25% at 60% notional gearing? Do you recommend alternative analysis techniques or do you have suggested improvements to the analytical files published alongside this consultation?

    a) "AR-ER database.xlsx"

    b) "Residual outperformance.xlsx"

    c) "Simple MAR application model.xlsx"

FQ11. What is your view on an ex-post adjustment for baseline equity returns? Is there an alternative mechanism or implementation approach that you think could better meet our stated objectives? Do you have specific views on averaging, pooling or suggested simplifications?

Return on Regulated Equity (RoRE)

3.173 In this section we present our view on the package of incentives for RIIO-2. In line with our approach to RIIO-1 Annual Reports, we present companies with different notional gearing levels side by side. Figure 22 below reflects:

- Company proposals for baseline RoRE;
- Outcome Delivery Incentives (ODIs), showing the plausible upside and downside returns;
- Totex upside and downside, assuming 10% under-or-overspends;
- Return Adjustment Mechanism thresholds, as described in chapter 8;
- Our Draft Determination for the Business Plan Incentive; and
- Baseline RoRE values for RIIO-2.

Figure 22: RIIO-2 average RoRE ranges and company proposals
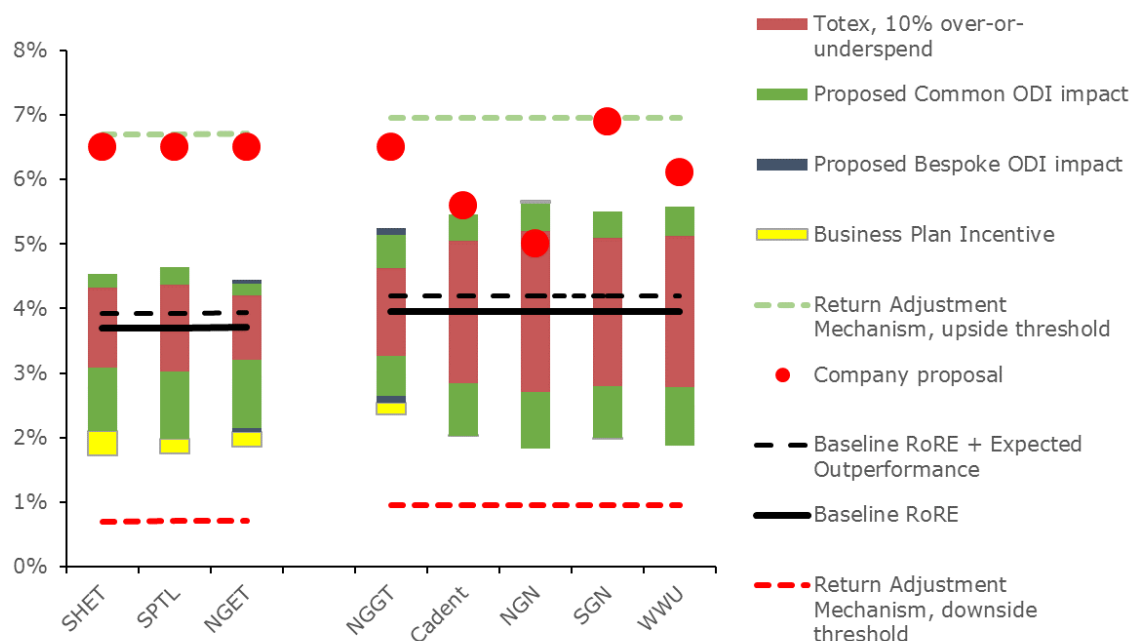
Source: Ofgem analysis

3.174 We consider that our RIIO-2 price control package offers a reasonable balance between scope for outperformance for high performing companies and underperformance for those companies that fall short. For ET, the chart may look asymmetric, ie the ODI element shows a wider range on the downside than on the upside, reflecting the cap and collar values applied to particular ODIs. This does not mean that the expected range of outcomes is asymmetric. Our expectation based on actual performance to-date is that all three TOs should perform well on these ODIs and the more extreme downside outcomes are highly unlikely to materialise"

3.175 For further detail, please see Appendix 6 and 7.

4. WACC allowance

Section summary

In this section we bring together our proposals for debt, equity and notional gearing to generate an overall allowance for the cost of capital for ET, GT and GD. We summarise how allowances for the cost of capital will change during RIIO-2 to reflect debt and equity indexation.

4.1   Our current view on the baseline allowed return on capital during RIIO-2 is summarised in Table 31, reflecting the combined proposals made in other chapters, debt, equity and financeability.

Table 31: Draft determination on the baseline allowed return on capital[148]

Price base	Component	Average - five years ending 31st March 2026				Ref	Source
		SHET	NGET & SPT	GT	GD		
CPIH	Notional gearing	55%		60%		A	Paragraph 5.57
	Cost of equity	3.93%		4.20%		B	Table 25 shows Ofgem estimate of 4.20%. 3.93% assumes the cost of capital is identical at 60% and 55% gearing.
	Expected Outperformance	0.22%		0.25%		C	See paragraph 3.168 for Ofgem estimate of 0.25%. 0.22% assumes return on capital is identical at 60% and 55% gearing.
	Allowed return on equity	3.70%		3.95%		D	D = B – C
	Allowed return on debt	1.47%[149]	1.74%			E	Table 5 and Table 6
	Allowed return on capital	2.47%	2.63%			F	F = A * E + D * (1 − A)

Source: Ofgem analysis

4.2   The allowed return on capital will change during RIIO-2 to reflect the combined effect of the debt indexation and equity indexation mechanisms, as shown in the

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148 Table values may not sum due to rounding.

[149] Based on Illustrative UM totex case. The five-year average forecast using baseline totex assumptions would be 1.58% CPIH real.

"WACC allowance model" published alongside these Draft Determinations. We propose to update the allowed return on equity using updated risk-free rates and an equity beta of 0.71 for 60% notional gearing as proposed at paragraph 3.101. We then assume that the impact on the allowed return on capital is the same at both 55% and 60% notional gearing. We propose to calculate the impact of equity indexation after first confirming the impact of debt indexation given the dependence of the former on the latter. Under these proposals, equity indexation affects the allowed return on capital equally, in line with Modigliani Miller. For further detail on our proposed approach for network companies and ESO, see the "WACC allowance model" as published alongside these Draft Determinations, as discussed at paragraph 3.6.

5. Financeability

Section summary

Financeability relates to licence holders' ability to finance the activities, which are the subject of obligations imposed by or under the relevant licence or legislation. We focus on this chapter on the financeability considerations for ET, GT and GD. The ESO annex sets out our ESO considerations.

We have considered the financeability assessments as per received Business Plans and have applied a similar assessment to forecasts of financial performance once updated for Ofgem's totex allowances, incentives and notional structure as well as macro-economic changes since Business Plan submissions.

Financeability	
Purpose	To check that when all components of our determination are taken together a notional efficient operator can generate cash flows sufficient to meet its financing needs.
Benefits	Allowing continuing investment in networks, which benefits consumers by allowing the continuation of stable and well-functioning networks that support the continuation of energy supply at an efficient cost to consumers.

Background

5.1   Ofgem has a duty to have regard to the need to secure that network companies are able to finance the activities which are the subject of obligations imposed by or under the relevant legislation.

5.2   In the SSMD, we confirmed that this involves a focus on the notional company and that we would review financeability following submission of Business Plans and any updates to financial parameter working assumptions.

5.3   We use a financeability assessment as a last check that, when all the individual components of our determination are taken together (including totex, allowed return, notional gearing, depreciation and capitalisation), a notional efficient operator can generate cash flows sufficient to meet its financing needs.

5.4   As discussed in Chapters 2 and 3 above we have updated the assumptions for equity and debt based on further work since Business Plan submission and changes in macro-economic factors such as interest rates and inflation forecasts.

5.5   Our Business Plan guidance required companies to submit a financeability assessment in their Business Plans, accompanied by Board assurance that either the plan is financeable on both the notional and actual capital structure bases or that they have considered all applicable mitigating measures to improve financeability. The Business Plan guidance also required companies to provide an explanation of their target credit rating supported with evidence of the financial metrics on both a notional and an actual basis. We use this information to inform both our assessment of company Business Plans and also to inform our own financeability assessment.

5.6   All networks included board assurance in their Business Plans stating that they considered the notional company to be financeable on the basis of the SSMD working assumptions. In the main, they provided this assurance by considering rating agency methodologies and stated metric guidance for a target rating of BBB+/Baa1 for the notional company.[150]

5.7   Networks did express some concerns over either the Ofgem working assumption inputs or the outputs of their financeability assessments, which are summarised and responded to in Appendix 5. No further evidence relating to financeability was submitted in response to our call for evidence[151].

5.8   Networks have identified concerns with respect to equity financeability as distinct from debt financeability, and some company submissions claim that the former is more of a problem than the latter. In the SSMD we stated we were conscious that financeability refers to the licence holder being able to finance activities that are the subject of obligations imposed under relevant legislation and hence is applicable to both equity and debt.[152] In assessing equity financeability, we continue to look primarily to ensure that our cost of equity and allowed equity return assessment is robust and hence sufficient for the equity financeability of

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[150] With the possible exception of SPT, who indicated Baa1-A3 target rating, although they also said "RIIO-2 final proposals for electricity transmission need to achieve an implied credit rating of at least a strong Baa1", page 33, Annex 25, December 2019 Business Plan submission.

[151] Centrica submitted a letter which states "Companies have proposed significantly higher equity costs even though they are financeable if Ofgem's working assumptions were applied" and mentions some of the Challenge Group views on financeability but they did not provide any further evidence.

[152] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=84

the notional company. We also included a suite of equity metrics (including dividend yield and dividend cover) in Business Plan models and have considered these in our analysis.

5.9 The Challenge Group[153] considered that networks' target ratings were insufficiently justified and that networks did not provide "an appropriately nuanced and considered approach to financeability"[154]. In particular, the Challenge Group considered that networks did not submit a balanced quantitative analysis of the merits of targeting a BBB rating (rather than the networks' proposed BBB+ rating).

Consultation Position

Allowance parameter	Consultation position
Notional Gearing	Notional gearing of 55% for ET networks and 60% for NGGT and GD networks.
Financeability Check	We consider all networks are financeable on the basis of the notional capital structure taking account of the allowed costs, cost recovery and allowed returns in these Draft Determinations.

5.10 We consider that the credit quality is, in the round, consistent with two notches above the minimum investment grade, which was the target rating for the notional company proposed by all networks.[155]

5.11 We have completed our notional company financeability assessment with regard to actual market data (for example, our assumptions for notional company cost of equity and debt are based on actual market data, our notional gearing assumption is based on market examples, and our assumption for the proportion of inflation linked debt in the notional company is based on current actual network average proportions of inflation linked debt).

5.12 We have considered recent market evidence, which suggests that we do not need to adjust our notional company financing assumptions for the impact of Covid-19.

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[153] In their independent report to Ofgem on RIIO-2 Business Plans, published 24th January 2020
[154] https://www.ofgem.gov.uk/system/files/docs/2020/01/riio-2_challenge_group_independent_report_for_ofgem_on_riio-2_business_plans.pdf, page 8
[155] With the possible exception of SPT, who indicated Baa1-A3 target rating, although they also said "RIIO-2 final proposals for electricity transmission need to achieve an implied credit rating of at least a strong Baa1", page 33, Annex 25, December 2019 Business Plan submission.

Rationale for Consultation Position

5.13 As noted in the SSMD, Ofgem does not target any particular rating or credit ratio. However, in common with the networks themselves, we do consider forecasts of key financial metrics and draw on rating agency methodologies to assess likely credit quality in the round, which in turn influences our view of access to and cost of capital.

5.14 We agree with the Challenge Group that networks could have provided more detailed justification for their target rating. However, we also consider that this cannot be fully captured in a quantitative analysis as there are also qualitative considerations to take into account.

5.15 Some networks mentioned debt market access and increased costs of debt for lower ratings as reasons to target a BBB+/Baa1 rating.

5.16 We have considered whether a lower target rating could be justified with reference to:

- Ratings migration of GBP investment grade bonds indicating that the average rating has fallen in the broader market over the last 12 years
- Ratings migration of European utility company ratings across EMEA indicating a similar trend
- Whether a lower powered (less risky) price control could require less headroom in the base case to absorb shocks
- Whether targeting a lower credit quality could cost consumers less than any adjustments required to maintain notional company credit quality at BBB+/Baa1

5.17 However, we also consider the following benefits of targeting notional company credit quality two notches above minimum investment grade:

- Lower cost of debt (estimated at 15-30bps between Baa1/BBB+ and Baa2/BBB)
- Lower risk of migration to sub investment grade or default (if networks broadly aim to replicate the notional structure)
- Better access to capital, particularly in times of market disruption
- More headroom in the energy supply chain generally if networks are more financially resilient

- Greater ability to absorb market or operational impact of shocks (generally but also from Covid-19)

5.18 We are therefore comfortable with the networks' general proposed target credit quality for the notional company of two notches above investment grade.

5.19 However, it is clear that rating agencies, lenders and market participants do not always agree on the credit quality of a given entity[156] and that this assessment involves some degree of judgement.

5.20 We therefore do not take the approach that some networks did which was to apply strict threshold levels to particular credit metrics without also considering how or why published methodologies would imply a different rating outcome and/or whether particular metrics are genuinely good indicators of credit quality.

5.21 We therefore completed an in-the-round assessment that targets each notional company being judged as broadly of comfortable investment grade credit quality. This included consideration of:

- financial projections from our financial model that is used to propose revenue allowances in draft determinations
- the implied Moody's methodology rating (as this is the most transparent and therefore replicable methodology of the three rating agencies)
- key ratios compared to stated agency guidance thresholds for ratings two notches above investment grade but without a hard requirement to always meet those guidance levels for every ratio, recognising the discretion that rating agencies have in applying those levels to their eventual ratings assessments
- the strength of other metrics and qualitative factors
- stress test results

5.22 In completing this assessment, we used the following assumptions for the notional company:

- Allowed return (WACC) as set out in Table 31

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[156] As evidenced by a large volume of companies that have different rating category assignments by different agencies, banks having their own internal credit assessments that do not always equal published ratings and bond market pricing that is often not equal for entities rated in the same category.

- Expected outperformance of 0.22% (55% gearing) or 0.25% (60% gearing)[157]

- Totex allowances are assumed to equal network totex cost forecasts for RIIO-2

- No BPI awards or penalties as we would not assume a notional efficient operator would be subject to these

- Net debt is reset to the Draft Determination notional gearing level at the start of RIIO-2, with any opening de-gearing assumed to be achieved by an equity injection (with an equity issuance allowance paid and used)

- Debt costs are assumed to equal allowances set out in Table 5 and Table 6

- 30% of the network's debt is assumed to be CPIH linked (with a scenario test showing an alternative of 30% RPI-linked debt). This represents a change from the SSMD working assumption of 25%. This change in assumption is based on analysis of Business Plan submissions which indicate that 37% of externally raised GD&T company debt (pre derivatives) is inflation linked as at FYE 2019. An assumption of 30% is closer to the assumption of 33% used by Ofwat and does not require an assumption that a matching proportion of future debt would be inflation linked to be a valid assumption overall.

- Tax allowances are equal to tax costs, as calculated using the BPFM

- Immediate transition to CPIH from 1st April 2021 for WACC allowance and RAV calculations

- Opening RAV values to be based on totex forecasts for RIIO-1 as provided in Business Plan Data Template submission, and inclusive of any known logged-up adjustments (for example, the effect of site disposals)

- Lagged revenue impacts arising from RIIO-1 are excluded (eg inflation true-up, cost pass-through adjustments, output incentive revenue and over / under collection of revenue)

- Depreciation based on the proposed policy set out in Chapter 10 of this document

- Capitalisation based on the proposed policy set out in Chapter 11 of this document

- Dividend yield assumed at 3% of regulatory equity, as discussed in paragraphs 11.38 to 11.43.

- Equity issuance transaction costs of 5% of any amount forecast to be issued, as discussed in paragraphs 11.44 to 11.46.

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[157] Evidence suggests equity investors should expect at least 0.25% in outperformance returns and we are proposing an ex-post top up if outperformance does not materialise as expected, so we believe it is appropriate and justified to include it in financeability analysis.

5.23 In the SSMC and SSMD, we set out the actions that network companies could take to address any financeability concerns, which were:

- dividend policies can be adjusted to retain cash within the ring-fence during the RIIO-1 or RIIO-2 period
- equity injections can be used to reduce gearing
- expensive debt or other financial commitments could be re-financed
- network companies can propose alternative capitalisation rates and/or depreciation rates, if appropriate
- adjust notional gearing.

5.24 Of the above measures only some are applicable for any identified notional company financeability constraints, namely:

- Reducing the dividend assumption, if appropriate
- Adjusting capitalisation and/or depreciation rates
- Adjusting notional gearing (which implies notional equity injection)

5.25 Although some networks indicated that adjusting capitalisation or depreciation rates would not be effective in addressing financeability constraints, we believe this is an oversimplification because some ratings agencies, lenders and market participants would consider that these measures improve credit quality while others have indicated that they do not consider these measures to improve credit quality.

5.26 In previous price controls, we have expressed our concerns with overly focussing on particular individual metrics and have set out our view on the limitations of the AICR or PMICR ratio in particular.[158] We believe an assessment of credit quality and financeability requires a consideration of a number of metrics and qualitative factors in the round. However, we also recognised that it is rating agencies' prerogative to use and apply thresholds for these metrics as they choose for their own rating assessments.

5.27 We have previously indicated that it will be for networks and the rating agencies to evaluate whether any issues revealed by weak metrics should lead to lower levels of gearing, tolerance of lower credit ratings or further evolution in rating

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[158] See RIIO-ED1 Draft Determinations Financial Issues Appendix 1 for a full discussion of this issue and A1.23 in particular which concludes that the limitation of this ratio stems from the use of a real terms capital maintenance concept in the numerator and a largely nominal concept in the denominator.

methodologies.[159] We are not aware of any change in rating methodologies on this topic and networks did not indicate tolerance of lower credit ratings in their Business Plans.

5.28 We have previously indicated[160] that we cannot justify giving investors higher cost of capital allowances to improve a financial metric and we maintain this stance. Therefore, if constraints were identified with the AICR/PMICR metric we looked to notional gearing in the first instance.

5.29 For RIIO-2, allowances for both debt and equity will change to reflect market rates for risk-free and corporate debts.[161] We therefore consider it appropriate to consider possible evolution of the cost of debt and cost of equity and whether debt servicing is projected to improve or worsen over the longer term in different possible rate environments. This could better inform our decisions on whether any changes to notional gearing for RIIO-2 could be expected to prevail or require further adjustment, prior to RIIO-2 or at future price controls.

5.30 We considered whether there were likely to be longer term constraints on AICR which may indicate longer term financeability concerns that may need to be addressed. In doing so we looked at the economic form of this ratio rather than extending the more detailed LiMo. This is because the economic form serves to extract from shorter term impacts and does not require a lot of detailed assumptions a long way into the future. We therefore consider the economic form of this ratio[162] is an appropriate tool for looking at longer term expected trends. We show the results of our analysis on the basis of a 60% notional gearing assumption.

5.31 Figure 21 shows the market implied evolution of the Iboxx index based on market implied interest rates (blue line). This chart also shows the market implied evolution of the cost of debt allowance if a 14yr trailing average prevails past the end of RIIO-2 (orange line). Interest rates, and by extension corporate borrowing rates, are currently close to historical lows and are expected by the market to remain significantly lower than interest rates have been in the past. Therefore, networks overall cost of debt is expected to fall in future as embedded debt that

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[159] RIIO-ED1 Draft determinations financial issues paragraphs 3.21-3.22. Although this draft determination applied to Electricity Distribution networks, which this price control does not, the principle holds for all sectors.
[160] Ibid, paragraph 3.19
[161] Equity indexation explicitly references risk free rates and debt indexation implicitly references risk free rates through changes in iBoxx yields which include risk free rates and corporate bond credit spreads.
[162] See Table 13 in Ofgem's Sector Specific Methodology Decision, Finance Annex (May 2019).

was fixed at higher rates is refinanced as it matures with debt at lower rates of interest.

Figure 23: Market implied evolution of iBoxx index and cost of debt allowance
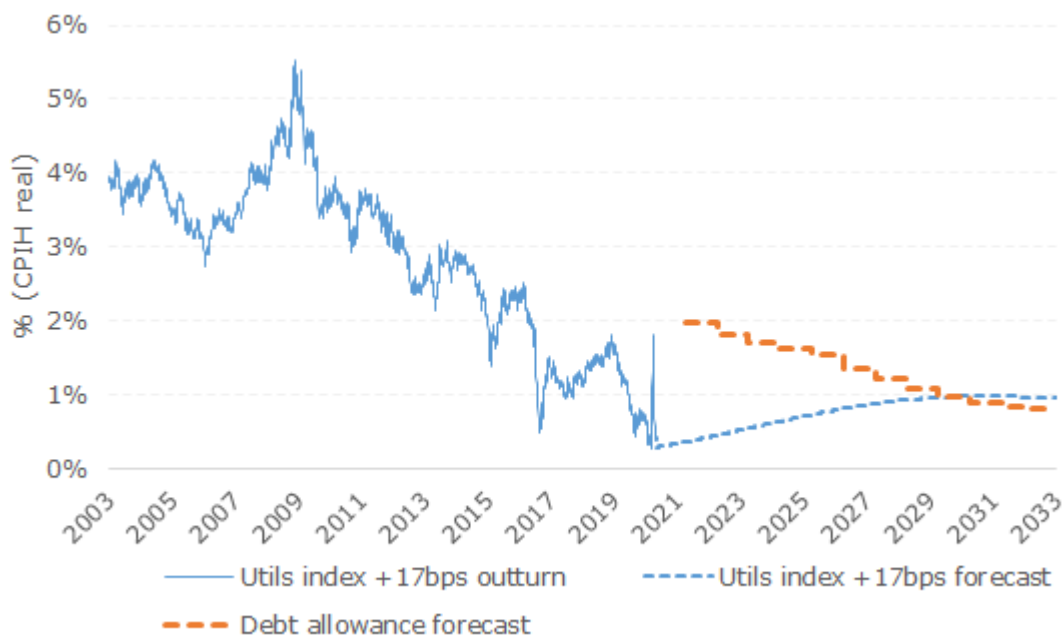
Source: Ofgem analysis

5.32   Figure 24 shows the market implied evolution of the 20-year real gilt rate and the corresponding evolution of the equity return (with the proposed risk free rate indexation mechanism), all in CPIH equivalent terms. As rates are expected to rise slightly over time this leads to a slightly higher market implied equity return into the future.

Figure 24: Market implied evolution of the 20- year real gilt rate and equity return indexation
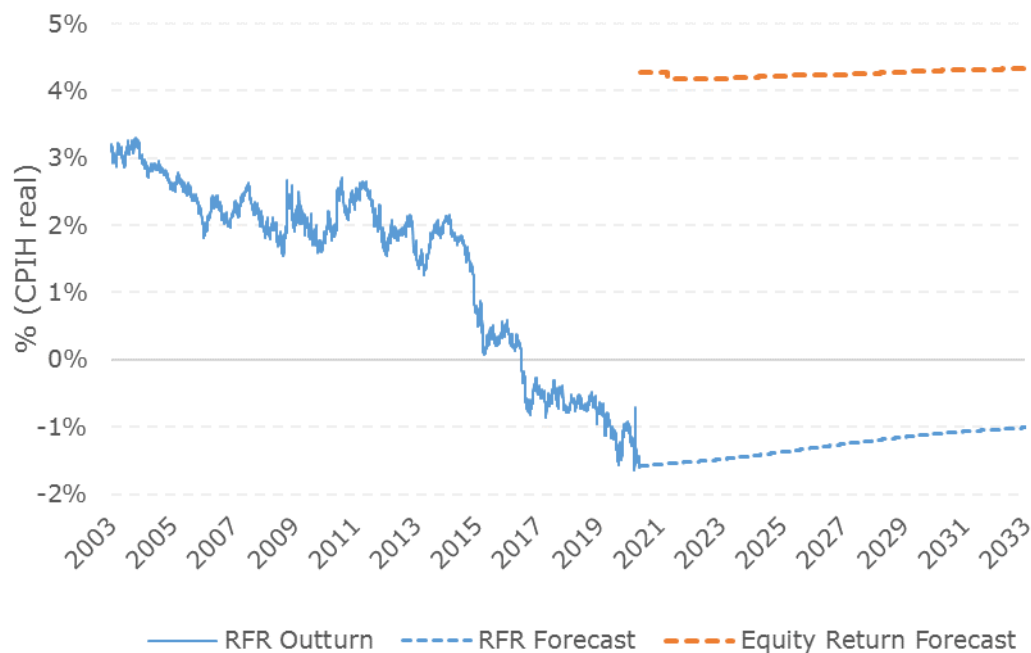
Source: Ofgem analysis

5.33 A falling overall cost of debt combined with a slightly rising equity return would lead to an improving AICR over time (as shown in Figure 27). This result adheres with a GDN network submitted extended Business Plan model where a market implied cost of debt has been used, which showed key credit metrics improving into RIIO-3 and RIIO-4. We therefore do not have any longer term financeability concerns related to AICR in the market implied case.

5.34 We also considered different possible interest rate scenarios, high and low, as shown in Figure 25 (cost of debt) and Figure 26 (cost of equity) to test whether different interest rate environments over the longer term could be expected to cause financeability concerns related to this ratio. Figure 25 and Figure 26 show implied rates ±1% but we also considered the impact of implied rates ±2%.

Figure 25: Interest rate scenarios (cost of debt)
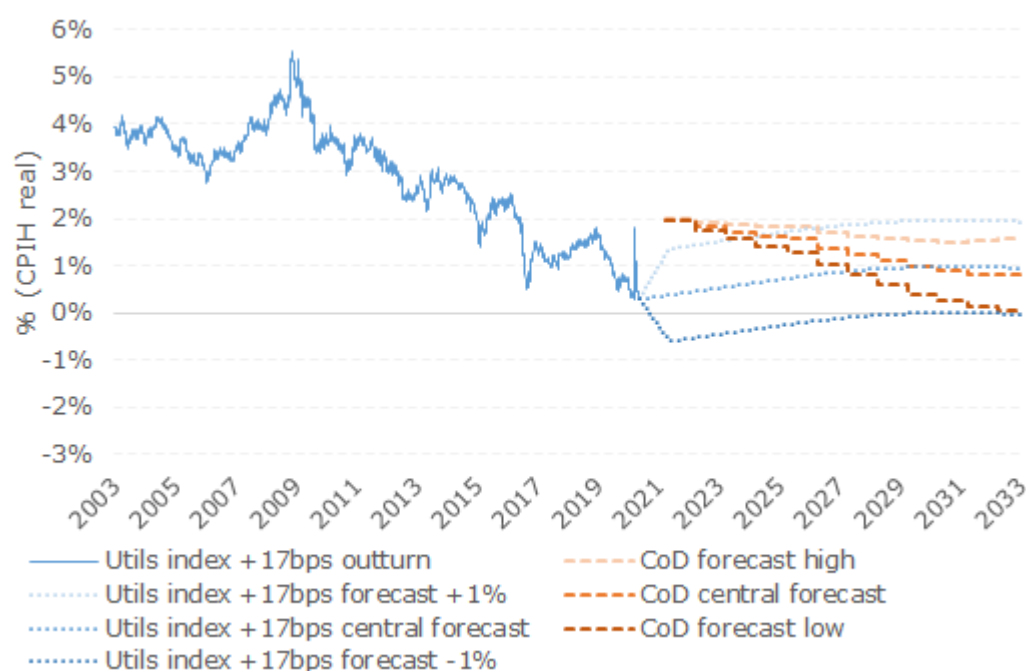
Source: Ofgem analysis

Figure 26: Interest rate scenarios (cost of equity)
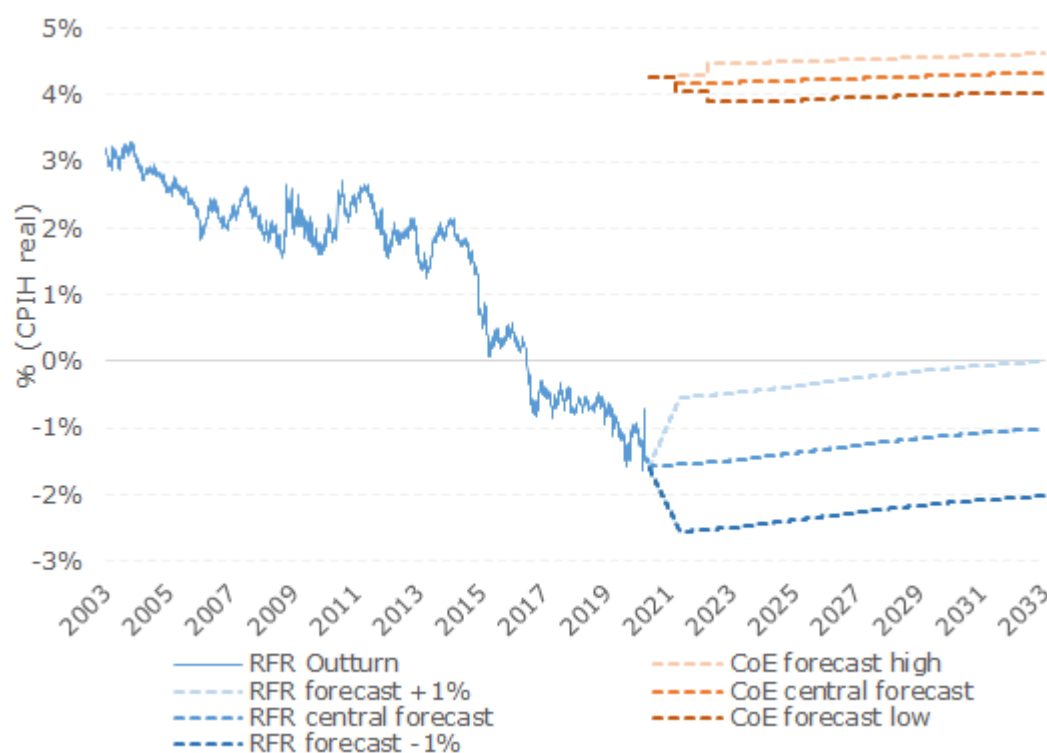
Source: Ofgem analysis

5.35 Figure 27 shows the AICR results of this analysis and suggests that the combination of equity and debt allowance indexation serves to protect the headroom in this credit metric to a large degree (compared to only indexing debt allowances as in RIIO-1). A 2% lower interest rate environment would lead to AICR approaching 3x by 2033 but we have not shown it in Figure 27 because the scale would make it harder to view the other results, which we feel represent more feasible scenarios.

Figure 27: Adjusted Interest Cover Ratio evolution under different rate scenarios
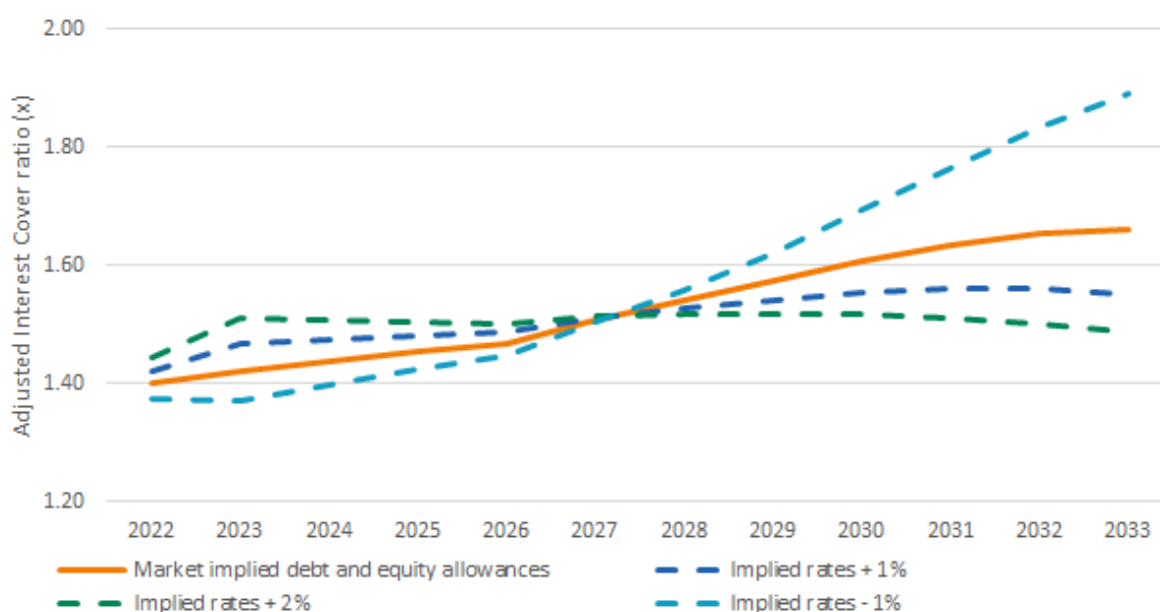
Source: Ofgem analysis

5.36 In considering equity financeability as distinct from debt financeability, we have looked primarily at our assessment of allowed equity returns (discussed in chapter 3 above). We have used a notional dividend yield of 3.0% and assessed the implied dividend cover ratios in financeability modelling (discussed further in paragraphs 11.38 to 11.43. We consider the dividend yields and cover ratios to be adequate, in line with our views on allowed equity returns.

Notional gearing

5.37 In RIIO-1, there are four different notional gearing assumptions, ranging from 55% to 65%, whereas the price controls before RIIO-1 had two distinct levels, 60% and 62.5%, as shown below.

Table 32: Notional gearing assumptions across price controls

Sector	Company	Price control before RIIO-1	RIIO-1	SSMD working assumption
GT	NGGT	60%	62.5%	60%
ET	NGET	60%	60%	60%
	SPTL	60%	55%	60%
	SHET	60%	55%	60%
GD	All	62.5%	65%	60%

Source: Ofgem analysis

5.38   In the SSMD, we provided a working assumption of 60% notional gearing for Business Planning purposes but indicated that we would review our notional gearing assumption for each sector following Business Plan submission.

5.39   We are of the view that notional gearing should be determined as a reference point with consideration of the risks network companies face, rating agency views on gearing levels for investment grade regulated networks, balancing an appropriate cost of capital, and the impact medium-term market conditions have on debt servicing.

5.40   Allowances for the cost of equity are determined with reference to current risk free rates but allowances for the cost of debt are determined with reference to a trailing average of corporate debt rates over the last 10 years or longer.[163] This can naturally create some lag in debt servicing ability when rates have been falling.

5.41   In RIIO-1, the justification for lower gearing for certain networks was linked to overall cashflow risk, RoRE range analysis and relative capital intensity of networks in different sectors. Reflecting this, we asked, in Business Plan guidance, that networks provide an assessment of overall risk of their Business Plans and realistic and well-justified proposals for notional gearing.

5.42   Some networks carried out risk, RoRE and financeability assessments at 55%, 60% and 65% notional gearing intervals. SPT's analysis suggested that "assumption of 60% or 55% as with RIIO-T1 would provide a stable investment grade credit rating that aligns with regulatory precedent"[164]. SHET indicated that a reduction in notional gearing was required to improve cashflows and maintain

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[163] This is because the cost of debt allowance seeks to cover both embedded debt that has been fixed with reference to market rates over time and new debt that will raised in the upcoming price control.
[164] https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_25_Finance.pdf, page 50

their target notional company rating[165] and NGET suggested that a "reduction in notional gearing to 55% could lead to the network being considered financeable"[166] but expressed concern that "… at these levels, financial structures are not efficient and sustainable in the long term."

5.43   In common with previous price controls, we have considered both RoRE analysis and financeability to test the appropriateness of notional gearing assumptions. RoRE analysis allows us to stress test notional gearing levels by examining the overall range of returns to which networks will be exposed and whether the resultant ranges represent reasonable upsides and downsides. We consider the RoRE upside to be reasonable and that returns around the level of the Cost of Debt index at the minimum are appropriate.

5.44   Figure 22 illustrates that expected RoRE ranges are well within the RAMs boundaries and that the minimum RoRE is slightly above the average RIIO-2 cost of debt. The RIIO-2 average cost of debt includes embedded debt which was transacted at higher rates so this minimum RoRE is significantly higher than a debt investor would receive for a debt investment in networks today. We therefore consider the downside RoRE to be relatively mild.

5.45   Financeability analysis enables us to test whether our notional gearing assumption, when combined with other price control parameters, allows the notional efficient operator sufficient headroom to service its debt.

5.46   We began our financeability analysis using the RIIO-2 SSMD working assumption of 60% notional gearing for each sector. We then combined this with:

- the latest data available on costs and incentives
- debt and equity allowances outlined in chapters 2 and 3 above for the relevant working assumption level
- Capitalisation and depreciation assumptions as set out in chapters 10 and 11.

5.47   We also considered the following sensitivities:

- Foreseeable increases in investment during RIIO-2 (illustrative Uncertainty Mechanism totex)

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[165] https://www.ssen-transmission.co.uk/media/3761/a-network-for-net-zero-final-business-plan.pdf, page 117
[166] Page 74, NGET_A15.01- Finance Annex, December 2019 Business Plan submission

- Reasonable underperformance on cost or incentives (ie gentle RoRE downsides of 0.5%)
- Foreseeable increases in debt costs and decreases in risk-free rates, based on our proposed indexation policies

5.48 Based on the results of the above analysis we then proceeded with the following logic:

a) Is there excessive headroom which might indicate it could be more efficient[167] to increase notional gearing levels?
   (i) If yes, consider higher notional gearing assumption
   (ii) If no, proceed to b)

b) Is there sufficient headroom for gearing to remain at RIIO-2 working assumption levels (e. 60%)?
   (i) If yes, retain assumption (eg. 60%) and proceed to d)
   (ii) If no, proceed to c)

c) Do market benchmarks support a lower assumption (eg 55%)?
   (i) If no, is there another solution?
   (ii) If yes, proceed to d)

d) Is there sufficient headroom at this lower assumption (eg 55%)?
   (i) If yes, retain lower assumption and proceed to e)
   (ii) If no, return to c)

e) Is the new gearing level lower than RIIO-1?
   (i) If no, then no allowance is provided
   (ii) If yes, what is the assumed equity issuance cost?

5.49 This logic constrains the de-gearing process to secure that the notional company remains within the bounds of market benchmarks and provides an allowance for any assumed de-gearing (equity issuance).

5.50 The results of this process are summarised below:

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[167] For example if notional gearing assumption is lower than RIIO-1 this would involve an equity issuance cost allowance, which would not be required if the notional gearing assumption was the same or higher than RIIO-1.

Table 33: Notional Gearing Analysis

Sector	Company	Is there sufficient headroom at assumed level?	Do market benchmarks support a lower assumption (eg 55%)	Is there sufficient headroom at this lower level (eg 55%)	Is the new gearing level lower than RIIO-1?	What is the assumed equity issuance cost?
GT	NGGT	Yes (60%)	Na	Na	Yes (by 2.5%)	£8m
ET	NGET	No	Yes	Yes (55%)	Yes (by 5%)	£35m
	SPTL	No	Yes	Yes (55%)	No	£0
	SHET	No	Yes	Yes (55%)	No	£0
GD	All	Yes (60%)	Na	Na	Yes (by 5%)	£48m

Source: Ofgem analysis

5.51 The results are strongly correlated with growth and totex uncertainty in each sector: sectors with potentially higher growth or greater totex uncertainty require lower levels of gearing to maintain the same level of credit quality.

5.52 Table 34 sets out the resulting financial ratios of our Draft Determinations on the basis of baseline totex allowances. As there could be additional totex allowed for through uncertainty mechanisms we considered it prudent to also consider an illustrative totex case for financeability purposes (resulting ratios provided in Table 35) in addition to the baseline totex case. This 'Illustrative UM' case does not represent a forecast or indication of re-opener allowances but is a case that could be considered, albeit dependent on a number of factors.

5.53 Table 34 and Table 35 also show forecast RIIO-1 and RIIO-2 combined RAV growth and illustrates that the ET sector is expected to show higher RAV growth than the GD and GT sectors in either baseline or illustrative totex cases.

Table 34: Summary financial ratios for draft determinations for notional company structures (FYE 2022-2026 average), baseline totex allowances

Licensee	RIIO-2 Starting Notional Gearing	Adjusted Interest Cover Ratio	Funds from operations/ net debt	RIIO-1 & 2 RAV growth (nominal)
SHET	55%	1.52	10.7%	11.2%
SPTL	55%	1.58	13.2%	6.0%
NGET	55%	1.68	14.4%	3.1%
NGGT	60%	1.51	11.4%	1.7%
Cadent	60%	1.45	10.2%	2.2%
Northern	60%	1.43	9.8%	3.0%
Scotland	60%	1.42	9.9%	2.7%
Southern	60%	1.43	10.0%	2.6%
Wales & West	60%	1.45	10.2%	2.5%

Source: Ofgem analysis

Table 35: Summary financial ratios for draft determinations for notional company structures (FYE 2022-2026 average), illustrative UM case

Licensee	RIIO-2 Starting Notional Gearing	Adjusted Interest Cover Ratio	Funds from operations/ net debt	RIIO-1 & 2 RAV growth (nominal)
SHET	55%	1.52	9.4%	13.1%
SPTL	55%	1.51	11.0%	7.9%
NGET	55%	1.62	13.3%	3.6%
NGGT	60%	1.48	10.9%	2.2%
Cadent	60%	1.42	9.7%	2.7%
Northern	60%	1.42	9.7%	3.1%
Scotland	60%	1.38	9.2%	3.4%
Southern	60%	1.41	9.6%	3.0%
Wales & West	60%	1.40	9.5%	3.2%

Source: Ofgem analysis

5.54 The financial ratio results in Table 34 and Table 35, along with consideration of stress test results, indicate to us that there is sufficient headroom to consider each notional company financeable. We do not consider there to be excessive headroom in these credit metrics to justify a higher notional gearing assumption.

5.55 We note that AICR would improve by approximately 15bps if the notional company were assumed to retain RPI debt rather than immediately switch all RPI debt to CPIH-linked debt. Although in the base case we have assumed a switch to higher real yielding CPIH-linked debt in line with the switch in RAV inflation (mainly because this is the more conservative assumption from a financeability and credit metric perspective), we do not consider that to be the only possible reasonable

assumption for the notional company. If the notional company were assumed to either retain RPI-linked debt or transition to CPIH debt over time, the AICR metric would exhibit more headroom (although in our view not excessive headroom). This is a relevant factor to take into consideration in an in-the-round credit quality assessment.

5.56 We are also comfortable that our notional gearing assumptions are supported by market benchmarks (for example see Table 13 for market benchmarks of actual gearing levels).

5.57 We therefore propose notional gearing of 55% for ET networks and 60% for NGGT and GD networks.

Consideration of Stress Tests

5.58 We asked the networks to run a set of stress test sensitivities as part of their Business Plan submissions. These were broadly equivalent to the types of stress tests run at previous price controls, including macroeconomic, totex and overall RORE scenarios.

5.59 Given our analysis of the reduced RORE range compared to RIIO-1, combined with both debt and equity indexation which reduces exposure to macro-economic shocks, we consider there to be significantly less systematic risk in the RIIO-2 price control compared to the RIIO-1 price control. This is partly driven by lower incentive strengths, such that companies that overspend on totex allowances bear less of the cost of that overspend. From a credit perspective this is supportive in downside scenarios because a given level of overspend has less of an impact on revenues and credit metrics.

5.60 We consider our totex allowances have been set at a fair level but for financeability stress test purposes have considered the relative impact of different severe overspend scenarios, in terms of their impact on credit metrics.

5.61 Table 36 provides a summary of overspend scenarios across all networks and the impact on key credit metrics. The results indicate that even very severe overspend scenarios (20%) would retain investment grade credit quality.

Table 36: Baseline, Illustrative UM and overspend scenarios[168]

	Baseline Totex		Illustrative UM Totex		Illustrative UM + 10% overspend		Illustrative UM + 20% overspend	
	AICR	FFO/ND	AICR	FFO/ND	AICR	FFO/ND	AICR	FFO/ND
SHET	1.52	10.7%	1.52	9.4%	1.48	8.9%	1.49	9.0%
SPT	1.58	13.2%	1.51	11.0%	1.46	10.6%	1.45	10.4%
NGET	1.68	14.4%	1.62	13.3%	1.56	12.7%	1.49	12.2%
NGGT	1.51	11.4%	1.48	10.9%	1.40	10.4%	1.32	9.9%
Cadent	1.45	10.2%	1.42	9.7%	1.28	8.9%	1.19	8.6%
NGN	1.43	9.8%	1.42	9.7%	1.26	8.8%	1.13	8.3%
SGN Scotland	1.42	9.9%	1.38	9.2%	1.28	8.8%	1.15	8.3%
SGN South	1.43	10.0%	1.41	9.6%	1.28	8.8%	1.20	8.6%
WWU	1.45	10.2%	1.40	9.5%	1.24	8.6%	1.14	8.3%

Source: Ofgem analysis

5.62 We noted from the majority of Business Plan submissions[169] that the macro-economic scenarios did not have a very material impact on overall credit quality. We supplemented with two additional macro-economic scenarios:

- A high iBoxx scenario that is not mirrored in the real gilt market (such that debt costs increase but equity return and allowance doesn't), this could be driven by wider credit spreads or other factors. This has been forecast using 10yr implied gilt rates plus a spread that is midway between the 3yr average (188bps) and the month with the highest historical spread (336bps, December 2008). This high spread of 262bps was assumed to prevail for the full five years of RIIO-2.

- Long term forecast for RPI equalling the long term forecast for CPIH, thus reducing the equity return and allowance but not reducing the cost of debt.

5.63 We consider both of these scenarios to be highly unlikely, but even in these extreme scenarios AICR fell by only 2-6bps and FFO/net debt fell by only up to 0.3%.

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[168] In this analysis we do not assume that a downside RAM is triggered. The change in metrics relative to the baseline may, in some cases, be smaller if we included the benefit of that protection.
[169] An exception was NGET, NGGT, who ran the inflation wedge scenario in a way we do not believe to be accurate (as discussed in Appendix 5)

Impact of COVID-19

5.64 We have considered recent market conditions in light of the impact of COVID-19 on equity and debt markets and whether market conditions or forecasts may indicate a need to amend our assumptions on equity, debt or financeability.

5.65 We note that the FTSE all share index has fallen significantly since the start of 2020. However, companies with significant network assets display muted impacts in comparison, with any falls generally less than half as large, in line with our a priori expectations that these stocks provide a safe haven. However, if the impact on Total Market Returns is large enough, it could outweigh relative risk comparisons as captured in beta analysis. We do not at this stage have any firm analysis on this trade-off and anticipate that any reliable data will take months to reveal itself.

5.66 On debt costs, credit spreads on network bonds widened significantly in March, following the trend of the broader corporate bond market.

5.67 Bond credit spreads have recovered more recently and the offsetting downward movement on UK gilt yields has left current corporate and network bond yields lower than average 2018/19 levels. We have witnessed network companies being able to issue new deals at these low yield levels[170] .

5.68 Therefore, bond markets remain open for network companies and the yield levels available are lower than 2018 and 2019 on average.

5.69 Overall we do not currently consider there to be evidence that network companies have reduced access to finance or that any of the financing assumptions we have made for the notional efficient operator require amendment due to COVID-19.

5.70 However, we will continue to review market developments and invite stakeholders' views and evidence regarding whether we should consider adjusting our notional company financing assumptions due to the impact of COVID-19.

Financeability questions

FQ12. Do you agree with our approach to assessing financeability?

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[170] For example National Grid on 8th April priced a new 20yr bond at a yield 14bps inside a similar 20yr deal in Dec 2019 and Northern Powergrid priced a new £300m 42yr bond with a coupon of 1.875% on 9th June 2020.

FQ13. Do you agree with our approach to determining notional gearing for each notional company?

FQ14. Do you have any evidence that would suggest we should consider adjusting our notional company financing assumptions due to the impact of COVID-19?

6. Financial Resilience

Section summary

In this chapter we propose additional resilience requirements for ET, GT, GD and ESO for RIIO-2, seeking further stakeholder views on these proposals.

Financial Resilience measures	
Purpose	Financial resilience measures aim to protect consumers from adverse consequences of financial distress.
Benefits	Having measures in place that provide early warning of financial distress, consider potential mitigations and/or restrict certain activities in the event of financial deterioration make failure less likely and/or increases the chance and quantum of recovery for the benefit of consumers.

Consultation Position

6.1   We propose including additional requirements for licensees to a) provide Ofgem with published rating reports, where possible, and b) provide Ofgem with a financial resilience report if their issuer credit rating falls to BBB/Baa2 (or equivalent) and is placed on negative watch (or is downgraded directly to a lower rating without first being placed on negative watch).

Rationale for Position

6.2   We have consistently said that networks are able to determine the appropriate actual capital structure for their own circumstances, so it is possible that individual actual network credit quality may be different to our assessment of notional company credit quality.

6.3   It is companies and their investors rather than customers that should bear the risk of a company's choice of its actual capital structure to the extent that it departs from the notional capital structure.

6.4   Through consideration of company Business Plan submissions on actual company financeability and updated analysis including the impact of our Draft

Determinations (necessarily making some broad generalised assumptions for these forecasts) we have had regard to the possible impact on actual company financial resilience.

6.5 Based on evidence presented in Business Plans (and our own analysis updating for draft determinations), WWU[171], SGN[172] and NGN[173] may need to consider plans to demonstrate how they will maintain financial resilience in 2021-26. We note NGN's detailed risk assessment and potential mitigating actions in their submitted Business Plan and welcome this type of analysis of the options for maintaining financial resilience.

6.6 Networks and their investors are responsible for maintaining long-term financial resilience and we maintain the view that networks can improve actual company financial resilience by either reducing dividends or injecting equity. This view has been shared by the Competition Commission in previous appeals. For example, in 2014 the Competition Commission[174] said "if shareholders were able to withdraw large sums in periods with strong cash flow, it was reasonable they should also be willing to supply finance in periods of weaker cash flow".

6.7 We note that a number of water companies propose improving financial resilience by either constraining dividends or injecting equity.[175] We therefore do not agree with some networks' stated objections to these options for improving financial resilience.

6.8 Although we set our price control with reference to the notional efficient operator, we also have an ongoing interest in networks' financial resilience as any financial failures could in extremis have negative consequences for consumers.

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[171] https://www.wwutilities.co.uk/media/3567/3-wwu-business-plan-december-2019.pdf , page 195 under "Ofgem Actual Company" heading "Due to mitigating measures by WWU …. we conclude that it should maintain a rating of BBB- and be compliant with senior lender ratios, albeit with very limited headroom".

[172] https://www.sgnfuture.co.uk/wp-content/uploads/2019/12/SGN-RIIO-GD2-Business-Plan.pdf, page 196, "The actual company at the 4.3% cost of equity….AICR is below the range consistent with a Baa2……PMICR is below the range consistent with BBB", and page 198 with reference to actual company post mitigations "The credit metrics reach a level consistent with the minimum credit rating of BBB/Baa2….albeit in the bottom half of the range for the Southern network".

[173] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/NGN-RIIO-GD2-Business-Plan-2021-2026.pdf, page 188, "on an actual basis …. key metrics being below the acceptable levels as set by the credit rating agencies and/ or stipulated by NGN's bank covenants" and page 191 "We have concluded that under each of the scenarios, the mitigating actions would allow the company to remain viable for the period under review".

[174] Paragraph 17.100, Competition Commission, 2014, Northern Ireland Electricity Limited price determination – A reference under Article 15 of the Electricity (Northern Ireland) Order 1992

[175] As mentioned by Ofwat, https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Aligning-risk-and-return-technical-appendix.pdf, page 104

6.9   We have protective measures in place in our licence conditions, such as requirements for sufficiency of resources certificates, a requirement for each licensee to maintain an investment grade issuer credit rating and restrictions on payments to shareholders if ratings fall below certain levels.

6.10   Our determinations for the notional company, which in some cases has indicated a requirement to reduce gearing to protect notional company credit quality, do not impose a requirement on actual licensees to reduce gearing if either their gearing or overall credit quality are weaker than notional levels.

6.11   However, given the potential risk to consumers of network financial failure if networks either operate inefficiently or choose not to protect their financial resilience, we believe it is appropriate for us to bolster our checks and balances on credit quality and financial resilience. We believe some changes are required to assist us in monitoring the credit quality of all licensees and to clarify upfront the reporting expectations for networks whose actual issuer credit ratings fall materially below those generally expected for the notional company.

6.12   To address this, we invite stakeholder views on including additional requirements for licensees to a) provide Ofgem with published rating reports, where possible, and b) provide Ofgem with a financial resilience report if their issuer credit rating falls to BBB/Baa2 (or equivalent) and is placed on negative watch (or is downgraded directly to a lower rating without first being placed on negative watch).

6.13   We would expect any such financial resilience report to be provided within 60 days[176] of the rating action and to include the following:

- an assessment of the licensee's current and forecast financial standing, including an assessment of resilience to downside scenarios relating to either operational performance or macro-economic events;
- financial projections[177] for the following 3 Regulatory Years or the remainder of the Price Control Period, whichever is longer; and
- details of potential mitigating actions the licensee could take to improve its financial resilience and an indication of whether such actions are planned.

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[176] Suggested reasonable timeframe but open to discussion or proposals
[177] To include forecast financial metrics and results of stress tests

6.14   We believe the provision of such reports will assist Ofgem in monitoring the financial resilience of companies and will provide us with valuable information on networks' considerations of and plans for mitigating financial resilience challenges.

7. Corporation tax

Section summary

In this chapter we outline the three options put forward at SSMD and the background to this, we summarise the work done and the results of stakeholder engagement to date and we provide an Ofgem view.

We then outline each of the proposed protections for ET, GT, GD and ESO for RIIO-2, seeking further stakeholder views on these proposals.

Corporation tax questions

FQ15. Do you agree with our proposal to pursue Option A?

FQ16. Do you agree with our proposals to roll forward capital allowance balances and to make allocation and allowance rates Variable Values in the RIIO-2 PCFM?

FQ17. Do you agree with the proposed additional protections? In particular:

a) do you have any views on a materiality threshold for the tax reconciliation? Do you think that the "deadband" used in RIIO-1 is an appropriate threshold to use?

b) Do you have any views on our proposals to retain the Tax Trigger and Tax Clawback mechanisms from RIIO-1?

c) Do you have any views on the proposed process for the Tax Review?

d) Do you have any views on the proposed board assurance statement?

Corporation Tax	
Purpose	To provide a tax allowance compensating companies for their efficient corporation tax payments.
Benefits	Providing a notional allowance enables companies to recover amounts required to cover their costs while incentivising them to manage their tax affairs efficiently thereby keeping costs lower for consumers.

Background

7.1 In the SSMD, we retained the three proposed options for our RIIO-2 tax methodology for further consideration as part of our Business Plan assessment. Those options were as follows:

- Option A – Notional allowance with added protections
- Option B – Pass-through for payments to HMRC

- Option C – The "double-lock": the lower of notional (Option A) and actual (Option B)

7.2 We also stated that we would consider the merits and applicability of the Fair Tax Mark before deciding on whether to make it a licence requirement for companies.

7.3 In this section, we set out our consultation position for the RIIO-2 tax policy and the mechanisms that we propose to use to calculate and monitor the tax allowance.

Policy Options

Option A

7.4 Option A involves calculating an allowance based on notional company assumptions, as was done in RIIO-1. As well as this, we proposed to introduce a number of additional protections to increase transparency and to enable adjustments to the tax allowance, if considered necessary. We propose the following additional protections, under Option A:

- Tax reconciliation to be submitted to Ofgem on an annual basis reconciling the adjusted notional allowance with the adjusted CT600 value
- CT600 forms to be submitted to Ofgem on an annual basis
- A board assurance statement covering the tax reconciliation
- A tax review procedure enabling Ofgem to review and, if required, adjust the allowance during the price control period

7.5 See paragraph 7.23 of this document for more detail on each of these.

Option B

7.6 Option B would allow companies to pass through their Corporation Tax charge based on actual payments made to HMRC in each year.

Option C

7.7 Option C involves setting the allowance at the lower of the actual tax charge (option B) and the notional calculation (option A).

Context

7.8   During RIIO-1, companies' actual tax payments as reported to HMRC were different from the notional tax allowance that we gave them. This mismatch is primarily driven by fundamental differences between the statutory and regulatory basis of calculation as well as timing differences.

7.9   There are a number of items within companies' Company Tax Return (CT600) forms that are not factored into the notional calculation in the PCFM. Examples of these include group and other reliefs where the company is a group member, tax relating to non-regulated activities of the company and any necessary accounting adjustments[178].

7.10   There are also a number of assumptions within the PCFM that do not reflect the actual tax position, for example, capital allowance pool balances and allocation rates are set at the beginning of the price control and are not updated to match actual balances over the course of the price control, resulting in a gradual divergence between PCFM and the CT600. As well as this, the PCFM calculates the tax allowance on a notional company basis, which includes a number of assumptions over gearing and cost of debt, which may not be in line with the companies' actual gearing and cost of debt.

7.11   These are legitimate and known reasons for differences between the notional allowance and HMRC payments and would not on their own indicate a need for a fundamental policy shift on tax, in our view.

Stakeholder views

7.12   Throughout our continued engagement, companies have been supportive of either option A or in some cases option B, while reiterating concerns regarding option C.

7.13   Companies broadly agree that the RIIO-1 tax framework does a good job of protecting consumers and promoting tax legitimacy. SPT note that the notional allowance is the most appropriate mechanism to fund companies.

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[178] Taxable profits are calculated in accordance with generally accepted accountancy practice (GAAP) and therefore the tax treatment of assets and liabilities typically follows the accounting treatment. Under GAAP, an asset or liability is valued at its "fair value", which is a market-based measurement of the carrying value as at the measurement date. Certain assets including financial instruments fluctuate in value and must be priced, accordingly. These and other accounting adjustments are not reflected in our regulatory model.

7.14   Cadent were of the view that the tax allowance calculation should remain on a notional basis to avoid introducing inconsistencies. They suggest that instead of changing the policy, we introduce flexibility in the calculation to better capture the actual tax position.

7.15   NGET and NGGT remain supportive of option A and considered that an incentive to negotiate tax with HMRC and to maximise reliefs and incentives that Government has chosen to make available to investors in UK infrastructure must be retained.

7.16   Companies were not supportive of option C on the basis that it would penalise them and provide no incentive to efficiently reduce their tax costs. The ESO noted that it would be particularly affected due to its volatile profits driven by its system operator role. SSE were supportive of option B, noting that it is the most appropriate way to remunerate companies for the tax they pay, when they pay it.

Analysis

7.17   In the SSMD, we requested that companies provide us with substantial evidence that there are not material differences between allowances received under the price control and payments made to HMRC.

7.18   As part of our further analysis in this area, we have gathered additional information from the companies to enable us to reconcile the notional tax allowance to actual tax paid for each period per their corporation tax returns to confirm whether the differences were legitimate and in line with our expectations.

7.19   We compared the adjusted tax liability taken from the companies' latest CT600 forms against the adjusted notional allowance and found that on the whole, allowances were broadly in line with payments made to HMRC, over the course of RIIO-1.

Consultation position

Output parameter	Consultation Position
Basis of calculation	To pursue Option A – continuing with the notional allowance with a number of additional mechanisms to improve reporting and enable us to review the allowance, if required during RIIO-2.
Additional protections – Tax Trigger	To retain this mechanism from RIIO-1 and to simplify the modelling and determination process for Type A events.
Additional protections – Tax Clawback	To retain this mechanism from RIIO-1 and where we are reducing notional gearing levels for particular companies in RIIO-2 to allow some headroom by gradually reducing notional gearing levels for the purposes of the tax clawback calculation.
Additional protections – Tax Reconciliation	To introduce an annual requirement for companies to submit an annual tax reconciliation between the notional allowance and actual tax liability per their latest Corporation Tax returns.
Additional protections – Board assurance statement	To introduce an annual requirement for companies to submit a board assurance statement alongside the tax reconciliation, providing assurance over the appropriateness of the values in the reconciliation.
Additional protections – Tax review	To introduce a tax review mechanism that would enable us to formally review and, if necessary, to adjust the companies' tax allowance during the course of RIIO-2.
Capital allowances - rates	To make both the allocation rates and tax rates used to calculate capital allowances variable values to enable updates during the price control.
Capital allowances – opening balances	To roll the RIIO-1 closing balances forward on a notional basis as opposed to resetting the opening pool balance based on the companies' actual tax computations.
Fair Tax Mark	To not pursue the Fair Tax Mark certification as a requirement for RIIO-2.

7.20 While we did not identify material differences that companies were unable to explain, we found that adjustments made to the notional allowance and to the tax liability were not always applied clearly and consistently across companies. On this basis, our analysis highlighted the need for more robust reporting and monitoring to improve transparency in this area.

7.21 Options B and C would represent a shift in the basis of calculation away from the existing approach. We have not identified any clear evidence that this would provide better value for the consumer. Both options B and C would remove any incentive for companies to reduce efficiently their corporation tax charge and re-setting allowances would introduce inconsistency in the treatment of capital expenditure that has already been incurred.

7.22 We have engaged with the companies in this regard and propose to pursue 'Option A', the notional allowance with a number of additional mechanisms to allow us to monitor the policy during the course of RIIO-2 through improved reporting and introducing an uncertainty mechanism. These additional protections are listed below.

Proposed Additional Protections

<u>Tax Trigger</u>

7.23 In RIIO-1, we used a Tax Trigger mechanism, which captures the impact of changes to tax rates, legislation and accounting standards, during the price control on allowed revenue above or below a materiality threshold[179].

7.24 As noted in the SSMD, we propose to retain this mechanism for RIIO-2 and to simplify the way that it works for Type A events[180]. The current PCFM uses a macro to calculate the impact of changes in tax rates on base revenue and then generates a "Tax Trigger Event" adjustment if the impact is greater than the materiality threshold.

7.25 We propose to replace the macro with variable values for each tax rate, which can simply be updated every year as part of the Annual Iteration Process, with no need for a macro or a materiality threshold. This is a modelling simplification, which will also simplify the process of running the Annual Iteration Process.

7.26 For Type B events, we propose no changes to the existing materiality thresholds, or the existing notification and determination process.

<u>Tax Clawback</u>

7.27 In RIIO-1, we used a tax clawback mechanism that claws back the tax benefit a licensee obtains as a result of higher than notional gearing levels.

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[179] This threshold referred to as "the deadband" and is the higher of the effect of a one per cent change in the rate of corporation tax on base revenue (all other things being held equal) and 0.33 per cent of the opening base revenue allowance.
[180] Changes in tax rates are Type A events. A full list of Type A and Type B events is included in the Tax liability allowances - financial adjustment methodologies chapter of the Price Control Financial Handbook for each sector: https://www.ofgem.gov.uk/publications-and-updates/latest-price-control-financial-handbooks-riio-network-operator-licensees

7.28   We use two tests to determine the value of the clawback in each regulatory year: a gearing level test and a positive tax benefit test. The gearing level test measures the companies' actual gearing against the notional level and the positive benefit test compares their actual tax-deductible interest to the tax-deductible interest assumed notional.[181]

7.29   WWU have expressed concern that a drop in the notional gearing level from 65% in RIIO-GD1 to 60% in RIIO-GD2 would trap them in clawback for the entirety of RIIO-2. WWU argue that tax clawback should be abolished, as it is not as significant for the sector and consumers that when it was first introduced. They state that, as Ofgem holds licensees responsible for any risks that relate to decisions on capital structure, any benefits obtained from these decisions, such as excess leverage, should be kept by the licensees. WWU argue that tax clawback does not allow this and request Ofgem reconsider this policy.

7.30   Our view is that it remains appropriate to retain a tax clawback mechanism as removing it entirely may incentivise licensees to increase their gearing and lower their actual tax costs, while retaining the full tax allowance. This mechanism ensures that licensees continue to share the benefit of interest deductibility with the consumer.

7.31   However, we believe that, where we are reducing the notional gearing level for RIIO-2, it is reasonable to allow some time for those companies to adjust to lower levels of gearing for tax clawback purposes. As such, we propose a gradual decrease in the notional gearing level used in the gearing level test of the tax clawback calculation, as indicated in Table 37.

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[181] The Tax clawback methodology is described in further detail in the Tax liability allowances - financial adjustment methodologies chapter of the Price Control Financial Handbook for each sector: https://www.ofgem.gov.uk/publications-and-updates/latest-price-control-financial-handbooks-riio-network-operator-licensees

Table 37: Notional gearing levels for gearing level test

Sector / Licensee	RIIO-1 Notional Gearing	RIIO-2 Notional Gearing	Notional gearing to be used for Tax clawback 'gearing level test'				
			Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Gas Distribution Networks	65%	60%	65%	64%	63%	61%	60%
National Grid Gas Transmission	62.5%	60%	62.5%	61.88%	61.25%	60.63%	60%
National Grid Electricity Transmission	60%	55%	60%	59%	58%	56%	55%

7.32 For the avoidance of doubt, if both the gearing level and positive benefit tests are satisfied, the amount of clawback will be calculated with respect to the RIIO-2 notional gearing as used in the PCFM, rather than notional gearing to be used for the gearing level test.

Tax Clawback and COVID-19 impact

7.33 We note that the ESO will have Transmission Network Use of System (TNUoS) under-recovery for 2019/20 and 2020/21 due to COVID-19, which could have gearing implications in RIIO-2.

7.34 While other network companies may also face under-recovery risk, in light of COVID-19, our analysis highlights that the ESO could be exposed to significant under-recovery risk of magnitude comparable to its RAV. This would require significant borrowings, increasing its gearing and could result in a material clawback amount. This would not be the case for other networks, for whom the under-recovery impact would be less significant as a proportion of RAV.

7.35 We propose therefore to disapply the Tax clawback calculation to the ESO for the first two years of RIIO-2 in light of this material under-recovery risk.

7.36 We will review the ESO's debt and cash flow situation over the course of the price control and will decide whether or not to apply the tax clawback for the remaining three years of RIIO-2.

Tax Reconciliation

7.37   We propose to introduce a requirement for companies to submit an annual tax reconciliation between the notional allowance and actual tax liability per their latest CT600 forms. As part of this, we propose to reinstate the requirement for companies to submit their latest CT600 forms to us to review in conjunction with the reconciliation.

7.38   We previously required network companies to submit their CT600 forms to us as part of their RIGs submissions but this requirement was dropped part-way through the price control. The CT600 Tax liability will be the starting point for the reconciliation and would allow us to validate the value used in the submitted template. Both would be part of the regulatory submissions.

7.39   If we decide to take this forward, we will provide a template for the reconciliation, likely to be based on the existing 'R10-Tax' sheet in the Regulatory Financial Performance Reporting (RFPR)[182] template. Any adjustments made and residual differences should be explained by companies in the associated commentary.

7.40   Following engagement with the Energy Networks Association (ENA), we note that companies had no objections to providing the CT600 forms as part of the annual submissions. We also note that National Grid raised a concern over confidentiality and requested that these aren't published online, which we do not intend to do.

7.41   National Grid also raised a point on timing. Due to the timing of CT600 submissions, a tax reconciliation will need to be performed with a one-year lag (i.e. a reconciliation for the 2021/22 year will be submitted by companies in July 2023).

7.42   Some companies noted concerns over the level of work required to reach a full reconciliation and expressed a desire for further guidance. We intend to work closely with companies to develop the template and guidance within the Regulatory Instructions and Guidance (RIGs) ahead of the first submission date.

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[182] The RFPR is a data template that measures network company financial performance under the RIIO framework and is submitted to Ofgem by each licensee on an annual basis. The data template and its associated guidance document fall under our Regulatory Instructions and Guidance licence conditions. https://www.ofgem.gov.uk/publications-and-updates/direction-introduce-regulatory-financial-performance-reporting-rfpr

7.43 We note that tax is a complex area and so the guidance will make clear that some differences are expected and will not require detailed commentary. It is the residual differences that we want clarity on in RIIO-2.

Materiality

7.44 Some companies suggested that we set a materiality threshold for the reconciliation to allow for immaterial unexplained variances. Cadent suggested that the "deadband" level set in RIIO-1 would be an appropriate threshold for the reconciliation, whilst others suggested a materiality threshold in line with our approach to other reopeners for RIIO-2.[183]

7.45 We accept that applying a materiality threshold would be an appropriate way to ensure that reviews are triggered where it is proportionate to do so. However, we do not consider the common approach to reopeners (1 per cent of opening base revenue) to be the most appropriate in this case as we propose the tax allowance does not form part of base revenues and is not subject to the Totex Incentive Mechanism.

7.46 The materiality threshold used for tax in RIIO-1 known as the "deadband" was set at the greater of 0.33 per cent of opening base revenue allowances and the effect of a one per cent change in the rate of corporation tax, which we consider may be more appropriate in this area.

7.47 We propose to use the deadband level as a materiality specific threshold below which any residual differences in the reconciliation would be deemed immaterial.

Board Assurance

7.48 We propose to introduce a licence requirement for network companies to submit a board assurance statement alongside the tax reconciliation, to provide us with additional comfort over the appropriateness of the values in the reconciliation.

7.49 Some companies are supportive of the introduction of a board assurance statement, in principle, but there have been concerns over the particular wording to be included.

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[183] See paragraph 1.19 of the RIIO-2 Draft Determinations - Cross sector document for an outline of the common approach to materiality thresholds for reopeners.

7.50 Some commented that their directors already provide assurance over the RIGs submissions as a whole through the DAG requirement and questioned the value in providing further statements.

7.51 This proposed assurance statement will cover the tax reconciliation and the figures within it whereas the DAG requirements cover the licensees' internal assurance processes and controls. While this may cover the review process surrounding the RIGs templates as a whole, it is different from the specific assurance we would get from an assurance statement covering the accuracy of the values in the tax reconciliation.

7.52 We will continue to engage with companies on the wording of the statement.

Tax Review

7.53 We are proposing to introduce a tax review licence condition that would enable us to formally review and, if required, adjust the companies' tax allowance during the course of RIIO-2.

7.54 This review mechanism would enable us to establish whether the notional tax allowance remains appropriate, if any information comes to light during RIIO-2, which could indicate otherwise. The review would follow the proposed process for Authority-triggered reopeners, the rationale for which is outlined in chapter 1 of the cross sector draft determinations document. However it would diverge from the materiality threshold set out in the common approach. The reason for this is outlined from paragraph 7.44 of this document. We outline the specifics of the tax review, below.

Trigger events

7.55 There are a number of scenarios in which we may consider triggering a tax review; these are as follows:

- If there are material, unexplained differences between the notional allowance and actual tax costs, which have not been adequately addressed in the supporting commentary to the reconciliation[184].
- If Ofgem is notified of a valid concern by any stakeholders, such as:

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[184] In determining the significance of any unexplained, residual differences we will consider a range of contributing factors including incentive performance and the difference between notional and actual gearing and cost of debt. What may be significant for one licensee may not be for all and so we will use judgement to determine whether differences are legitimate or need further investigation.

- ○ the licensee in question
- ○ any other licensee
- ○ other stakeholders
- If a licensee undergoes a change in ownership or a material change in circumstances that is likely to affect their tax costs.

Preliminary assessment

7.56 Where one or more of the events listed above occur, we would perform a preliminary assessment before deciding whether or not to trigger the review.

7.57 The preliminary assessment would involve notifying and, if appropriate, requesting further information from the affected licensee(s), explaining that we are considering triggering a tax review. This would give the licensee in question an opportunity to engage with us and to provide supporting information and/or explanations, as required.

Review process

7.58 If the preliminary information requested does not suitably address the concerns raised, we may trigger a formal tax review, which would require the affected licensee to procure a tax review by an appropriately qualified, independent examiner.[185]

7.59 We would notify the relevant licensee and provide the following:

- an explanation of why the Authority requires the licensee to procure an examiner to perform the tax review;
- the steps that must be taken for the procurement of an examiner and the terms of appointment of the examiner;
- a description of the scope of work to be carried out and the timeframe for this work; and
- the form and content of any information that the examiner must report to Ofgem following the completion of the review.

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[185] The examiner would be a qualified tax accountant from a reputable firm regulated by a relevant professional body. The examiner chosen by the licensee should be agreed to by Ofgem. If appropriate, the examiner used may be the licensee's Appropriate auditors as defined in Standard Condition B1 of the Electricity Transmission Licence, Standard Special Condition A3 of the Gas Transporter Licence or Standard Special Condition A3 of the Gas Transporter Licence.

After the review

7.60   Following the review, we would consider the findings of the examiner's report and consult on to whether or not any adjustment to the tax allowance is needed before reaching a decision.

Stakeholder views

7.61   While companies have indicated broad support for a review mechanism in principle, the primary concern raised is that the existence of differences between notional and actual tax costs should not prompt Ofgem to trigger a review, if they are legitimate.

7.62   If we find unreconciled differences, which have not been adequately addressed in the supporting commentary, we would first seek a resolution through engagement with the relevant company. The formal review would only be triggered if we are unable to reach a resolution via the reconciliation or preliminary information request.

Other areas of Tax

Capital Allowance pools

Modelling under RIIO-1

7.63   Capital allowances (CA) feed into the overall tax allowance and are calculated based on different asset categories modelled within the Price Control Financial Model (PCFM).[186]

7.64   Each pool begins with an opening balance, which accrues over time according to the level of spend on assets falling within that particular pool. In RIIO-1, we used companies' actual opening CA pool balances and used pre-determined allocation rates to split Totex across each pool.

7.65   The allocation rates used are company-specific and are multiplied by Totex categories to derive the additions to each CA pool, which are added to the opening pool balance to give the book value before depreciation. The allowance is then calculated, either on a straight line or reducing balance basis depending on the

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[186] Capital allowances can be claimed on asset investments and are treated as a deduction from a company's profits before tax. Depending on the asset classification or "pool", the allowance granted may be the full or a partial value of the cost of the asset.

pool, as the book value before depreciation multiplied by the annual allowance rate.

7.66 Annual allowance rates are set by HMRC and may be updated from time to time. This is currently done using a Tax Trigger mechanism, which involves running a macro to calculate the impact of changes in tax rates on base revenue. See paragraph 7.23 of this document for more detail on this mechanism.

7.67 The allocation rates were set at the beginning of the price control based on company Business Plans and are currently fixed for the duration of the RIIO-1 period.

Annual Allowance rates

7.68 In RIIO-2, we propose to use four main CA pools and the applicable annual allowance rates in the current legislation[187], which follows our RIIO-1 approach, as follows:

Table 38: Annual allowance rates

Capital allowance pool	Annual allowance rate	Basis of amortisation
General pool	18%	Reducing balance
Special Rate	6%	Reducing balance
Structures and buildings	3%	Straight line
Deferred revenue expenditure	3% for SHET and NGET 2.22% for all others	Straight line

Source: Ofgem analysis of current legislation

7.69 The annual allowance for deferred revenue follows the statutory depreciation rates rather than tax legislation. There is also a Revenue pool, which attracts a 100% rate of allowance and feeds straight through to the tax calculation without amortisation.

7.70 We propose to simplify the way that we make updates to reflect changes in tax rates, including annual allowance rates in the PCFM. The current process requires

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[187] See applicable rates for the General, Special Rate pools here: https://www.gov.uk/work-out-capital-allowances/rates-and-pools and the Structures and buildings pool here: https://www.gov.uk/guidance/claiming-capital-allowances-for-structures-and-buildings#how-the-3-rate-of-allowance--works

a macro to calculate an adjustment to base revenue. See paragraph 7.23 of this document for more detail on this mechanism.

7.71 We propose to replace the macro with variable values for tax rates, which can simply be updated every year as part of the Annual Iteration Process[188], with no need for a macro or a materiality threshold.

Allocation rates

7.72 The allocation rates used to allocate Totex categories to the relevant pool balances were fixed during RIIO-1 to approximate our expectations of how various categories of spend would be attributed across pools. We now propose to make these allocation rates variable values within the PCFM, which will enable them to be updated annually, as described above.

7.73 From our stakeholder engagement to date, companies have been supportive of these proposed changes to our modelling approach for tax. Making the tax rates variable values in the PCFM would more closely align the tax allowance as a whole with the companies' actual tax payments and would remove the need for Tax Trigger macro, thus simplifying the current process for running the model.

Opening pool balances

7.74 We have reviewed companies' Business Plans and have used their forecast closing capital allowance pool balances for RIIO-1 as the opening balances for the RIIO-2 period.

7.75 We propose to roll the RIIO-1 closing balances forward on a notional basis as opposed to resetting the opening pool balance based on the companies' actual tax computations, which was done at the beginning of RIIO-1. This would ensure that consumers continue to benefit from tax relief in respect of the asset expenditure that they have funded. This is also in line with the policy that we set for the Electricity Distribution sector in our ED1 Draft Determinations.[189]

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[188] The Annual Iteration Process or 'AIP' is the formal process of the annually updating the Variable Values in the PCFM. Revisions to these values are determined under the provisions of relevant licence special conditions and/or under financial methodologies that are contained within the relevant sector's Price Control Financial Handbook.
[189] RIIO-ED1: Draft determinations for the slow-track electricity distribution companies Financial Issues: https://www.ofgem.gov.uk/sites/default/files/docs/2014/07/riio-ed1_draft_determination_financial_issues.pdf

7.76   The ESO is the exception to this. Following the legal separation of the ESO, during the RIIO-T1 price control, we will be reviewing its opening tax pool balances more closely and we propose to set them based on the ESO's actual tax computations, rather than by approximating its existing notional tax pool balances. We believe that this is a more appropriate treatment in the case of the ESO as it is a new licensee and is treated separately from NGET by HMRC. Our proposal to re-set its opening tax pool balance at the beginning of RIIO-2 would ensure that its tax allowance is more reflective of its actual tax charge.

7.77   The RIIO-2 opening balances will remain under review for all licensees until we can finalise the closing pool balances from the close-out of the Gas Distribution and Transmission price controls.

Fair Tax Mark

7.78   We have had further engagement in this area with HMRC who have confirmed that they are not able to endorse any certification relating to tax compliance from a third-party organisation.

7.79   Having considered all of the information before us, including stakeholder responses to the SSMC and further to our conversations with HMRC, we do not think this would provide consumer value nor necessarily ensure tax legitimacy so we do not propose to make this a requirement for RIIO-2.

7.80   Where companies may choose to pursue the Fair Tax Mark certification of their own accord, we will not discourage them to do so, however we do not propose to fund any voluntary uptake of the scheme through the price control.

8. Return Adjustment Mechanisms (RAMs)

Section summary

In this chapter we propose a Return Adjustment Mechanism for ET, GT and GD, before seeking views on this proposal.

Return Adjustment Mechanisms (RAMs)	
Purpose	The purpose of RAMs is to provide protection to consumers and investors in the event that network company returns are significantly higher or lower than anticipated at the time of setting the price control.
Benefits	Consumers and investors will benefit from the introduction of RAMs as they will be protected against the possibility of unreasonably high or low or returns in the RIIO-2 price controls. RAMs to help ensure the fairness of RIIO-2 by protecting consumers and investors against ex post overall returns from network price controls deviating greatly from ex ante expectations.

Background

8.1   In the SSMD, we said that we intended to implement a sculpted sharing mechanism for the gas distribution, gas transmission and electricity transmission sectors. A sculpted sharing mechanism involves applying an adjustment to individual companies' returns if performance deviates from predetermined thresholds.

8.2   In the SSMD, we said that we would consider whether we retain symmetry of the mechanism, as the case for symmetry would be lessened by implementing a sculpted sharing mechanism (when compared with other previously considered options that would have taken into account sector-wide performance). We said the mechanism is intended to encompass performance under both output and totex incentives, but that we would consider whether it should account for each of these separately or in a combined manner.

8.3   We said that such mechanisms would not consider financial or tax performance and that we intended to exclude performance through the Business Plan Incentive

(BPI) from RAMs. We said that we would exclude BPI performance in order to preserve the upfront value of BPI rewards and penalties.

8.4   Although, in the SSMC, we consulted on a threshold of +/- 300bps around the cost of equity, in the SSMD, we said that we would determine the threshold after having received Business Plans and having fully considered the makeup of the overall RIIO-2 package.

Consultation position

Parameter	Consultation position
Threshold level	300 basis points either side of the baseline allowed return on equity
Adjustment rate	50% of returns above or below the threshold
Symmetry	RAMs will be symmetrical, allowing for adjustments for both under- and outperformance
Combined or separate totex and ODI performance	Combined totex and ODI performance

Rationale for consultation position

Overarching rationale for RAMs

8.5   The aim of the inclusion of RAMs in RIIO-2 is to provide protection to consumers and investors in the event that network company returns are significantly higher or lower than anticipated at the time of setting the price control. We note that some network companies have previously indicated to us, including in their Business Plans, that they are not in favour of the introduction of RAMs.

8.6   Through the RIIO-2 policy development process we have discussed a range of options for achieving this aim. This has included: a hard cap and floor, zero sum incentives, fixed incentive pots, discretionary adjustments and anchoring. We have sought and acted upon stakeholder views on these options and believe that the mechanism that we are now proposing is the most appropriate of the options that we have considered. The introduction of RAMs is necessary, as no other mechanism in the price control either separately or in combination with other mechanisms will achieve the aim set out above.

8.7   As a mechanism for ensuring that energy consumers do not pay in full for levels of return that are only achievable by companies due to errors or information asymmetry, our RAMs proposals will further our principal objective to protect the interests of existing and future consumers in relation to gas conveyed through pipes and electricity conveyed by distribution or transmission systems. In developing our RAMs proposals, which include moderating the effect of returns being very low due to factors outside of companies' control, we have had regard to the need to secure that licence holders are able to finance their licensable activities.

Symmetry of the mechanism

8.8   In the development of our policy on RAMs, we have described the purpose of the mechanisms being to protect against both significant levels of outperformance and underperformance. For example, in the SSMC we said that "Our intention is that RAMs will be symmetrical and offer downside protection to investors as well as protecting consumers from higher returns."

8.9   In the SSMC we said that we would reconsider whether we should retain symmetry of the mechanism, as the case for symmetry would be lessened by implementing a sculpted sharing-type mechanism.

8.10   The position that we are now proposing is that we will introduce a symmetrical RAMs mechanism for the RIIO-2 price controls, as we believe that this represents a fair balancing of the interests of consumers and investors and is consistent with previous descriptions of RAMs mechanisms, such as in the SSMD.

Threshold level

8.11   At SSMC, we consulted on a threshold of 300bps. However, we stated in the SSMD that this was not our working assumption and that we would determine the appropriate level after having received Business Plans and having fully considered the total package and interactions with the cost of equity, the Business Plan Incentive, the totex incentive, and the output delivery incentives.[190]

8.12   Having considered the Business Plans and the impact of the threshold across the Transmission and Gas Distribution sectors, we now propose a RAMs threshold of 300bps either side of our baseline allowed return on equity. This implies that

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[190] SSMC paragraph 12.133

adjustments under RAMs would be made if companies unadjusted returns, for the 60% notional gearing level, were:

- Lower than 0.95% RoRE. This level would be lower than our allowed cost of debt, being 1.74% with an additional margin of error.
- Higher than 6.95%. This would be a level approximately 0.2% higher than our upper estimate of the total market return, being 6.75%.

8.13 We believe returns lower than the allowed cost of debt or materially higher than our upper estimate of the total market return to be significantly outside our current expectations in setting the price controls and therefore appropriate threshold levels for RAMs. Such levels of return are, in our view, unlikely to be achieved by any company as this would require a very significant level of overspend or underspend against allowances, either alone or in conjunction with performance against ODIs

8.14 Our measure of company returns for the purposes of RAMs will be the performance of each company, measured using a combination of the RoRE metric, under the totex incentive mechanism and financial ODIs. As previously set out, we will not take into account financial or tax performance or rewards or penalties arising from the BPI.

8.15 As we stated in the SSMC[191], for asset-rich organisations such as regulated energy networks, the return that investors earn on their regulatory equity (RoRE) would be an appropriate metric for use in setting the RAMs threshold as it is directly linked to the RAV. Additionally, Ofgem has consistently used RoRE as a preferred measure of company performance in the setting and monitoring of price controls and we believe it is appropriate to use it in this context. Further, given that we are proposing that RAMs should encapsulate both TIM and ODI performance, a threshold expressed in RoRE terms is appropriate as it can accommodate this (including any trade-offs between TIM and ODI performance). The use of a RAMs threshold expressed in RoRE terms means that the level of combined TIM and ODI performance required to meet that threshold may vary from company to company. For example, because two companies underspending by the same % amount may have different TIM incentive rates and different totex:RAV ratios or and/or different notional gearing. As we have set out above, we believe that it is appropriate to set the upper and lower thresholds for RAMs with reference to the

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[191] Paragraph 10.88

baseline allowed return on equity, the cost of debt and the total market return, respectively. The relevant financial metrics do not in general vary between companies and as such we believe that the RAMs threshold should also not vary between companies. In any event, we do not believe any company will trigger RAMs without this being due to errors in the setting of the price control. In our view, setting the threshold in RoRE terms is appropriate.

8.16   In our view, a threshold set at 300bps either side of the allowed return on equity is consistent with RAMs being a 'failsafe' mechanism. By way of illustration, a company achieving a significant RoRE return of 1% via performance under ODIs would need to simultaneously achieve an underspend of at least 13% over RIIO-2 against its totex allowance in order to hit the RAMs upside threshold.[192] We believe this genuinely represents a failsafe level in the context of historical levels of performance, especially when taking into account other relevant changes in the RIIO-2 package such as the setting of TIM incentive rates via the CDIR method and the greater use of indexation.

Figure 28: RAMs thresholds and RoRE values
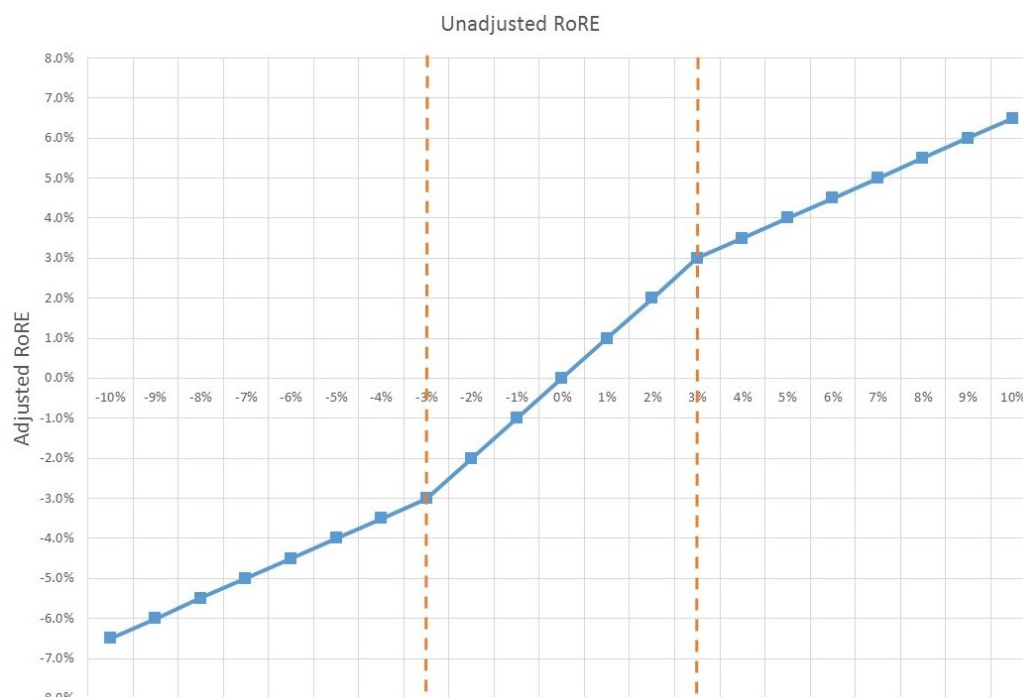
Source: Ofgem analysis

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[192] Assuming a totex:RAV ratio of 12% and the maximum possible TIM efficiency incentive rate of 50% for a 60% notionally geared company.

Adjustment rate

8.17   The adjustment rate is the rate at which company returns are adjusted upwards or downwards in the event that the threshold is breached.

8.18   At the Framework decision stage, we ruled out introducing RAMs via a hard cap and floor regime.[193] We said: "While the hard cap and floor provides absolute assurance against higher than expected returns, it has a potentially distortive effect on incentives. When a company reaches the cap the power of positive incentives is completely eliminated as a company cannot earn any higher. When companies reach the floor, it removes responsibility from companies to take mitigation action to prevent any further decline in performance."

8.19   The nearer the adjustment rate is to 100%, the more the mechanism resembles a hard cap and floor regime, which we ruled out for the reasons above. The nearer the rate is to zero, the less effect it will have in limiting extreme levels of return.

8.20   As such, and as we have identified no compelling reason for an adjustment rate closer to either zero or 100%, we propose setting a single adjustment rate of 50%. Returns outside of the thresholds would be adjusted upwards or downward by 50% if the downside or upside thresholds are breached, respectively.

8.21   We have previously indicated that the design of RAMs would incorporate multiple threshold levels, with adjustment rates that increase as each threshold is breached. In our view, the proposal set out in these draft determinations will achieve the aims that we have set out for the introduction of RAMs without introducing multiple thresholds.

Implementation

8.22   We propose that any adjustments under RAMs are made following the closeout of the relevant RIIO-2 price controls and reflected in company revenues in RIIO-3. The rationale for this is that we consider it to be the simplest approach and the approach that is least likely to result in inaccuracies as a result of partial information and because there was broad (though not unanimous) support for this approach in company responses to the SSMC.

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[193] See RIIO-2 Framework decision, paragraphs 6.138-6.140.

Return adjustment mechanism questions

FQ18. Do you agree with our proposal to introduce a symmetrical RAMs mechanism as described above?

FQ19. Do you agree with our proposal to introduce a single threshold level of 300 basis points either side of the baseline allowed return on equity?

FQ20. Do you have any other comments on our proposals for RAMs in RIIO-2?

Interactions

8.23 As indicated in the SSMD[194], our proposal on a threshold of 300bps around the baseline allowed return on equity is made in the context of the total RIIO-2 package that is proposed within these draft determinations – for example, taking into account the TIM and ODI parameters. We believe that it is an appropriate proposal in this context. If adjustments made to relevant aspects of the price control in between draft determinations and final determination, we will consider the extent to which these may necessitate a need to reconsider the threshold level.

8.24 In response to our SSMC, some respondents commented that there was overlap or duplication between return adjustment mechanisms and our proposals to distinguish between expected and allowed returns. As previously stated, we do not accept that these measures are duplicative. The principle behind 'allowed returns' addresses ex ante expectations to set the most appropriate baseline for returns, having regard to the systemic nature of information asymmetry and other potential sources of return. Return adjustment mechanisms are intended to operate only as a failsafe mechanism when ex post outturns deviate substantially from those ex ante expectations.

8.25 The rationale for our proposals on RAMs and on distinguishing between expected and allowed returns are separate and each proposal is intended to achieve separate policy goals that cannot both be met by either one of the proposals.

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[194] Paragraph 12.122

9. Indexation of RAV and calculation of allowed return

Section summary

In this chapter we summarise Business Plan submissions with regards to inflation use, when indexing RAV and calculating allowed returns for ET, GT, GD and ESO for RIIO-2. We provide an updated view and propose to implement CPIH rather than CPI from 1st April 2021, before seeking views on this proposal.

Indexation of RAV and calculation of allowed return	
Purpose	RIIO-2 price controls offer inflation protection to investors through inflation adjustments to the Regulatory Asset Value (RAV). Returns on capital are also provided in real terms. Together these approaches make inflation a key parameter for the RIIO-2 price control.
Benefits	A good measure of inflation improves legitimacy and accuracy for both investors and consumers.

Background

9.1   In the SSMD[195], we decided to:

- Implement an immediate switch from RPI to either CPIH or CPI from RIIO-2 onwards (1st April 2021 for GT, ET, GD and ESO) for the purposes of calculating RAV indexation and allowed returns.
- Provide an updated position at Draft Determinations whether to use CPIH or CPI.

Business Plan submissions

9.2   As proposed in the SSMD, submissions generally assume CPIH for inflation referencing. Cadent, NGET and NGGT argue that the switch from RPI is being used to address financeability concerns. Similarly, SHET suggest it is not appropriate to use a change in inflation measure to support short-term credit ratios at the

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[195] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=109

expense of longer term financeability. Some network companies also proposed that financeability should be conducted on an RPI basis.

9.3   Cadent, NGET, and NGGT propose CPIH rather than CPI as a basis for RIIO-2.

Consultation position

Allowance parameter	Proposal
Indexation of RAV and calculation of allowed return	To implement an immediate switch from RPI to CPIH from 1st April 2021 for the purposes of calculating RAV indexation and allowed returns.

Rationale for consultation position

9.4   We agree with SHET that it is not appropriate to use a change in inflation measure to support short-term credit ratios at the expense of longer-term financeability. We disagree with Cadent, NGET and NGGT that the switch from RPI is being used to address financeability concerns. The primary rationale for moving away from RPI is that it is no longer seen as a credible measure of inflation.[196] Given RPI's lack of credibility, we have not been persuaded to conduct financeability on an RPI basis.

9.5   On 11 March 2020, HM Treasury published a consultation on reforms for the Retail Prices Index (RPI) methodology.[197] This consultation reflects a policy paper published by HM Treasury in October 2018 which states "The government's objective is that CPIH will become its headline measure over time…".[198] Together, this means it is possible that index-linked gilts will, at some point in the future, reflect CPIH rather than CPI or RPI in its current form. In this context, CPIH appears more attractive in the long term.

Consultation question

FQ21. Do you agree with our proposal to implement CPIH inflation?

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[196] See for example the review by Paul Johnson, UK Consumer Price Statistics: A Review (2015) https://www.statisticsauthority.gov.uk/archive/reports---correspondence/current-reviews/uk-consumer-price-statistics---a-review.pdf
[197] https://consultations.ons.gov.uk/rpi/2020/supporting_documents/RPI%20Consultation%20Document.pdf
[198] https://www.gov.uk/government/publications/budget-2018-documents/budget-2018

10. Regulatory depreciation and economic asset lives

Section summary

In this chapter we summarise Business Plan submissions with regards to regulatory depreciation and economic asset lives. We provide an Ofgem view, then propose assumptions for ET, GT, GD and ESO for RIIO-2, including policy alignment for GT and GD, before seeking views on these proposals.

Regulatory depreciation	
Purpose	Regulatory depreciation assumptions determine the speed that RAV additions are re-paid by consumers.
Benefits	Accurate rates help ensure, over time, that charges are fair and that company revenues reflect annual and economic investment. Rates can reflect the economic and technical lives of the underlying assets.

Business Plan submissions

10.1　GD and ET companies did not propose depreciation policy changes for RIIO-2. In contrast, NGGT proposed a step-change, such that RAV additions from RIIO-2 onwards are depreciated on a front-loaded basis using a 25-year life rather than straight line basis using a 45-year life. NGGT estimated that its proposed depreciation change would increase household charges by £0.20 per year.

10.2　In terms of economic life, NGGT refer to falling gas demand across all four Future Energy Scenarios (2018) and that this leads to two issues: intergenerational mismatch between asset usage and charges; and an increase in RAV stranding risk.

10.3　In terms of technical asset life, NGGT estimates the proportion of totex expenditure by price control and by asset life, showing a growing proportion of assets have shorter lives. During TPCR4, NGGT estimates that more than 60% of totex spend related to assets with a technical life greater than 45 years. In contrast, NGGT estimates most expenditure during RIIO-2 will reflect assets with technical lives of 25 to 40 years (approximately 65% of totex) or less than 25 years (approximately 34% of totex).

Consultation position

Allowance parameter	Consultation Position
Regulatory depreciation	To align GT and GD depreciation policies, so that for RAV additions from 2002 onwards the depreciation policy for both sectors is on a 45-year, front loaded basis.

10.4   Our RIIO-2 proposals are summarised in Table 39, relative to RIIO-1, showing our proposed change for GT and the comparison with GD. For completeness, we list the existing policies for GD and ET, which roll over the approaches from RIIO-1.

Table 39: Summary depreciation policies for ET, GT, GD and ESO

Sector	Licensee	RAV additions	RIIO-1	RIIO-2 draft determination
GT	NGGT	Pre-2002	56 years, front loaded	
		2002-2021	45 years, straight line	45 years, front loaded, with backlog recovered over 20 years beginning at the start of RIIO-2
		Post-2021	na	45 years, front loaded
GD	All	Pre-2002	56 years, front loaded	
		2002-2013	45 years, front loaded, with backlog recovered during RIIO-1	45 years, front loaded
		Post-2013	45 years, front loaded	
ET	SHET	Pre-2013	20 years, straight line (with backlog recovered over 30 years from 2013)	
		2013-2021	Starting at 20 years and increasing to 32.5 years in the RIIO-1 period	
		Post-2021	na	Increasing from 32.5 to 45 years in 2022 to 2026
	SPT	Pre-2011	20 years, straight line (with backlog recovered over 15 years from 2011)	
		2011-2021	Starting at 20 years and increasing to 45 years in the RIIO-1 period	
		Post-2021	na	45 years, straight line
	NGET	Pre-2011	20 years, straight line (with backlog recovered over 50 years from 2011)	
		2011-2021	Starting at 20 years and increasing to 45 years in the RIIO-1 period	
		Post-2021	na	45 years, straight line
ESO[199]		Post-2021	na	7 years, straight line

Source: Ofgem analysis

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[199] ESO RAV additions are generally depreciated on a 7-year basis with the Wokingham asset being one exception to this with that addition being depreciated over a 20-year period.

Rationale for consultation position

10.5   We considered both the economic and technical lives of GT assets including how these compared with the GD sector. To consider NGGT's proposed change, we primarily considered economic analysis, before supplementing this with NGGT's analysis of technical lives. We considered the latest Future Energy Scenarios from July 2019 (FES2019) as shown in Figure 29.

Figure 29: Plausible reductions in energy demand, Community Renewables scenario[200]
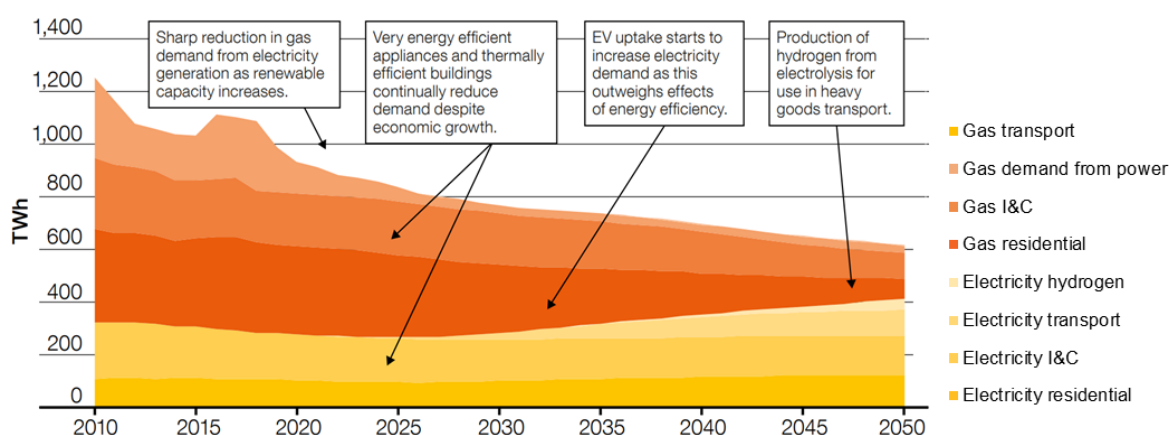
Source: National Grid Electricity System Operator, Future Energy Scenarios, July 2019

10.6   Some FES2019 scenarios indicate that energy demand could remain stable, but we agree with NGGT that there is a risk that gas volumes continue to fall. This risk resides mostly, but not exclusively, with gas consumers. Investors have greater protection, given the commitment to RAV recovery and frequent price control re-sets which provide an opportunity to consider the appropriate RAV recovery speed. However, we agree with NGGT that a rapid and sustained decline in gas volumes may mean that return of the RAV becomes less viable at each price control review.

10.7   GD networks did not propose in their respective Business Plans to address stranding risk through faster RAV recovery. Given the current GD policy (45-year front loaded) allows faster recovery than the current GT policy, and that NGGT's proposal reflects technical life analysis, we recognise some merit in the difference between these sector proposals.

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[200] 'Preferred approach' incorporates market data on the value of debt. 'Alternative approach' uses book value of debt.

10.8 Further clarity on volumes will materialise during RIIO-2, including government policies for heat and net zero. Therefore, better information should be available for RIIO-3, which can be taken into account in companies' Business Plans and by Ofgem in future decisions.

10.9 Noting the volume risk for both GD and GT networks we considered the benefits of aligning RAV recovery for GT and GD. We also note that the SSMD methodology emphasises an economic principle (intergenerational fairness) rather than a technical life principle. We considered the option to maintain a distinction between GT and GD, and we also considered the option to further differentiate between the sectors on the basis of Business Plan submissions. However, the attractiveness of either of these options is distinctly weakened by the economic analysis, which indicates to us that both sectors will face volume reduction challenges. Similarly, the policy for both sectors will benefit from the clarity that should materialise in advance of RIIO-3.

10.10 Therefore, overall, we see benefit in policy alignment between GT and GD.

10.11 In the context of sector alignment, we note NGGT's analysis that approximately 30% of TPCR4 assets and 80% of RIIO-1 assets have technical lives lower than 45 years. NGGT's analysis therefore indicates that, on a technical life basis, the current depreciation policy for those assets (45 year straight line) will have under-depreciated the RAV. Similarly, on the basis that the economic future for GT is similar to the economic future for GD, it is possible that the stranding risk for the current GT RAV is greater than the stranding risk for the GD RAV, because of the slower depreciation rate in place to date. Therefore, on both a technical and economic basis, it is possible that the RIIO-2 opening GT RAV is higher than it should be.

10.12 On this basis, we see benefit in aligning depreciation policies for RAV additions from 2002 onwards, such that the depreciation policy for both GT & GD is on a 45-year, front loaded basis. To implement this, we propose following precedent from the GD sector to change the basis for historical RAV additions, with backlog depreciation recovered over a suitable future period, which we propose is 20 years from the start of RIIO-2.[201]

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[201]

https://www.ofgem.gov.uk/sites/default/files/docs/2012/12/3_riiogd1_fp_finance_and_uncertainty_0.pdf#PAGE=8

Consultation question

FQ22. Do you agree with our proposals, including the policy alignment for GT and GD, and to recover backlog depreciation for GT RAV additions (2002 to 2021) over 20 years from the start of RIIO-2?

11. Other finance issues

Section summary

In this chapter we address the following financial issues for the ET, GT, GD and ESO sectors:

- Capitalisation rates
- RAV opening balances
- RIIO-1 Close-out
- Directly Remunerated Services
- Amounts recovered from the disposal of assets
- Dividend Yield assumption
- Notional equity issuance costs
- Pension scheme established deficit funding
- Annual Iteration Process
- Transparency through RIIO-2 reporting
- Bad Debts

We address each of these issues in turn below, outlining the relevant background, making proposals and seeking stakeholder views on relevant proposals.

Capitalisation rates

Capitalisation rates	
Purpose	Capitalisation rates determine the proportion of costs added to the RAV with the remainder recovered within the year incurred.
Benefits	Accurate rates help ensure, over time, that charges are fair and reflect annual and economic investment.

Business Plan submissions

11.2 Submissions generally propose that rates should reflect an accounting distinction between opex and capex, and therefore be 'natural'. Reflecting this, most companies suggest that capex costs are 100% capitalised, opex costs 0% capitalised, with repex costs in the GD sector also 100% capitalised.

11.3 Submissions argue that lower rates of capitalisation would not benefit credit ratings and therefore do not consider low rates as a viable option in terms of improving financeability.

Consultation position

Output parameter	Consultation Position
Capitalisation rates	We propose to use capitalisation rates that reflect accounting distinctions. We seek stakeholder views on whether we should fix these rates ex-ante, or update ex-post to reflect outturn capex and opex proportions.

11.4 Based on company submissions, and our proposed levels and categorisation of totex for RIIO-2, we forecast the following capitalisation rates for RIIO-2 in Table 40 below.

Rationale for consultation position

11.5 We agree with submissions that 'natural' rates of capitalisation are desirable. However, it is not immediately clear how to implement a perfectly natural rate for RIIO-2. First, on an ex-ante basis, it is not clear the exact level of costs that will be incurred, or classified as opex or capex. Second, it is difficult to perfectly reflect each company's accounting approach whilst maintaining a consistent cost classification across companies.

11.6 We therefore welcome stakeholder views on whether capitalisation rates for all categories should be fixed ex-ante or whether we should consider updating capitalisation rates, say for Uncertainty Mechanism (UM) totex, ex-post. For example, in Table 40 we assume UMs are subject to high rates of capitalisation. This could risk over-capitalising: some costs may turn out to be, or more accurately reflect, opex.

Table 40: Capitalisation rates for RIIO-2 compared with RIIO-1

Sector	Licensee/ network	Totex categorisation	RIIO-1 [202]	RIIO-2
GT	NGGT (TO)	Baseline totex	64%	56%
		Uncertainty Mechanisms (illustrative)	90%	90%
	NGGT (SO)	Baseline totex	37%	34%
ET	SHET	Baseline totex	90%	81%
		Uncertainty Mechanisms (illustrative)	NA	98%
	SPT	Baseline totex	90%	84%
		Uncertainty Mechanisms (illustrative)	NA	98%
	NGET	Baseline totex	85%	75%
		Uncertainty Mechanisms (illustrative)	NA	94%
GD	East	Baseline totex	27%	26%
		Uncertainty Mechanisms (illustrative)	NA	83%
	London	Baseline totex	24%	17%
		Uncertainty Mechanisms (illustrative)	NA	60%
	North West	Baseline totex	26%	25%
		Uncertainty Mechanisms (illustrative)	NA	76%
	West Midlands	Baseline totex	25%	22%
		Uncertainty Mechanisms (illustrative)	NA	66%
	Northern	Baseline totex	35%	33%
		Uncertainty Mechanisms (illustrative)	NA	56%
	Scotland	Baseline totex	35%	38%
		Uncertainty Mechanisms (illustrative)	NA	77%
	Southern	Baseline totex	32%	28%
		Uncertainty Mechanisms (illustrative)	NA	70%
	Wales & West	Baseline totex	36%	26%
		Uncertainty Mechanisms (illustrative)	NA	78%
	All GDNs	Repex	Increasing from 50% to 100%	100%
ESO	NGESO	Totex	28%	41%

Source: Ofgem analysis

Consultation question

FQ23. Do you agree with our proposed assumptions for capitalisation rates?

FQ24. For one or more of the aggregations of totex we display in Table 40, should we update rates ex-post to reflect reported outturn proportions for capex and opex?

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[202] In the interest of simplicity, we do not report in this table a capitalisation rate for all RIIO-1 RAV additions given some items of expenditure had unique rates.

RAV opening balances

RAV opening balance questions

FQ25. Do you agree with our proposal to use the closing RIIO-1 RAV balances as opening balances for RIIO-2?

FQ26. Do you agree with our proposal to use estimated opening RIIO-2 balances until we have finalised the closing RIIO-1 RAV balances?

Opening RAV balance	
Purpose	To ensure the accuracy of opening balances at the start of RIIO-2.
Benefits	The opening RAV balance drives a number of the building blocks of allowed revenue (depreciation, return on RAV) and so will need to be correctly calibrated to ensure the accuracy of allowed revenue.

Business Plan submissions

11.7 Companies submitted estimated values for their opening RIIO-2 RAV balances, which included actual and forecast information to bridge the two-year lag[203] between the end of the RIIO-1 period and the beginning of RIIO-2.

11.8 We have reviewed the reasonableness of the submitted opening RIIO-2 RAV balances, by comparing them against the closing RAV balances in the latest published RIIO-1 PCFM.[204]

11.9 We then overlaid the PCFM closing balances with forecast RAV additions and depreciation, excluding enduring value adjustments, from the July 2019 Regulatory Financial Performance Reporting pack (RFPR) to cover the 2019/20 and 2020/21 regulatory years.

11.10 Finally, we included any specific RAV adjustments that the companies had made in their Business Plans. These adjustments typically relate to areas of the price control where the final values cannot be settled until the close of RIIO-1, including asset disposals, and excluded services.

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[203] Network companies submit actual expenditure data at the end of the Regulatory Year and must set their customer tariffs in advance, in the following Regulatory Year. As such, actual performance impacts revenue allowances with a two-year lag.

[204] At the time of publication, the latest published version is the November 2019 Price Control Financial Model: https://www.ofgem.gov.uk/network-regulation-riio-model/current-network-price-controls-riio-1/price-controls-financial-model-pcfm

11.11 Once we have received the outturn data for the final two years of RIIO-1, we will settle the final values for these "close-out" items and similarly we will settle the final RAV impacts. For now, companies have used estimates to calculate a RAV impact, and this has been factored into the opening RAV balance that they have submitted.

Consultation Position

Output parameter	Consultation Position
Opening balances	To roll forward closing RIIO-1 RAV balances from the PCFM to inform the opening RAV balances for RIIO-2.
True-up of opening balances	To use provisional opening balances until we are able to settle the final RIIO-1 closing RAV balances as part of our work on closing out the RIIO-1 price controls.

11.12 We propose to use the closing RIIO-1 RAV balances as the opening RAV balances for the RIIO-2 PCFM, as and when these values become available to us upon closing out the RIIO-1 price controls, which we expect will take place in 2022.

11.13 Until we know the final closing balances for RIIO-1, we propose to provisionally use the opening RIIO-2 RAV balances as submitted by the companies in their Business Plans.

11.14 These values have been prepared using actual and forecast data and as such, they represent our best estimate of opening RAV and remain under review until we can closeout the RIIO-GD1 and RIIO-T1 price controls.

RIIO-1 Close-out

RIIO-1 close-out questions

FQ27. Do you agree with the three categories of adjustments outlined below?

FQ28. Do you agree with our approach in using estimated values for closeout adjustments until we are able to close out the RIIO-1 price controls?

RIIO-1 Close-out	
Purpose	To ensure the accuracy of opening balances at the start of RIIO-2 and that any issues not settled in RIIO-1 are captured in RIIO-2.
Benefits	The opening RAV balance, along with fast money, drives a number of the building blocks of allowed revenue (depreciation, return on RAV) and so will need to be correctly calibrated to ensure the accuracy of allowed revenue.

Close-out adjustments

11.15 There are a number of areas within the Gas Distribution and Transmission price controls that need to be settled once the price control has ended and outturn data becomes known. These include things such as uncertainty mechanisms, Network Output Measures, incentives, proceeds from disposal of assets and the final RIIO-1 MODt[205] adjustments, each of which may have different treatments. Closeout adjustments can be either positive or negative and will be made in one of three ways.

11.16 The first is by applying adjustments to the final RIIO-1 PCFM, which will then feed into the updated RIIO-2 PCFM. The opening RAV balance, depreciation allowance or opening capital allowance pool balances for RIIO-2 are examples of areas requiring such adjustments.

11.17 As well as this, we will also make adjustments for areas that will impact RIIO-2 allowed revenues, such as incentives that operate on a two-year lagged basis.

11.18 Thirdly, an example of an area that may require both an adjustment to allowed revenue and to RAV is the MODt value for the final two years of RIIO-1.

November 2020 MOD$_t$ calculation

11.19 Companies will submit their actual expenditure for the 2019/20 regulatory year by 31 August 2020, which we propose to reflect in our Final Determinations for RIIO-2.

11.20 We will do this by amending the existing RIIO-1 PCFM to give it the functionality to calculate a MODt value for 2019/20 actual expenditure. This "legacy MODt" value will be used to update the starting position for RIIO-2 and will be reflected in the opening revenue allowances for RIIO-2.

November 2021 MODt calculation

11.21 The values we will publish in our Final Determinations will contain forecast information for the 2020/21 Regulatory Year, which will be updated in the

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[205] The MODT term is used to modify the licensee's Opening Base Revenue Allowance for each Regulatory Year t during the price control. The value is calculated at each Annual Iteration Process (AIP) and reflects the difference between the recalculated base revenue figure for any licensee for the relevant year t and the Opening Base Revenue Allowance as set in Final Proposals. It also reflects the difference between the recalculated base revenue figures held in the PCFM for Relevant Years t-1 and earlier before the AIP and the recalculated base revenue figures for the licensee held in the PCFM for the same years after the AIP.

November 2021 Annual Iteration Process (AIP), following the submission of companies' actual expenditure in July 2021.

11.22 The November 2021 AIP will therefore result in a revision to allowed revenue for the 2022/23 year through the calculation of the MODt for 2022/23. This will be the final revenue year of the RIIO-1 price control.

Consultation Position

Output parameter	Consultation Position
Close-out adjustments	To use estimated values for closeout adjustments until we are able to close out the RIIO-1 price controls.

11.23 At this stage, we have not reflected any closeout adjustments, forecast or otherwise in our RIIO-2 Licence Model scenarios. We propose to include forecast and, where possible, actual amounts to reflect RIIO-1 closeout adjustments within RIIO-2 opening base revenues at Final Determinations.

11.24 Where we have used estimates, we will then true these up and apply any further incremental adjustments to RIIO-2 RAV and revenue allowances, once the required outturn information becomes available.

11.25 We propose to reflect companies' actual expenditure for the 2019/20 regulatory year in the opening revenue allowances for RIIO-2, by calculating a "legacy MODt" adjustment for the 2021/22 Regulatory Year.

11.26 The final "legacy MODt" adjustment for RIIO-1 will be made through the November 2021 AIP. This will adjust allowed revenue for the 2022/23 Regulatory Year.

Directly Remunerated Services

Business Plan Submissions

11.27 Directly Remunerated Services (DRS)[206] are specific activities outside of the normal regulatory price control. Companies are allowed to charge their customers

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[206] These are referred to as "Excluded Services" in RIIO-1 Special Condition 8B (Services treated as Excluded Services) of the electricity transmission licence, RIIO-1 Special Condition 11C (Services treated as Excluded

directly for certain services performed. We provided further information in relation to DRS in SSMD.[207]

Update

11.28 In SSMD, we said that we intend to clarify the treatment of revenues and costs for each category of DRS and to harmonise the categories across sectors following submission of company Business Plans.

11.29 We also said that we would review DRS to investigate where there is a need for any adjustment to enable whole system activities.

11.30 In addition, we said that we would consider treatment of DRS in light of operational practice to date and the information in company Business Plans. Where costs incurred differ from original forecasts, we said we would consider true-up methodologies if we believe it is in the consumer interest. We said we would also consider where regulatory reporting could be further improved to enhance understanding.

11.31 As in RIIO-1, we want to ensure that consumers do not pay twice for a service for which companies have already been remunerated. Our review of the DRS Business Plan data submitted to us in December 2019 has highlighted a degree of apparent inconsistency in the forecasting of companies' DRS costs and revenues, with not all GDNs having submitted projections. In addition, there appears to be differences between the submitted Business Plan estimates for RIIO-1 and historical values previously reported as part of the normal RRP. We intend to continue to review the submissions in order to clarify the treatment of revenues and costs for each category and to harmonise the categories across sectors following submission of company Business Plans. We will also review DRS to investigate whether there is a need for any adjustment to enable whole system activities (for further information, see Chapter 8 Enabling whole system solutions, in the Core document).   If it is necessary to make changes to the existing approach to remuneration, we will consult on it as appropriate. For the ESO, we currently see benefit in formal review of DRS approach in line with its two-year business cycle.

Services) of the gas transmission licence and in RIIO-1 Special Condition 4C (Services treated as Excluded Services) of the gas distribution licence.
[207] SSMD – Finance, paragraphs 7.65-7.76.

Amounts recovered from the disposal of assets

Disposal of assets questions

FQ29. Do you agree that proceeds from the disposal of assets during RIIO-2 should be netted-off against totex from the year in which the proceeds occur?

FQ30. Do you agree that we should carry out a review where an asset is transferred to a holding company and then subsequently sold to a third party?

Business Plan submissions

11.32 In our SSMD, we said that companies should be incentivised to dispose of assets where it is clear they are no longer required and consumers should also benefit from this. We asked companies to propose as part of their Business Plans their strategy on the disposal of assets, clearly demonstrating how consumers would benefit from financial proceeds or fair value transfers of asset (including land) disposals during RIIO-2.

11.33 Company submissions provided very limited detail of any strategy for disposal of assets during RIIO-2.

Draft determination

11.34 We maintain our view that consumers should benefit where assets are no longer required and are disposed of by companies.

11.35 We propose that where a company has disposed of an asset, we consider cash proceeds (or transfer to a company within the licensee group) are netted off against totex from the year in which the proceeds occur, which go through the totex incentive mechanism.[208] Adjustments include:

- cash proceeds of sale at an arm's length transaction to a third party external to the licensee group
- transfer at an arm's length fair market value of assets to a company within the licensee group
- cash proceeds of sale of assets as scrap

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[208] This is for disposal of assets during RIIO-2. For assets disposed in RIIO-1, adjustments will be made as part of the close-out of RIIO-1, based on the respective sector policy that was in place for RIIO-1. In RIIO-T1 and GD1, RAV is adjusted with net proceeds (for GD there is a five-year lag).

- amounts recovered from third parties, including insurance companies, in respect of damage to the network.

11.36 Where an asset is transferred to a company within the licensee group and then subsequently sold to a third party, we may review the final sale. Where there is a difference, we will consider whether a further adjustment to totex is required. The licensee will be required to inform Ofgem promptly of any completed sale to a third party, setting out:

- the amounts of the proceeds from a third party; and
- the factors which they consider account for any difference between the transferred amount and the proceeds from a third party referring in particular to:
  - the general movement in market prices of similar assets; and
  - costs incurred by the company in improving or maintaining the asset.

11.37 The RIGs will provide guidance on how companies should report disposal of assets.

Dividend Yield assumption

Consultation Position

Parameter	Consultation Position
Dividend yield assumption	To assume a dividend yield of 3.0% in the Licence Models.

Rationale for consultation position

11.38 We said at the time of the SSMD that we considered a 3.0% dividend yield to be a reasonable return for shareholders.

11.39 Oxera, on behalf of NGN, submitted a report arguing that this was insufficient and argued for a 4% yield. Our response was that investors receive returns both from dividends and from capital (or growth) and therefore there is no level of dividend yield that can be said to be correct.[209] Our proposed dividend yield allowed the

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[209] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=88

notional company to maintain the target level of gearing without additional
borrowing.

Business Plan submissions

11.40 These are summarised in Appendix 5.

Draft determination

11.41 Although companies argued for higher dividend yields, they did not include levels
of dividend cover (EPS/ DPS) or payout ratio (1/ dividend cover) in their analysis.
It seems reasonable for us to consider both the level of dividend yield and also the
level of dividend cover of the companies. If companies pay a lower dividend yield
but reinvest those earnings in the business then that should lead to higher returns
for investors in the future, and investors should view the two courses of action as
equivalent. This is consistent with what Modigliani and Miller argued regarding
dividend irrelevance.[210]

11.42 We observed that the 2009-19 average payout ratio (dividends/ earnings per
share) for FTSE 100 stocks was 46.0% and for Stoxx Europe 600 was 44.2%. If
we adjust the payout ratios of the UK listed energy stocks (SSE and NG) to 50.0%
(dividend cover of 2.0x – slightly below market averages), we calculate dividend
yields of approximately 3.0%.

11.43 As investors are remunerated by both current dividend yield and future growth in
assets, we consider a 3.0% assumption to be reasonable.

Notional Equity Issuance Costs

Consultation Position

Allowance parameter	Consultation Position
Notional equity issuance costs	To allow 5% for equity issuance costs associated with notional equity issuance assumed in the LiMo.

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[210] See Merton H. Miller; Franco Modigliani, "Dividend Policy, Growth, and the valuation of Shares", The Journal
of Business, Vol. 34, No. 4 (Oct, 1961). https://www.jstor.org/stable/2351143?seq=1

Rationale for consultation position

11.44 We said at the time of the SSMD[211] that we would consider further the question of notional equity issuance costs, which were set in RIIO-1 at 5% of the value of the notional equity raised. We said that we would consider whether they should be lower in light of the Business Plans submitted and notional gearing.

11.45 Since then we have not been made aware of any significant new information regarding the cost of equity issuance. The Business Plans submitted did not contradict our assumption of 5% for equity issuance costs.

11.46 Therefore, we propose to continue to allow 5% for equity issuance unless any additional evidence emerges during this consultation period.

Pension scheme established deficit funding

Business Plan submissions

11.47 Companies submitted their RIIO-2 costs for pension scheme established deficit (PSEDs) and Admin and Pension Protection Fund costs as per the Business Plan guidance.

Draft determination (update)

11.48 For draft determinations, we have provisionally used the costs as submitted in companies' Business Plans.[212] We will update these at final determinations with the outcome of the 2020 pension reasonableness review, which will conclude in November 2020.

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[211] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=114
[212] We asked companies to submit costs based on allowances set as part of the revised pension allowance values of 2017 reasonableness review, (https://www.ofgem.gov.uk/publications-and-updates/revised-pension-allowance-values-and-completion-2017-reasonableness-review). These are provisional pending the conclusion of the 2020 reasonableness review.

Annual Iteration Process

Parameter	Consultation Position
Allowed Revenue	Consolidated within an all-revenue PCFM.
Interest rate on prior-year adjustments (time value of money)	SONIA + 110bps (expressed as a nominal rate) for gas distribution and transmission, for both PCFM ex-post revisions and charging error corrections.
Forecasting of PCFM variable values	Subject to specific guidance in the RIGs, all inputs forecast except for re-opener allowances.

Consultation position

11.49 The AIP for the Price Control Financial Model (PCFM) means we can remodel revenue allowances annually using an updated set of 'PCFM Variable Values'. As a result, any changes to inputs, such as actual expenditure, can be reflected in the next year's AIP rather than waiting until the next price control.

11.50 To consolidate reporting and increase transparency, we propose to modify the AIP and PCFM from RIIO-1 such that that the total Allowed Revenue (instead of Base Revenue) is calculated in the PCFM. This means including some output incentive adjustments, pass-through items, and any other variables previously not part of Base Revenue in the PCFM.

11.51 Under these proposals, opening revenue allowances will no longer need to be set out in the licence. Instead, the values would be as given in the PCFM published at each AIP, and therefore no 'MOD' term will be required. Instead, allowed revenue adjusts to reflect any revised estimates of future allowances, and any updates to prior years since the previous AIP.

11.52 The PCFM Variable Values and the methodologies under which they can be revised for each AIP will be specified in the special conditions of the licence, the RIGs, and the Price Control Financial Handbook ('the handbook').

11.53 The handbook, including the methodologies, and the PCFM (collectively called the Price Control Financial Instruments) will be specified in the "Governance" chapter of a licensee's special conditions, and will be subject to modification rules set out there.

Interest on prior year adjustments (time value of money)

11.54 Ofgem makes three kinds of revenue true-ups relating to prior years, to which it applies a rate of interest:

 a) Historical revisions to PCFM inputs (eg such as reporting totex underspend and reducing revenue accordingly)

 b) Incentive, or other income 'earned' in previous years, forming part of allowed revenue two years after

 c) Correcting charging error for amounts over or under recovered based on the ex-ante restriction (they set out to collect 100, but actually collected 105)

11.55 In RIIO-1, there is a variety of interest rates applied to these adjustments:

- Nominal WACC, for historical revisions to PCFM model inputs
- Bank Rate + 150bps for GT, GD, ED charging error.
- Bank Rate + 200 bps for ET charging error
- Bank Rate only, or nominal WACC for some incentive revenue earned by past performance

11.56 Vanilla WACC is referred to in financial handbooks as 'the time value of money'. However, the variety of interest rates applied to other uplifts do not typically have stated rationale. Ofgem would consider the time value of money to be the marginal cost of capital for revenues switched between years during the price control, or the potential benefit or loss from applying no interest rate.

11.57 To review Ofgem's policies and make recommendations for RIIO-2, we commissioned an additional study from CEPA, published alongside this consultation.

11.58 We summarized the conclusions from CEPA's paper as follows:

- That the cashflow timing impacts of updated revenue allowances, or 'prior year adjustments', differ in risk from more general licenced activities
- Some may view the allowed cost of capital as the single anchor point for preserving the net present value of the price control, but it may also exceed the time value of money or marginal cost of capital for prior-year adjustments. A cost of debt may be a more appropriate rate.
- If not the allowed cost of capital, a leading option for a single prior year adjustment rate for RIIO-2 would be an interest rate that is:

○ Estimated via a margin on a floating underlying rate, as it is relatively simple and parallels how floating debt may be priced in practice, which is more relevant to short term debt.

○ Using a margin of 100-150 basis points from the Bank of England Base rate, or SONIA (the Sterling Overnight Index Average).[213]

11.59 We agree that the cost of debt may better reflect the marginal cost of capital for prior year adjustments, and note that using a margin from an underlying rate is long established regulatory practice for charging errors (the K correction factor).

11.60 Secondly, we argue that the underlying risk of all prior year adjustments (updated PCFM inputs, delayed incentive revenue, and charging error) is similar, and therefore see no reason to apply different rates. Similarly, we do not have justification for differences between sectors.

11.61 Therefore, we propose to use a fixed margin over a floating rate (expressed in nominal terms) for all types of prior year adjustments, and apply the same rate of interest to all gas distribution and transmission.

11.62 We propose to update the margin analysis at final determinations, using a methodology consistent with the determination of the ESO cost of debt. Specifically, we:

- Examined the iBoxx £ Utilities 1-3 year index (which has an expected remaining life of about 2 years), and found the asset swap margin to 6m LIBOR to average 77bps in the last three years (to 11 May, 2020).
- Found the three-year average spread between SONIA and 6m LIBOR to be 23bps.
- Added a transaction cost of 10bps
- 77 + 23 + 10 = a total spread of 110bps from overnight SONIA.

11.63 Using the Bank of England instantaneous forward curve as a forecast for SONIA, the following table shows illustrative RIIO-2 rates

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[213] SONIA is an important interest rate benchmark, administered by the Bank of England, based on actual transactions and reflects the average of the interest rates that banks pay to borrow sterling overnight from other financial institutions.

Table 41: Illustrative values for interest applied to prior year adjustments

Year	SONIA	Margin	Correction Interest
2021/22	0.06%	1.10%	1.16%
2022/23	0.11%	1.10%	1.21%
2023/24	0.17%	1.10%	1.27%
2024/25	0.24%	1.10%	1.34%
2025/26	0.27%	1.10%	1.37%
Mean	0.17%	1.10%	1.27%

Source: Ofgem analysis

11.64 It is worth noting that due to the timing of the AIP, outturn data may not be available for each relevant time-period. The current charging error process includes a short forecast for the 't-1' year, with revisions to that forecast being captured in subsequent charging error years.

11.65 We propose to adopt the same process for all prior year adjustments, noting that we would base any recovery penalty (or penal rate of interest) on a fixed target set at the time of the AIP.

Time value of money questions

FQ31. Do you agree with our proposal to apply one interest rate to revisions to PCFM inputs and charging errors, based on a short-term cost of debt?

FQ32. Do you agree with the margin-based approach, and the methodology used to calculate a margin of 110bps?

FQ33. Do you have any reason why the marginal cost of capital for revisions to PCFM inputs and charging errors should remain distinct from each other, or why WACC may remain a more appropriate time value of money for a particular subset of prior year adjustments?

Forecasts in PCFM variable values

11.66 The RIIO-1 PCFM is currently for the purposes of calculating MOD, and predominately reflects the forecast of expenditure made at the beginning of the price control. Actual expenditure is reflected in the following regulatory year, resulting in a 2-year lag before adjustments flow through to Recalculated Base Revenue, as directed by Ofgem.

11.67 To reflect updates more quickly, to reduce the magnitude of true-ups, and to streamline reporting, we propose to incorporate forecasts in most PCFM variable

values. These would replace enduring value adjustments currently submitted via the RFPR, and would serve as the basis for measuring return on regulatory equity.

11.68 To complement this proposal, we would propose adding a licence condition to require a licensee to use best endeavours in providing forecast values.

11.69 The broad categories PCFM inputs are listed in the table below, with the corresponding proposal on forecasting:

PCFM Input	Forecasting methodology
Actual expenditure	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR, and would instead be input in the PCFM at each AIP
Volume driver allowances	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR, and would instead be input in the PCFM at each AIP.
Incentive performance	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR, and would instead be input in the PCFM at each AIP.
Re-openers	Values **not** updated until re-opener determination. Initial values will be set at final determinations. Any exceptions detailed in regulatory instructions and guidance.
Legacy adjustments	For RIIO-1 PCFM close-out and RIIO-2 opening values: the expected two final years of MOD continue to be forecast consistent with the LIMO Business Plan submissions and the RFPR, eventually reflecting the final RIIO-1 PCFM as published.
Other revenue components, such as DARTs, pass-through, use-it-or-lose-it allowances	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR, and would instead be input in the PCFM at each AIP.

Revenue forecasting questions

FQ34. Do you agree with our proposal to include forecasts for most PCFM variable values for the purposes of the AIP?

FQ35. Considering re-openers as set out in these Draft Determinations, do you agree with our proposal to exclude them from any forecasting? If not, please submit specific examples or analysis of the potential materiality of actual spend versus initial allowances.

Transparency through RIIO-2 reporting

Background to Executive pay/remuneration and dividend forecasting

11.70 In our open letter on the RIIO-2 framework in July 2017, we highlighted that a number of commentators (such as the Citizens Advice Bureau) have drawn attention to high levels of returns, and made suggestions for reform.[214] In the open letter, we explained that:

> *"Stakeholders are more likely to view high returns as legitimate or fair when they are the product of efficiency or innovation. They are less likely to view them as legitimate or fair when they are perceived to be the result of companies' exploiting information asymmetry or windfall gains due to economic conditions differing from original forecasts."* [215]

11.71 We proposed in the SSMD (see para 12.144), as part of dealing with the concept of legitimacy of the price control, to require disclosure of executive remuneration to a similar level to that required for UK-listed public limited companies and for companies to publish their sustainable dividend policies.

11.72 We discuss both executive remuneration and dividend policies in more detail below.

Executive pay/remuneration

Ofgem proposals to date

11.73 When developing the RFPR we discussed these proposals with the companies. Concerns were expressed regarding these proposals, and as a result, these were not implemented for reporting for 2018-19 or 2019-20.

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[214] https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/EnergyConsumersMissingBillions.pdf
[215] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_core_30.5.19.pdf#page=137

Stakeholder responses

11.74 In response to the consultation on the introduction of the RFPRs into the RIGs,[216] some stakeholders expressed concerns over the proposals for executive remuneration disclosure.

11.75 Namely, stakeholders did not support including more details around executive remuneration on the basis that this information is provided in the Statutory Financial Statements for UK-listed public limited companies, where it is subject to external audit. Further, they did not feel that the RFPR information should be subject to the same reporting standards for non-UK listed public limited companies.

11.76 The Energy Networks Association (ENA), while supportive of the RFPR as a way of providing stakeholders with more transparent and relevant regulatory financial information, also had concerns around including narrative regarding executive remuneration within the RFPR commentary. They suggested that:

> "A requirement to disclose personal data/information for publication is not one that Ofgem should impose and also conflicts with requirements in respect of good corporate governance and the disclosure of directors' remuneration set by Parliament, the FCA or any exchange on which a company's securities are listed".

Ofgem view

11.77 As natural monopolies and regulated companies, we believe that transparency is important for building customers' and other stakeholders' trust and confidence that the regulatory regime is protecting consumers' interests. To support the legitimacy of the price control and build stakeholder trust and confidence, we consider it appropriate that licensees explain executive roles in relation to the regulated business, and how executive pay reflects the company performance and adds value for consumers. We believe that doing so would increase the focus on executive remuneration and the linkage to company performance in order to build

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[216] https://www.ofgem.gov.uk/publications-and-updates/direction-introduce-regulatory-financial-performance-reporting-rfpr

stakeholder trust and confidence. This is line with the UK Corporate Governance Code, July 2018.[217]

11.78 We note the comments from some stakeholders that this information on executive remuneration is already provided in the Statutory Financial Statements and therefore should not be provided in the RFPR. While we will address the details of the RFPR requirements in our RIGs later this year, the proposal is for all licensees to provide transparency on executive remuneration and to link this to the performance of the regulated businesses. This is something that has already been adopted in other regulated sectors (eg for regulated water companies).

11.79 The ENA expressed a concern that publication of such information to demonstrate how executive pay is linked to the underlying performance conflicts with requirements in respect of good corporate governance. However, we note that the UK Corporate Governance Code (July 2018) states that "executive remuneration should be aligned to company purpose and values, and be clearly linked to the successful delivery of the company's long-term strategy". The FRC's Guidance on Board Effectiveness (July 2018)[218] sets out questions for remuneration committees including "How will any financial and non-financial performance measures support long-term thinking and delivery against strategy". In our view, reporting and publication of this information will further build stakeholder trust and confidence that licensees are acting in the best interests of consumers and that their executives' remuneration is linked to the performance of the licensee under the price control. In addition, this is in line with the approach Ofwat has taken in its latest price control.[219]

11.80 While it is not our intention to design or put restrictions on licensees' remuneration policies or strategies, we do expect these policies to be transparent and in the best interests of consumers and stakeholders in supporting the licensees' regulated businesses.

Draft determination

11.81 We propose to require licensees to report annually on executive roles in relation to the regulated business, and how executive pay reflects the company performance

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[217] https://www.frc.org.uk/getattachment/88bd8c45-50ea-4841-95b0-d2f4f48069a2/2018-UK-Corporate-Governance-Code-FINAL.pdf

[218] https://www.frc.org.uk/getattachment/61232f60-a338-471b-ba5a-bfed25219147/2018-Guidance-on-Board-Effectiveness-FINAL.PDF

[219] Putting the sector in balance: position statement on PR19 Business Plans – July 2018

and adds value for consumers. This reporting should provide the same level of disclosure for executive remuneration for each executive director, as found in Statutory Accounts in line with the UK Corporate Governance Code, with regard to fixed pay (eg salary, benefits, pension), variable pay (eg performance related incentives), and additional governance (eg share ownership). This should include a narrative explaining the allocation of executive remuneration to the regulated business and how the variable pay relates to performance outcomes and benefits consumers.

Dividend forecasts

<u>Ofgem proposals to date</u>

11.82 We had originally proposed that companies provide details of their dividend forecasts as part of the licensees' RFPR. Stakeholders expressed concerns, so these were not implemented for reporting for 2018-19 or 2019-20.[220]

<u>Stakeholder responses</u>

11.83 In response to the consultation on the introduction of RFPR into the RIGs, some stakeholders did not support the requirement to include details of dividend forecasts, saying that this was commercially sensitive and is not required in the Statutory Financial Statements.

<u>Ofgem view</u>

11.84 As with our view on executive pay, we consider that transparency around a licensee's dividend policy for any price control is important for building consumers' and other stakeholders' trust and confidence that the regulatory regime is protecting consumers' interests. It is not Ofgem's role to specify any company dividend policy, but for companies to set out in their Business Plans, and future reporting, details underpinning their proposed approach to dividends and the factors that would influence them, including setting out how their dividend policy is reflective of the company's performance.

11.85 We recognise that these dividend policies can change as the circumstances surrounding the operational characteristics of the licensees' regulated businesses

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[220] https://www.ofgem.gov.uk/publications-and-updates/direction-introduce-regulatory-financial-performance-reporting-rfpr

change. It is not Ofgem's intention that a company's dividend policy should be prescriptive over the price control period. We will not require licensees to provide a dividend forecast but rather that they provide transparency of how their approach to dividends relates to overall shareholder return and performance of their regulated businesses.

11.86 We consider that requiring licensees to report on their policy and approach to dividends is not commercially sensitive as licensees already report forecast regulatory performance against allowances and incentives. Any dividend policy should be consistent with licensee performance, and in our view, the reporting of their approach will only strengthen and build on trust and confidence that the regulatory regime is protecting consumers' interests.

11.87 We also consider that companies disclosing their approaches to dividends would provide transparency that any dividends paid are reflective of the company's performance over a price control, and would provide stakeholders with a more complete understanding of this. We note that this is also required in other sectors. For example, Ofwat, in its recent position statement in its latest price control[221], required regulated water companies to clearly set out in their Business Plans details of their proposed approach to dividends and factors that will influence these dividends over the forthcoming price control period.

Draft determination

11.88 As natural monopolies and regulated companies, we consider it appropriate for licensees to explain their approaches to dividends over the RIIO-2 price control period along with any factors that will influence these policies. In our view, this would provide evidence that these are in consumers' interests and support the legitimacy of their regulatory performance and efficiency over the price control period. We propose to require licensees to report this annually.

Transparency question

FQ36. Do you agree that additional reporting on executive pay/remuneration and dividend policies will help to improve the legitimacy and transparency of a company's performance under the price control?

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[221] https://www.ofwat.gov.uk/wp-content/uploads/2018/04/Benefit-sharing-decision-statement-FINAL-for-publishing.pdf

Bad Debts

Bad Debt Pass-through	
Purpose	To enable RIIO-2 companies to recover amounts associated with supplier-related bad debts.
Benefits	To introduce a consistent and transparent mechanism for all sectors to recover amounts associated with bad debts.

Background

11.89 During the course of any price control, there may be times when companies are unable to recover debts owed to them by their customers if they become bankrupt. In these cases, it is our policy to allow companies to recover the costs associated with those bad debts through their revenue allowances.

Treatment in RIIO-1

11.90 There is no formal mechanism in the any of the Transmission special licence conditions to allow for the recovery of bad debts as these costs represented a very low cash-flow risk for the Transmission Operators.

11.91 The Gas Distribution Special Licence Condition 1C contains a Miscellaneous Pass-through term, which was included within the Pass-Through principal formula. This was not a specific term for bad debt, but a more generic term, which requires a direction by the Authority.

11.92 The Electricity Distribution licence contains a specific pass-through term designed to recover amounts associated with Supplier of Last Resort payments and any Eligible Bad Debts.

Impact of COVID-19

11.93 In light of recent developments in the supply market and particularly due to COVID-19, this is an area that will require closer monitoring and further policy development.

11.94 We recognise that the recently implemented Network Charge Deferral scheme,[222] which allows electricity suppliers and gas shippers to defer charge payments that

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[222] https://www.ofgem.gov.uk/publications-and-updates/managing-impact-covid-19-energy-market-relaxing-network-charge-payment-terms

they would ordinarily make to companies until end of March 2021, may lead to an increased risk of bad debts being incurred by companies,

11.95 In our open letter on relaxing network charge payment terms, we said that network companies would be able to recover outstanding bad debt within the Regulatory Year 2021-22.[223]

Consultation Position

11.96 We will be consulting separately on our proposal to introduce a consistent Bad Debt licence term across all sectors for RIIO-2.

11.97 However, where potential bad debts relating to the RIIO-1 period crystallise during the RIIO-2 price control, we propose to reflect an estimate of these amounts in our Final Determinations for the Transmission and Gas Distribution companies with the intent to true-up these estimates once the actual amounts are known.

Base Revenue, setting ODI caps and collars

11.98 Base Revenue is a defined term within RIIO, and is the basis on which caps and collars on output delivery incentive are applied. These caps and collars protect consumers and companies, from excessive gain or loss from a financial incentive.

Consultation position

Output Parameter	Consultation position
Definition of Base Revenue	Modified from RIIO-1 PCFM to include other pass-through and exclude tax allowance
Basis on which to set ODI caps and collars	Caps and collars are set as a percentage of ex ante base revenue. Base revenue is the annual average value fixed at final determinations

Rationale for consultation position

11.99 We propose that caps and collars remains expressed as a percentage of base revenue but modify that definition to fit more logically with an expanded PCFM.

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[223] The bad debt should be inclusive of accrued interest (net of the cost of capital). See here: https://www.ofgem.gov.uk/system/files/docs/2020/06/open_letter_on_relaxing_network_charge_payment_terms_1.pdf#page=5

Specifically, base revenue would include "pass-through" revenue (previously not part of the PCFM), but exclude:

- any tax allowance because it is a second order effect
- incentive and outperformance revenue, to avoid circularity with incentives based on Base Revenue
- legacy adjustments, or non-core revenues, because they are less related to the RIIO-2 price control

11.100 For the purpose of ODI caps and collars, Base Revenue in the RIIO-1 licence was defined as: $BR_t = (PU_t + MOD_t + TRU_t) \times RPIF_t$. This value is in nominal prices and is known before any year. The PCFM output "recalculated base revenue" is made up of the same components, but is revised ex-post and in real prices.

11.101 In the new PCFM structure, we propose to define Base Revenue in 18/19 prices, as sum of the following components:

- Fast pot expenditure
- Non-controllable opex & pass through
- RAV depreciation
- Return
- Equity issuance cost
- Core DARTs, which are the sum of:
  - Directly remunerated services (excluded services) net revenue
  - Pension deficit

Table 42: Comparing Annual Average Base Revenue in £m 18/19 prices, RIIO-1 vs RIIO-2 proposed definition

Network	RIIO-1* (PU+MOD+TRU)	RIIO-1** (new definition)	RIIO-2 (baseline)
SHET	217	202	402
SPTL	303	280	298
NGET	1733	1610	1439
NGGT TO	734	731	752
East	639	615	475
London	445	425	356
North West	462	445	364
West Midlands	344	328	271
NGN	426	404	371
Scotland	320	319	261
Southern	762	723	600
WWU	428	421	373
*average of FY 13/14 to FY 18/19 'BR' term per Revenue RRP, converted to 18/19 real (CPIH) prices. **Ofgem analysis retroactively applying the proposed RIIO-2 definition, converted to 18/19 prices			

Source: Ofgem analysis

11.102 For the purposes of caps and collars in ODIs, the options are:

a) Use the ex-post, 'recalculated' version of base revenue, defined above

b) Fix a value at final determinations

c) Update an ex-ante value prior to each year, based on the Base Revenue value calculated for the year during the AIP.

11.103 Responses to a working group emphasized that predictability and fixing these values ex-ante was desirable, but there was not consensus on options b) or c).

11.104 We propose option b – to fix the value at final determinations. We also think that the ODI caps and collars should use the annual average of Base Revenue over RIIO-2. This means provides the greatest certainty over the value of an ODI cap and collar, and is the simplest.

11.105 For reference, we present the annual and RIIO-2 average values for Base Revenue in the table below.

Table 43: Annual Base Revenue, Baseline (£m 18/19 prices)

	2021/22	2021/23	2023/24	2024/25	2025/26	RIIO-2 Avg
SHET	384.0	393.6	402.6	411.4	416.6	**401.6**
SPTL	296.3	307.1	307.7	300.3	276.5	**297.6**
NGET	1562.4	1448.8	1419.0	1393.8	1369.3	**1438.7**
NGGT TO	783.8	756.2	742.8	741.1	738.4	**752.4**
East	498.0	484.8	469.3	461.9	462.7	**475.3**
London	374.0	361.9	350.9	347.8	346.1	**356.2**
North West	381.6	373.7	359.5	353.9	353.4	**364.4**
West Midlands	282.1	277.0	266.8	265.0	263.7	**270.9**
Northern	377.2	371.2	370.2	369.1	368.4	**371.2**
Scotland	265.9	263.0	259.1	258.1	260.4	**261.3**
Southern	607.0	599.0	599.5	597.5	598.7	**600.3**
Wales & West	375.8	371.2	372.1	371.9	375.0	**373.2**

Source: Ofgem analysis

Base Revenue definition and ODI cap/collar questions

FQ37. Do you agree with the proposed definition of Base Revenue?

FQ38. Do you agree with the proposal to fix the values used for ODI caps and collars at final determinations?

Appendices

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Appendix 1 – Draft Determinations on the allowed return on capital

GD and GT	Financial year ending March 31					
Component	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	4.176%	4.187%	4.197%	4.212%	4.228%	**4.200%**
Expected outperformance	0.250%	0.250%	0.250%	0.250%	0.250%	**0.250%**
Allowed return on equity	**3.926%**	**3.937%**	**3.947%**	**3.962%**	**3.978%**	**3.950%**
Debt						
Cost of debt (10-14 yr trailing avg)	1.973%	1.830%	1.717%	1.629%	1.560%	**1.742%**
Notional gearing	60%	60%	60%	60%	60%	**60%**
Allowed return on capital	2.754%	2.673%	2.609%	2.562%	2.527%	**2.625%**

NGET and SPT	Financial year ending March 31					
Component	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	3.931%	3.925%	3.921%	3.925%	3.932%	**3.927%**
Expected outperformance	0.222%	0.222%	0.222%	0.222%	0.223%	**0.222%**
Allowed return on equity	3.709%	3.703%	3.699%	3.703%	3.709%	**3.705%**
Debt						
Cost of debt (10-14 yr trailing avg)	1.973%	1.830%	1.717%	1.629%	1.560%	**1.742%**
Notional gearing	55%	55%	55%	55%	55%	**55%**
Allowed return on capital	2.754%	2.673%	2.609%	2.562%	2.527%	**2.625%**

SHET, illustrative case[224]

Component	Financial year ending March 31					
	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	3.931%	3.925%	3.921%	3.925%	3.932%	**3.927%**
Expected outperformance	0.222%	0.222%	0.222%	0.222%	0.223%	**0.222%**
Allowed return on equity	3.709%	3.703%	3.699%	3.703%	3.709%	**3.705%**
Debt						
Cost of debt (10-14 yr trailing avg)	1.761%	1.570%	1.397%	1.323%	1.277%	**1.466%**
Notional gearing	55%	55%	55%	55%	55%	**55%**
Allowed return on capital	2.638%	2.530%	2.433%	2.394%	2.371%	**2.473%**

Electricity System Operator

Component	Financial year ending March 31					
	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	5.268%	5.273%	5.279%	5.286%	5.295%	**5.280%**
Expected outperformance	0%	0%	0%	0%	0%	**0.00%**
Allowed return on equity	**5.268%**	**5.273%**	**5.279%**	**5.286%**	**5.295%**	**5.28%**
Debt						
Cost of debt (floating rate allowance)	-0.159%	-0.110%	-0.049%	0.013%	0.045%	**-0.052%**
Notional gearing	55%	55%	55%	55%	55%	**55.00%**
Allowed return on capital	2.283%	2.312%	2.349%	2.386%	2.408%	**2.347%**

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[224] RAV weighted cost of debt allowance forecast based on Illustrative UM totex case. The five year average debt allowance forecast using baseline totex assumptions would be 1.58% CPIH real.

Appendix 2 – Debt and financeability: consultants' reports and our comments

Consultancy report 1:

Author	Prepared for	Report
NERA	ENA	HALO effect and additional costs of borrowing at RIIO-2[225]

Point raised	Ofgem consideration and response
The consultant reports that CEPA misstates the HALO effect for 2 reasons: i) CEPA uses coupon as its measure of cost of debt not the issue yield ii) CEPA fails to correctly control for bonds' rating at issue	We agree with NERA: 1. CEPA used coupons rather than issue yield. Issue yield is more precise but this was done by CEPA for practical considerations and with the knowledge it was an approximation. 2. They are correct that CEPA used an average of the 2 indices. Both of these impacts were taken into account by rounding down. We have updated our analysis on halo effect since CEPA's analysis so we believe it is appropriate to focus on our updated analysis in any case.
The report then goes on to critique Ofgem's approach to assessing halo for the SSMD. NERA state they calculate the credit spread and tenor more precisely by drawing on the Bank of England nominal spot curve because it matches tenor more precisely.	Ofgem would point out two issues in relation to NERA's approach. First, the Bank of England nominal spot curve is a zero coupon curve which can be used to give a forecast of future interest rates. However, as a zero coupon curve, it is inappropriate to use it to measure against corporate bond yields of the same maturity to determine credit spreads because the bonds issued by companies are not zero coupon bonds and therefore there is a duration mismatch which impacts the comparison. Comparing yields on couponed network bonds to zero coupon gilt yields will be more distortive than comparing issue spreads with the Iboxx spread to benchmark, both of which are spreads to the nearest couponed gilt yield. Secondly, the convention in the market is to price a corporate bond over the nearest benchmark gilt, not over the exact tenor of an interpolated curve. This is because investors are often switching in and out of gilts to buy corporate bonds. This is also set out by the International Capital Market Association in their Primary Market Handbook[226], which states that sterling

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[225] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/01/A34-%E2%80%93-NGN-RIIO-2-Halo-Effect-Additional-Costs-of-Borrowing-at-RIIO-2.pdf

[226] https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/Primary-Markets/ipma-handbook-home/

Point raised	Ofgem consideration and response
	new issuances should be priced with reference to the benchmark gilt maturing in the same year as the new issue or where these is no benchmark maturing in that year, the nearest shorter maturing benchmark .
It then uses this technique to recalculate the halo with a negative halo of -3bps or-13bps depending upon whether controlling for rating or not. It poses the reason for this negative halo is the new issue premium that is typically needed to issue new bonds, citing evidence of two recent academic studies. They therefore propose a new issue premium of 13bbps be added the the benchmark as an additional cost of borrowing.	As a result of using a smoothed zero coupon gilt curve, the yield comparison to derive the credit spread is distorted which in turn distorts the comparison with the Iboxx yields. We therefore think the halo impacts suggested by NERA in the report are inaccurate as a result. Our analysis suggests networks do not face a new issue premium compared to the Utilities 10yr+ index (because new issues are not priced on average at a wider spread than the Utilities 10yr+ spread). Therefore, we do not propose to add a new issue premium to the index as an additional cost of borrowing.
The report states that while the variation and size of the halo is significant for individual bonds, they undertake an analysis to show the sample average is not statistically different from zero	We question whether the data allows for this type of analysis and note that NERA do not state whether their stated negative halo of 13bps could be considered statistically significant using the same type of analysis.
The report uses other evidence to seek to demonstrate that there is no halo in the RIIO-ED1 appeal by BGT, the CMA also considered the halo effect and found some evidence before 2009 and 'no evidence of 'halo' since 2010. NERA goes on to state that the CMA evidence is not controlling for stronger company rating relative to benchmark, then saying the rating moves into line in 2010.	In its final determination in the RIIO-ED1 BGT appeal,[227] the CMA find a halo effect of around 20 basis points in their analysis of the period 2004-2015. They conducted their own analysis as the submissions received were all suggesting different outcomes. To say that 'the CMA found some evidence of halo before 2009' is misleading as the CMA evidence of 45bp was substantial. The CMA concluded that GEMA's assessment of 20bp was adequate, in addition to stating that the halo has been diminishing since 2009. By netting issuance costs with the halo effect, the CMA stated that GEMA was not wrong in its approach.[228]
NERA concludes the various studies employ different sampling periods and finds no support for a regulatory halo.

NERA also states that there is no reason that regulated companies can outperform the benchmark and any halo should be fully reflected in the rating eg a spread for an energy A rated bond should be the same for a non-energy corporate, assuming same tenor. | We think that depending on how you look at the data and deviations from how the market works, will impact the results. If the Halo has tightened in recent years, it would not be surprising given the yield and spread compression. However, to say there is no support for a halo effect is not accurate.

This implies that the only factor investors take into consideration for pricing credit of a particular company is the credit rating whereas in reality, investors do compare issuers with the same credit rating and look at sector characteristics as well as company specifics. Looking at market pricing, one can see that the rating is just one aspect, albeit an important one on pricing. |

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[227] British Gas Trading Limited v The Gas and Electricity Markets Authority - Final Determination, CMA, 29 September 2015, paras 8.44 – 8.54
[228] Ibid, para 8.54

Point raised	Ofgem consideration and response
	The pricing is also impacted at the margin by the quality of execution by issuers, keeping investors well informed on company developments, covenants etc. As a result, the evidence shows the same rating does not necessarily lead to the same spread.
The report states that it has collected evidence on transaction costs and ongoing annual costs and shows the percentage breakdown of these costs. It states their estimate of debt transaction costs to be 7bps	NERA subsequently provided Ofgem with the evidence it has collected on transaction costs used for their estimate of 7bps. Ofgem assessed this evidence and would suggest that one outlier impacts the average and should be excluded to provide for an allowance of 6bps as more representative of a notional efficient operator's transaction costs.
The report goes on to look at the cost of maintaining liquidity facilities which it states is separate to the cost of carry because it is managing 'day to day cashflow operations'	Companies have facilities which will look to cover liquidity needs arising both from the business as well as financing rather than two separate 'pots' of liquidity. We believe characterising liquidity and cost of carry separately leads to double counting this requirement. NERA's report also only estimates the cost of carry using some broad assumptions that Ofgem believe may not be valid (i.e. that companies hold 12-24 months of liquidity as cash) and does not provide evidence of this. Ofgem examined network RFPR submissions and group company accounts for evidence of actual cash holdings of network companies and group companies. This evidence is discussed below.
It then challenges Ofgem's calculations of 3.5-4.5bp based on facilities sized for 10% of debt and commitment fees of 35-45bp. It recalculates this to 9bp, on the basis of upfront arrangement fees amortised over the life of the facility-5yr); assumes the facilities are 50% drawn and an additional drawn margin of 20bp	Firstly, NERA says it draws this upon company evidence but have not provided supporting data and instead use some broad assumptions. Our understanding is that these liquidity facilities tend to rollover quite frequently and tend to be part of a broader bank relationship and so upfront legal and arrangement fees, we would expect to be de minimis. We believe one should not include the utilisation fee because this is when the debt is drawn down and is covered by the cost of debt allowance in any event. If we exclude this, the level of drawing is no longer relevant. We have examined RFPR and BPDT data on the size of RCF facilities included in debt books. We found some networks with no RCFs in place at the network operating companies so we also gave some consideration to group company accounts information. On the basis of this information, we estimated a range for facilities size at 8.6%-12% of debt. Combined with commitment fees of 35-45bps, this provides a range of 3-5.5bps for this liquidity cost.
Cost of carry – the report states that licence requirements to meet sufficiency of resource requirements means having to have sufficient liquidity to meet obligations over 12 months. Rating agencies have a liquidity requirement and for 'adequate' liquidity	In considering liquidity, the rating agency will also take into account: cash and equivalents; FFO if positive; working capital movements if positive, and undrawn parts of committed credit facilities beyond next 12 months. Other softer factors such as standing in the debt markets, well-established relationships with banks and prudent risk management also are taken into account. Therefore, the requirement for sufficient

Point raised	Ofgem consideration and response
needs 1.2x sources:uses over next 12 months and for strong 1.5:1 sources:uses over next 12 months and at least 1.0 for months 13-24	liquidity to meet obligations over the following 12 months does not translate into a requirement to hold cash for 12 months ahead of upcoming maturities.
It then calculates the cost of carry from 16 to 45bp assuming pre-financing to be 1-2 years ahead with 15 or 20 year tenor, with carry cost calculated at iBoxx less LIBOR on cash deposits. Costs higher if a 10 year tenor is shown to be used if 10 year trailing average is to be used	We think that there is a danger the cost of carry and the commitment fee is double counting. We also note rating agency publications citing examples of networks pre-financing maturities only 6-9 months ahead, with no negative commentary[229]. We also note from S&P's "Liquidity Descriptors for Global Corporate Issuers" that included in sources of liquidity are "The undrawn, available portion of committed credit facilities maturing beyond the next 12 months". We therefore consider that assuming 12-24 months' cash is held and revolving credit facilities sized at 10% of the debt book is double counting and hugely overestimating this cost. In addition, we would expect efficient treasury teams to achieve a cost of carry for any cash of less than the full differential between LIBOR and the cost of debt, particularly as rating agencies include liquid investments in their sources of liquidity. Ofgem examined network RFPR and BPDT submissions and group company accounts for evidence of actual cash holdings of network companies and group companies. This evidence would suggest a range of 0.6-4.1% cash on balance sheet. 0.6% represents the median of network company data and 4.1% represents a mean of a combination of network company data and group company data on cash held on balance sheet (with 75% weighting given to network company opco data and 25% weighting given to group company data, recognising the greater relevance of network company opco data given many group companies also own more cashflow volatile businesses). Based on this range and an estimate of the differential between iBoxx and 3 month deposit rates, we estimate cost of carry to range from 1.5bps to 11bps on the cost of debt.
Evidence from the RPI ILD market shows that the illiquidity premium in the index-linked gilt to nominal gilt market increased to around 80bps in the financial crisis which may be reflective of a premium for an illiquid CPI(H) ILD market	The movement between the nominal and index-linked gilt market in the financial crisis do not seem relevant when all markets were dislocated then. Investors often buy index-linked corporate bonds to match specific liabilities and at a premium to gilts, therefore, it is the corporate bond spread differential that is more interesting to note. There are theoretical reasons why spreads on inflation –linked debt are traditionally considered to be higher than nominal debt: longer duration and less liquidity. However, one has to be careful not to overstate the

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[229] For example, Moody's comment that "Cadent issued £681 million of new private placements in March 2019, part of which refinanced the £400 million which had been due October 2019." in their overall assessment of Cadent's liquidity profile as "excellent", Cadent Gas Ltd Credit Opinion published 6th Sept 2019.

Point raised	Ofgem consideration and response
	secondary market liquidity of the nominal sterling corporate bond market. In addition, in the IL market with much of the issuance being done in privately placed format, the public data is thin and disputable. It is clear there are some patterns with A-rated issuers paying less or no premium vs BBB issuers (Cambridge University vs Orsted). There is also an impact when a relatively new issuer raises ILD finance compared to those frequent issuers/issuers from the same sectors where there is a concentration of names issue across both nominal and index linked markets (eg Mutual Energy (Gas to the West) vs National Grid). Investors' demand for ILD is much higher than supply and the absence of a CPI gilt market is less of an issue than one might expect as investors typically hold these bonds for long term and so illiquidity is less of an issue and the RPI to CPI differential is treated with calculation of an inflation wedge.
The evidence on RPI and CPI inflation swaps suggests a premium of 15bps for CPI (20bps for CPI vs 5bp for RPI swaps)	There is not easily available data on this but our advisors, CEPA, spoke to market participants who estimated that the premium for RPI swaps was smaller (1-2bp) and the premium over this for CPI swaps was low single digit basis point.
CPIH corporate ILD market is unlikely to develop absent a CPI(H) gilt market – Treasury has not set out any plans and with RPI gilts out to 2068, the fragmentation of the ILD market will increase illiquidity further	The corporate issuance and derivatives market is evolving despite no CPI gilt market because investors are able to assess the inflation wedge. However, when asking investors if an illiquidity premium gets charged on top of that, this is hard to discern in what is a very competitive market currently to get hold of IL product. In any case, we do not believe the move to CPIH-linked RAV and returns necessitates a strategy of issuing CPIH-linked debt. Managing potential mismatches between revenue and debt cost bases is something that the majority of corporates are exposed to and is generally absorbed by the equity buffer. We therefore believe that this is factored into total market returns (therefore the CAPM-implied cost of equity) and should not be separately remunerated.
We estimate it could take 20 years for the CPI gilt market to develop assuming no incremental issue of index linked gilts or buy back of RPI gilts and it could take 20 years for the CPI IL gilts to achieve liquidity observed in RPI IL gilt market (evidence to show it stabilised as measured by breakeven to outturn inflation spread (1981 to 1998)	The policy decision on how the index-linked market will transition from RPI is still outstanding. We do however note the publication of a joint HM Treasury and UK Statistics Authority consultation[230] on a proposal to reform the calculation of RPI to match exactly that used for CPIH and when this change should be implemented between 2025 and 2030. If this change were to be decided, it would mean there would be no basis at all between RPI and CPIH from the implementation date and there would be no need for a CPIH gilt market to develop independently of the RPI

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[230]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879860/RPI_Consultation_extension.pdf

Point raised	Ofgem consideration and response
	gilt market because all RPI gilts would effectively become CPIH gilts from the implementation date. In any event, the absence of a CPI gilt market but the emergence of CPI corporate issuance, suggests this is not as critical as one might first think due to the strong investor appetite for index-linked product and the relatively small supply.
We estimate a 12bps premium to issue new CPI ILD and to mitigate basis risk of remaining RPI ILD, based on a swap cost of 50bp (range 15bp to 80bp) and 25% of portfolio being index linked	It is for each company to decide on a risk management basis what to do about any basis risk on RPI to CPIH over the medium term. The impact of the inflation wedge means if liability is left in RPI format (rather than swapped to CPIH), this will improve cash flow metrics in the near term at the expense of leverage metrics in the medium term. In relation to the points made about the cost of any such risk mitigation, our advisors initial discussions with market participants would indicate that the premium of CPI swaps compared to RPI swaps indicates that this would be limited to 'low single digit basis points', which, when applied to 25% of the portfolio, may indicate 1-2bps. As we believe this is a decision for each company to make and not an obvious assumption for the notional company, we do not believe this should be remunerated in the cost of debt allowance.

Consultancy report 2:

Author	Prepared for	Report
KPMG	NGN	Review of NGN's RIIO-2 Business Plan Financeability[231]

Points Raised	Ofgem Consideration and response
KPMG undertook analysis which, for the notional structure, found that Ofgem's base case with zero outperformance is not financeable (achieving Baa2), as it does not meet a comfortable investment grade rating that is consistent with the cost of debt allowance (A/BBB average). They also note that the actual financing structure faces a financeability challenge under Ofgem's base case with expected outperformance, with most of the individual	We have conducted our own analysis on financeability metrics and we are comfortable that the price control package is financeable. It would not be unusual for stress test scenarios to result in 1-2 notch downgrades if they materialize but we are comfortable that there is sufficient headroom compared to the licence obligation for investment grade.

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[231] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A27-NGN-RIIO-2-Review-of-NGNs-RIIO-2-Business-Plan-Financeability.pdf

Points Raised	Ofgem Consideration and response
Ofgem-prescribed scenarios resulting in a one/two notch downgrade.	
KPMG raise the risk that Moody's might downgrade the qualitative score they award to the energy sectors regulatory framework, as a result of potentially lower allowed returns and the impact of 'increasing interest in reopening price controls.' As a result of this, NGN may be required to meet higher financial ratio thresholds than at present to obtain the same target 'comfortable' credit rating (Baa1/BBB+).	We understand that Moody's downgrade relating to the predictability and stability of the regulatory regime in the water sector was due to multiple factors. Our approach has remained consistent and there have not been measures to revisit or reopen previous price controls. We consider the qualitative assessment alongside the quantitative assessment.

Consultancy report 3:

Author	Prepared for	Report
Oxera	SHET	RIIO-T2 cost of debt and financeability assessment[232]

Points Raised	Ofgem Consideration and response
An 11-15yr trailing average would underfund SHET's actual expected debt costs by up £2m in high interest rate scenario.	We note from Oxera's analysis (table 2.3) that an 11-15 trailing average calibration would be expected to overfund SHET for expected debt costs in either base case or low interest rate environments by a larger degree (up to £18m). We do not consider it our role to ensure that individual actual network costs of debt are more than covered in every possible interest rate environment. As discussed in the Cost of Debt chapter we instead approach our calibration exercise by looking at average costs rather than individual networks costs.
SHET note that, in Oxera's analysis on their financeability, the form of Ofgem's quantitative credit ratios is economic, as opposed to accounting. SHET state that the latter is consistent with the credit rating agency methodologies and Ofgem's own financeability guidance. Oxera and SHET both focus on the accounting form during their analysis.	Given that credit rating methodologies allow some tolerance of weak ratios over the short-term there may be some justification for considering "economic" ratios as well as the specific definitions used by rating agencies. The "economic" ratios may inform the underlying strength of each metric or the direction of travel. Oxera's points seem to relate to Ofgem's SSMD analysis (which was by necessity high-level pre Business Plan submission), rather than what was included in the Business Plan financial

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[232] https://www.ssen-transmission.co.uk/media/3863/oxera-cost-of-debt-and-financeability-assessment-for-she-t-dec-2019.pdf

Points Raised	Ofgem Consideration and response
	model. The BPFM calculates ratios broadly consistently with ratings agencies.
Oxera view the CPIH transition as having a positive cash flow impact in RIIO-2. This is due to higher cash flows, as a result of a higher return allowance, relative to RPI indexation. Oxera however, view this transition to CPIH as only improving short-term revenues and resulting in long-term reductions in financeability metrics. Oxera note Ofgem should consider these implications.	The appropriate inflation measure has been considered primarily on the basis of its legitimacy and reflectivity of economy-wide inflation. A shift from RPI to CPIH was not proposed in order to support short-term credit ratios.

We agree that considering trends and implications for financeability in the longer term is a consideration, by definition a detailed financeability assessment can only be conducted for the upcoming price control due to, parameters beyond this not being known.

Our modelling indicates that current policy does not create future financeability issues after RIIO2. |
Oxera raise the point that Ofgem have presented no evidence regarding the availability of CPI-linked debt, or the equivalence of using CPIH swaps when swapping RPI-index linked debt. Oxera have therefore, tested a 'no index-linked debt' sensitivity, and do not feel that Ofgem's +/- 5% sensitivity to the 25% CPI-linked debt assumption is appropriate.	Given actual companies in the sector have embedded RPI linked debt we do not consider it obvious that the notional company should be assumed to have CPIH linked debt rather than RPI linked debt. However, for financeability purposes we suggested this assumption in the first instance as it would lead to more conservative financeability results. We do not consider it necessary for companies to switch RPI linked debt into CPIH debt just because RAV and allowances will be CPIH linked. In a normal corporate financing structure (as distinct from for example project financings that tend to have much higher gearing) the equity buffer can absorb any inflation mismatches, as it has done historically between majority notional debt and RPI RAV inflation. We therefore do not consider it necessary to present evidence regarding the availability of CPIH swaps.
Oxera feel that a reduction in the capitalisation rate, to improve the credit rating, is debatable because credit rating agencies could look through NPV-neutral adjustments (eg capitalisation rate or depreciation profile adjustments). This therefore, creates questions around the effectiveness of reducing the capitalisation rate in order to improve the assessments of rating agencies.	While Moody's and Fitch have been explicit that they do make adjustments for changes to capitalisation rates away from the natural rate, Standard and Poor's is more flexible. This approach can be appropriate where a financeability constraint arises because of cashflow timing issues.
SHET propose, in order to address financeability, levers such as: 3. Adjusting the required capitalisation rate, in order to achieve a credit metric result that is consistent with the upper end of Moody's Baa1 rating guidance range	It is not clear that Ofgem should target quantitative metrics consistent with the upper end of Moody's Baa1 rating. Strong qualitative factors and/or strong performance on other quantitative metrics (such as gearing) may allow for tolerance of slightly weaker

Points Raised	Ofgem Consideration and response
(Baa1/BBB+ is SHET's current and target credit rating); 4. Assuming a reduction from 60% to 55% in notional gearing; or 5. A reduction in both notional gearing and the capitalisation rate.	performance on some quantitative metrics. Short-term weakening of quantitative metrics may also be tolerable during a period of adjustment (eg to a lower cost of equity with significant quantities of expensive embedded debt).
Oxera argue that the levers proposed by Ofgem to improve credit ratios will be unsuccessful in materially easing financeability constraints.	We disagree. While different levers will have different pros and cons – which should be considered carefully against one another – the levers under consideration are all capable of easing financeability pressure.
To be financeable from a debt perspective, Oxera argue that zero dividends and equity raising would be required in RIIO2 for the actual company, using 0% index-linked debt and the actual capital structure. Ofgem's SSMD notional company assumption is 3% dividend yields and 25% index-linked debt. This will create issues for equity holders.	It is for shareholders to address any actual company financeability constraints due to their financing structure or costs differing from the notional company. We consider that it is appropriate that shareholders consider dividend restraint and/or equity issuance in times of cashflow weakness. This is a view previously expressed by the Competition Commission in 2014[233] that "if shareholders were able to withdraw large sums in periods with strong cash flow, it was reasonable they should also be willing to supply finance in periods of weaker cash flow".

Consultancy report 4:

Author	Prepared for	Report
NERA	SPT	November 2019 - Risk modelling for RIIO-T2[234]

Arguments raised	Ofgem comment
NERA has developed a risk model to assess risks around SPT's financeability over the RIIO-T2 period. NERA use Oracle's Crystal Ball Monte Carlo software to undertake simulations. This is then used to model key credit metrics to inform SPT's expected credit rating. However NERA's report does not present the results of this modelling, nor challenge Ofgem's assumptions.	Ofgem recognises its financeability duty and we use financial modelling to inform our assessment of companies' financeability. We would be keen to see the outputs of the modelling and would be happy to engage further once the outputs are presented and the implications clear.
NERA have identified key risk factors for SPT and set out probability distributions for each of	We agree that there are factors driving different outcomes once the regulatory determination

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[233] Competition Commission, 2014, Northern Ireland Electricity Limited price determination – A reference under Article 15 of the Electricity (Northern Ireland) Order 1992, paragraph 17.100
[234] https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_16_-_Risk_Modelling_Report.pdf

Arguments raised	Ofgem comment
these risk factors. The five key risk factors are costs, incentives, CPIH inflation, the RPI-CPIH wedge and the interest rate.	has been made. We agree that the five factors selected are of relevance and have taken these into account when assessing the financeability of licensees for RIIO-2.

Consultancy report 5:

Author	Prepared for	Report
NERA	GDNs	Cost of Debt at RIIO-2: A report for Gas distribution Networks

Points Raised	Ofgem Consideration and response
GDN sector expected to underperform in RIIO-2 is an 11-15yr trailing average is used.	NERA's analysis includes an assumption of 68bps additional costs of borrowing so their stated underperformance of 47bps (excluding derivatives) is mainly driven by this assumption. We respond to NERA's points on additional costs of borrowing in our commentary on Consultancy report 1 above. If this assumption were amended to the 17bps we propose for additional costs of borrowing then the GDN sector could be expected to slightly outperform (on a debt weighted basis, excluding derivatives). As discussed in the Cost of Debt Chapter, we propose calibrating the allowance for GD, GT and ET companies with reference to GD, GT and ET debt costs and we have checked overall expected debt costs compared to the allowance accordingly, rather than on a sector-by-sector basis.
Simple average of debt costs is more appropriate than debt weighted because debt weighted gives undue weight to large licensees and other revenue allowances use equal company weights (eg cost benchmarking)	We consider that using debt weighted better fits with our principle that consumers should pay no more than an efficient cost of debt. If we use actual company debt costs as a crosscheck but use a simple average, consumers could pay more than actual networks pay in debt costs.
It's reasonable to allow for derivatives costs as an integral part of company debt costs.	This point is discussed in chapter 2 and in response to the same point raised in Appendix 4.
The conceptually correct approach is to match trailing average to the average tenor at issuance, which is more than 15 years and on average ca 20 years in energy and other regulated sectors.	This point was also raised by a number of networks directly and our consideration and response is included in Appendix 4.

Appendix 3 – Equity: A summary of consultants' reports and our comments

Consultancy report 1:

Author	Prepared for	Report
Frontier	NG and SSE	January 2020 – Beta decomposition[235]

Point raised	Ofgem consideration and response
Frontier aim to decompose asset betas to separate out elements relating to pure-play regulated GB energy network activities for National Grid and SSE.	We welcome attempts to decompose betas to obtain a more accurate beta estimate for pure-play regulated GB energy network activities. This is especially the case given the absence of pure-play comparators in energy and across regulated sectors. We consider that decomposition analysis could be extended to cover Pennon, given its significant non-'GB regulated' business. We discuss the issue of beta decomposition in depth in Chapter 3.
Frontier's approach to estimating beta uses OLS regressions with daily data over 5yr and 10yr horizons.	This approach is consistent with the findings of Indepen in their report.[236] We note the variability of beta estimates with different specifications and our preference remains, as decided and explained in SSMD[237], to use longer term time series data where available. Doing so avoids reliance on temporary fluctuations and we therefore agree with Frontier's focus on a large sample.
Asset betas are estimated using the Harris-Pringle approach, with a debt beta of 0.10. Gearing is calculated using net debt and market capitalisation. Frontier tested the robustness of its analysis using a debt beta of 0.05, with similar findings.	We agree with Frontier that its decomposition findings do not seem to hinge on the definition of gearing or the debt beta assumption.
Direct Decomposition looks to use segmental operating income over the beta estimation period to separate pure play GB energy network activities.	Operational income is a backwards-looking measure, while the share price reflects future expectations. This creates an inconsistency. In addition, the value of the company reflects cash flows, both revenues and costs.

This highlights an inherent limitation to decomposition, although we consider this may |

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[235] https://www.nationalgrid.com/uk/electricity-transmission/document/132956/download
[236] https://www.ukrn.org.uk/wp-content/uploads/2019/01/final_beta_project_riio_2_report_december_17_2018_0.pdf
[237] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=52

Point raised	Ofgem consideration and response
	be the best method available. CEPA's approach looks to subtract the impact of one-off factors in setting weights between sectors.
Frontier use US comparators and unregulated comparators for establishing the asset beta for non-regulated activities. US comparators were initially selected for a high proportion of regulated activities or proximity to the geographical operations of National Grid's US business unit, with a shortlisting approach applying.	The choice of comparators is always subjective. As noted above, we are cautious about inferences from betas calculated against a different index in a different currency. Our preference remains to consider GB water companies in the first instance to consider if they provide the best available comparators for GB energy networks. However, the CEPA report shows that the most comparable and robust European comparators are consistent with our beta range.

We note the range of asset beta estimates using the 5yr specification in Frontier's analysis. US regulated companies range from 0.19 to 0.55. European regulated asset betas range from 0.27 to 0.73. Unregulated asset betas range from 0.22 to 0.70. This range is especially broad and we have sought to refine the analysis using the best available comparators. The CEPA report outlines a qualitative comparison with European comparators. CEPA's approach to selecting the sample appears more logical and relevant for the purposes of RIIO-2 |
| Under the full information beta estimation approach, Frontier replace GB water companies with European energy networks in the sample. | A larger sample size is naturally preferred to a smaller sample size; however, we must ensure that the comparators chosen are reflective of the risk faced by RIIO-2 networks. Our analysis indicates that GB water companies are likely to provide more valuable information for GB energy networks than European networks.

The CEPA report shows that a different sample, and in our view a more appropriate one, of European networks gives a materially different result from Frontier. |
| The full information beta estimation approach continues to use operating income to separate units. Betas are then estimated simultaneously. | CEPA has built on the beta estimation approach by Frontier, conducting qualitative and quantitative analysis on a more robust and defensible sample.

We consider that the assumptions and natural limitations risk incorrect implications being drawn from analysis under the full information beta approach. This is reflected in the sampling analysis presented in the CEPA paper. In our view, the sample companies chosen by CEPA is |

Point raised	Ofgem consideration and response
	more appropriate than those chosen by Frontier.
Frontier suggest that a simple average of five GB comparators leads to an underestimation of beta.	We are not persuaded that the decomposition approach conducted by Frontier implies that we have underestimated the asset beta. As shown in CEPA's analysis, the most appropriate European comparators tend to have similar or lower asset betas than the sample chosen by Frontier.

Consultancy report 2:

Author	Prepared for	Report
Frontier	NG and SSE	January 2020 – Review of Ofgem's RIIO2 beta estimation (de-gearing and re-gearing of betas)[238]

Arguments raised	Ofgem comment
Frontier criticise two adjustments made by Ofgem in estimating beta; namely an adjustment for the Market Asset Ratio (MAR) and an adjustment to incorporate the market value of debt ('Market Value Adjustment').	The purpose of de-gearing and re-gearing is to control for the effects of financial risk. We consider that the two adjustments noted have the potential to improve our assessment of beta around financial risk when applied appropriately. However, we also consider that our view on equity returns does not hinge on these two adjustments. We demonstrate in our updated analysis the results from Step 1 remain in line with or lower than the working assumptions published in SSMD.
Frontier criticise the MAR adjustment for multiple reasons, including i) finance theory suggesting market capitalisation should be used, ii) use in de-gearing not re-gearing, contrary to Indepen's recommendation, and iii) the approach necessitating an EV-based gearing measure used for notional gearing.	The Indepen report noted a potential issue around de-gearing and re-gearing being undertaken on a different basis. We agree with Frontier that using market values is preferable, and this is exactly why adjustments to gearing values should be considered necessary. Frontier do not appear to bring their thesis to a conclusion in terms of satisfying the twin aspirations of consistency and using market data.
Frontier criticise the Market Value Adjustment as inconsistent with finance theory and for	We agree with Frontier that consistency is desirable. We also consider that the overall

Arguments raised	Ofgem comment
creating an inconsistency between valuing equity and debt. The inconsistency relates to converting equity to a book value, while then converting debt to a market value.	impact of gearing is important. Frontier's work does not appear to provide a solution to these issues.
Frontier note issues in relation to calculating a suitable MAR ratio, with the winner's curse and limited number of comparators available.	We have reviewed CEPA's more detailed analysis on the MAR to ensure that the estimates and interpretations are as robust as possible. CEPA's work does not indicate a marked difference between private company MARs and public company MARs. The latter should not be impacted by the winner's curse issue to which Frontier refer. Similarly, we do not consider there is a limited sample when considering both private and public MARs, as shown in CEPA's analysis.
Frontier state that it is their presumption that Ofgem seeks to prevent positive MAR ratios in future. This creates no incentive for firms to deliver improvement in future, if returns are automatically removed.	There is no intention to mechanistically remove all outperformance automatically for all companies. The approach to estimating gearing seeks to ensure accurate accounting for financial risk. Incentives continue to exist and these can lead to financial returns and MAR premiums.
Frontier argue that the 50bps downwards adjustment to the cost of equity (the 'AR-ER wedge') when applied with this adjustment equates to double counting.	The adjustment to de-gearing looks to control for financial risk over the period betas were calculated for. The AR-ER adjustment is a forward-looking adjustment to ensure the level of return for investors is appropriate. We do not consider this double counting and our approach is not to make future MARs equal to 1.

Our updated analysis shows how the cost of equity and expected outperformance are each considered without double counting. |
| Frontier say that the approach is inappropriate as Ofgem would not make the adjustment for a MAR below 1 and the approach is asymmetric. | Our approach looks to set an accurate cost of capital for a notional company. This is based upon a long-term assessment, rather than an opportunistic adjustment for a one-off occurrence. We consider that it would be prudent to consider all relevant evidence for future decision-making and disagree with the assessment that the policy is asymmetric. If MAR values were below 1, particularly on a sustained basis, it would inform inferences in a similar way. |
| Frontier say that the source of any MAR premium cannot be ascribed to cash flows or the discount rate, therefore there is a risk the adjustment leads to less accurate estimates of both. | We consider that there is a range of evidence available on the cost of capital and from analyst reports on expected outperformance / underperformance, each of which implies future cash flows and/or discount rates.

 We consider that there should in fact be viable information content within observed MAR premiums. |

Consultancy report 3:

Author	Prepared for	Report
Frontier	NGN	September 2019 – Outperformance wedge[239]

Arguments raised	Ofgem comment
Frontier have estimated a range for outperformance for a notional GDN in RIIO-GD2. The approach considers RIIO-GD2 incentives and using historical performance and correlation data, estimate potential performance. Monte Carlo simulation analysis is then used. Frontier suggest there will be 27bps of underperformance in RIIO-GD2 for a notional GDN. Nine incentives are included for RIIO-GD2. This includes totex outperformance and a range of other incentives/ minimum obligations. Frontier does not include consumer vulnerability minimum standards, annual environment report compliance, additional uncertainty mechanisms nor Return Adjustment Mechanisms.	We consider it positive that Frontier have engaged on the topic and acknowledge that the allowed and expected return are not identical. We agree with the approach of making estimates of the AR-ER reflective of allowed and expected returns in RIIO-2. We have undertaken our own analysis to arrive at plausible estimates of the AR-ER wedge. Our analysis implies outperformance rather than underperformance; hence, we disagree with Frontier's findings. Our results differ from Frontier's because of different input assumptions. A key driver for the existence of the AR-ER wedge is the ability of a regulator to forecast overall outcomes and returns. We prefer to focus on a higher-level assessment of historical returns, adjusted for non-repeating factors in RIIO-2. The Frontier approach involves assumptions around distributions, correlations with other factors and Monte Carlo analysis, with most incentives ending up as relatively immaterial (i.e. <2bps). We present our own analysis in chapter 3.
Data from NGN has been used to adjust for RPE and repex volume driver adjustments for totex, shrinkage & leakage incentive and the RAV-to-totex ratio.	The Frontier report references the use of historical data in its assessment. We have not sought to model outcomes in the same way as Frontier, however, we have made sure to normalise historical data to ensure its suitability for RIIO-2.
The baseline assumption for totex is that there will be zero outperformance or underperformance. There are adjustments noted to apply for RPEs and for volume drivers; however it is not clear whether this feeds into the neutral result or applies after. A 32.5% incentive strength is applied.	We agree that it is correct to adjust for RIIO-2 factors, including the indexation of RPEs, a different incentive strength and the totex to RAV ratio. Our updated analysis does this (see Step 3 in Chapter 3 above).

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[239] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A31-NGN-RIIO-2-Outperformance-Wedge.pdf

Consultancy style report 4:

Author	Prepared for	Report
National Grid (NG)	NG	January 2020 – Total Market Return[240]

Arguments raised	Ofgem comment
The report supplements previous analysis from NERA, Frontier Economics and Oxera on the same topic. The report criticises the use of the Bank of England's Millennium dataset and a CPI index to deflate nominal returns.	We continue to believe it is appropriate to place weight on a direct CPI deflation measure for estimating a real TMR.

The main issue with NG's analysis is that it embeds RPI inflation into the ex-ante return, even though RPI is a discredited measure of inflation.

NG's work does not address inflation issues in the way that CMA approached the same issue in the NERL appeal. It is therefore unclear how NG's approach differs materially from CMA's. |
The CPI dataset is not considered sufficiently reliable or consistently estimated to be used to set a real TMR. An example of this is the period 1900-48, where National Grid argue inflation values are more like RPI.	NG's argument appears to hinge on there being a consistent and perfect single measure of inflation for more than 100 years. The absence of this does not invalidate using the best available measure for each period of history, as implied by NG.
NG argue that the time horizon used for historical equity returns is downwards biased, as both longer and shorter time series give higher returns.	We have consistently used the period back to 1900 when estimating TMR, using evidence from DMS. We consider that this represents a suitable time horizon, and have addressed in SSMD why a longer period may suffer from survivorship bias.[241] A shorter period would seem to be selective, unless there is a good reason to believe earlier data is unrepresentative.
National Grid say that a further source of downwards bias is reference to only the largest 100 companies in the period 1900-54.	We have based our assessment on available evidence and are not aware of any source of downward bias in the available data as argued by NG.

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[240] https://www.nationalgrid.com/uk/electricity-transmission/document/132971/download
[241] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=36

Consultancy report 5:

Author	Prepared for	Report
NERA	SPT	November 2019 – Cost of Capital for SPT[242]

Arguments raised	Ofgem comment
NERA use nominal yields on 20yr UK gilts, deflated using OBR forecasts of CPI inflation. This is adopted rather than using an index-linked gilt yield with an assumed RPI-CPI wedge.	The May 2019 SSMD expressed that we would re-consider the exact calibration of deriving real values including whether to adjust nominal or real gilts.[243] We consider that the difference between these methods should be, after adjusting for risk, relatively small. We propose to adjust real gilts and publish alongside these Draft Determinations an Excel model to demonstrate our preferred implementation approach.
NERA consider historical DMS evidence should be the primary source for estimating TMR. For estimating the TMR, NERA consider that long-term evidence from DMS should be used. The NERA approach uses different averaging methods (simple, overlapping, Blume and JKM) with holding periods from 1 to 20 years. NERA estimate a real CPIH TMR of 6.9% to 7.8%.	We note NERA's results tend to be higher than similar analysis conducted by the CMA in the NERL appeal.[244] It was not clear to us why NERA's results would differ from CMA in this apparently upward biased way. In any case, the approaches taken are not in line with the UKRN Study or SSMD. Given these issues are not persuaded to put weight on NERA's analysis.
NERA deflate historical nominal market returns using RPI inflation, with an adjustment for an historical RPI-CPI wedge.	NERA's approach appears to replace observed inflation with a subjective adjustment. We could not see a sound basis for this manipulation. Rather than rely on NERA's view, we prefer to rely on other sources of inflation data, such as the Bank of England or the Office for National Statistics. As set out in the May 2019 SSMD, we believe that outturn inflation data from the Bank of England on CPI inflation is reliable.[245] This is consistent with the approach adopted by the CMA in the NERL provisional findings.

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[242] https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_9_SPT_WACC_report.pdf
[243] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=28
[244] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=190
[245] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=34

Arguments raised	Ofgem comment
NERA estimate betas using 2yr and 5yr horizons, criticising Ofgem's use of a longer-term time series.	Following extensive research into beta estimation, including reports from Indepen and Dr Robertson, we consider that having reference to a long time series is appropriate for estimating beta. We note a material degree of noise, autocorrelation and volatility that appears in short-term estimates. We do not agree with NERA's apparent view that regulated utilities have markedly changing risk profiles.
NERA criticise Ofgem's adjustments to re-gearing and de-gearing for the EV to RAB, and for the market value of debt.	This is discussed above in relation to the Frontier report on de-gearing and re-gearing for beta. We note NERA's criticisms are in line with Frontier's. Our analysis for these draft determinations does not hinge on the gearing adjustments to which NERA or Frontier refer.
NERA decomposed the asset beta for National Grid into pure play GB regulated revenues and its US business, suggesting the GB business is higher risk than the composite asset beta.	This is discussed above in relation to the Frontier report on beta decomposition. We refer NERA to CEPA's analysis to consider why decomposition analysis produces volatile results. It is not clear that this analysis consistently indicates that the proposed asset beta range understates the risk of the GB business.
NERA refer to European networks as comparators to expand the comparator set.	We refer NERA to CEPA's benchmarking and decomposition of European networks. NERA's work appears dependent on the sample of European networks chosen.
NERA use a debt beta of 0.05, lower than Ofgem's assumptions in the May 2019 SSMD.	We are not persuaded that we should reduce our estimate of the debt beta. The UKRN has published research on the debt beta which supports our current view.[246] We note a low debt beta implies a larger boost to both the cost of equity, and the cost of capital, as gearing increases. We note that NERA's debt beta assumption does not align with Oxera's direct estimation value of 0.2 for National Grid's debt beta, as noted in the UKRN debt beta study.[247]

[246] https://www.ukrn.org.uk/publications/considerations-for-uk-regulators-setting-the-value-of-debt-beta/
[247] https://www.ukrn.org.uk/wp-content/uploads/2019/12/CEPAReport_UKRN_DebtBeta_Final.pdf#page=10

Arguments raised	Ofgem comment
NERA note that "in general, the regulatory regimes in energy and water are closely aligned." NERA suggest that SPT is materially higher risk than water networks given greater system operability risk and greater stranding risk.	We agree with NERA that regulatory regimes in water and energy are closely aligned. Given that the regulatory regimes can strongly influence risk exposure, NERA's view suggests that overall systematic risk is also similar. We continue to believe, as stated in SSMD, that NERA's relative risk analysis appears subjective and selective.[248] Unfortunately, NERA's updated work did not address in detail or resolve the concerns raised in SSMD. It is therefore difficult to assume that the stated risks are systematic, as necessary for CAPM inference, or whether they lead to higher risk overall relative to water networks. The qualitative and quantitative analysis we have conducted, and referenced above in chapter 3, suggests that pure-play energy networks hold similar risk as water networks.

Consultancy report 6:

Author	Prepared for	Report
Oxera	ENA	November 2019 – The cost of equity for RIIO-2[249]

Arguments raised	Ofgem comment
Oxera has provided an updated report, building on a February 2018 report with early estimates of the cost of equity for RIIO-2 (on behalf of the ENA). Oxera has sought to update its cost of equity range with updated additional evidence, reducing its original high end by 25bps and its original low end by 53bps.	We welcome updated analysis and the improved comparability with our approach and estimates. A further update on Oxera's work would likely lead to a further fall in its estimates given lower risk-free rates and notional gearing levels of 55%.
For TMR Oxera suggest a 7.0-7.5% CPIH real range, consistent with their February 2018 position. Oxera's analysis indicates the figure may be higher based on its Dividend Discount Model and its view on inflation. Oxera's work indicates a stability in the TMR.	We agree with Oxera regarding relative stability in the TMR, although our evidence base does not rely heavily on any DDM or DDG model, particularly given the different results that can be derived. A clear issue with Oxera's work is the very different estimation of outturn data, primarily due to inflation, for real returns. We

[248] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=135
[249] https://www.oxera.com/wp-content/uploads/2018/01/Cost-of-equity-for-RIIO-2-Q4-2019-update.pdf

Arguments raised	Ofgem comment
	are not believe that Oxera's 'adjusted RPI' historical returns are robust.
Oxera criticise the use of a CPI index to deflate nominal returns. Oxera deflate using an adjusted RPI series to reflect structural breaks. Oxera also criticise Ofgem's approach of starting with a geometric average and aiming up on this.	Oxera's work does not appear to address the inflation or TMR cross-check issues we highlight in SSMD[250] or the analytical approaches used by CMA in the NERL appeal.[251] We also repeat our views on inflation and averaging in chapter 3 above.
Updated evidence from surveys and DDMs suggest an increase in the TMR since the previous Oxera report.	We place limited weight on these measures given the subjectivity involved. Oxera's place significant weight on DDM without reconciling why its assumptions are better than those used in CEPA's DDM/DGM, as displayed at SSMC.[252]
Oxera update its range for the risk-free rate based on updated market evidence for 20-year gilts. Oxera note and appear to agree with our argument that nominal gilts contain a premium for inflation risk – a risk to which the energy networks are not exposed.	We agree that updated evidence should be used, where possible, for financial parameters. We agree with Oxera that 20-year gilts are a reasonable basis for estimation. However, Oxera do not appear to account for the inflation risk premium and therefore its range for the risk free rate appears upward biased. Oxera's approach mixes two forward curves into its range, one for real and one for nominal, into its estimate, which may not result in a pure estimate of real gilts.
For estimating beta, Oxera include GB and European energy companies but exclude GB water companies. The primary empirical analysis uses daily two- and five-year betas.	Oxera's work appears sensitive to its selected sample of European comparators. As shown by CEPA, including more comparators, or focusing on the most appropriate, indicates lower results than Oxera's analysis. We are not persuaded that shorter periods better estimate betas than using larger samples of history.
Oxera disagree with the use of Ofgem's EV/RAB adjustment of 1.1x for de-levering, the use of a market value of debt for de-levering only and the use of a 0.125 debt beta. A 0.05 debt beta is used and book values used for both steps. For debt values, Oxera suggest that: "The choice is between using market values or book values of debt in both steps of the calculation.	We note Oxera's arguments align with Frontier's and NERA's – we observe that Oxera do not propose a solution to the twin aspirations of using market data in a consistent way. Oxera's view on debt beta seems heavily dependent on only one method of estimation, an indirect method. Oxera's other work however shows that a direct estimation approach for National Grid indicates a statistically significant

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[250] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=31
[251] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=180
[252] https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=29

Arguments raised	Ofgem comment
Using book values for debt is the standard approach followed in regulatory price controls…"	debt beta of 0.2, as per it's March 2019 report: "If (again for July 2013 – June 2018) we simply regress returns on a portfolio of National Grid debt against the FTSE we obtain a coefficient of 0.20 (t = 2.48)".[253] Oxera's estimates, from zero to 0.2, span our proposed debt beta estimate of 0.125. It is not clear to us why Oxera prefer a lower debt beta estimate, given its own findings of higher values. We agree with Oxera that it is reasonable to use market values of debt in both de-gearing and re-gearing.
Oxera suggest using the top half of the asset beta range due to empirical studies on underestimation of required return for stocks with a beta less than 1, systematic risk factors not included in CAPM market betas (eg policy and regulatory risk) and empirical analysis of greater political and regulatory risk since 2018.	It is not clear to us why it would be appropriate to aim to the top half of a given range, unless we could clearly identify issues that are not captured within the range or that it was somehow biased.
The AR-ER wedge is inappropriate as consumers benefit in the longer term through efficiency gains and the correct approach is to remove any miscalibration through the mechanisms themselves.	We propose to set allowed returns to accurately reflect required returns in RIIO-2. A key part of this is that the informational asymmetry means that Ofgem is not aware where there is mis-calibration. It is not clear that consumers can ever benefit from information asymmetry, should this be an enduring feature of regulation.
Oxera has noted that the differential between the asset risk premium and the debt risk premium is low relative to the use of bonds and previous regulatory determination.	As the cost of equity has fallen since RIIO-1 was determined relative to previous determinations, it is not surprising that the asset risk differential has fallen. Oxera does not argue that this approach is inconsistent with economic theory.
Oxera propose setting a point estimate above the midpoint of the estimated range due to the risk of long-term underinvestment in networks.	We are not persuaded by Oxera's suggestion to aim up as and note that Oxera imply aiming up both within the asset beta and on the overall cost of equity.

Consultancy report 7:

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[253] See "ENA" folder and Oxera report "Oxera The Estimating of Beta and Gearing ENA Final 3.pdf", page 21 here: https://www.ofgem.gov.uk/system/files/docs/2019/05/responses_a_-_e.zip

Author	Prepared for	Report
Frontier	ENA	December 2019 – Aiming up and incentives to invest

Arguments raised	Ofgem comment
The required return on equity is highly uncertain; the CMA has highlighted the consequences of erring too high or too low.	We agree with Frontier that CMA has considered the merits of aiming up within a given cost of capital range when setting an allowed return.
The UKRN report supports aiming up, although errors in the model mean they have markedly underestimated the extent of optimal aiming up. The model is based on Dobbs (2011), which is a superior basis for estimation. Frontier argue that a number of other regulators have aimed up within the cost of equity/ cost of capital range; this reflects best practice. Frontier criticised the logic put forward by the CMA in their 2015 Bristol Water determination for not aiming up.	We note that Frontier's report confirms that its work was conducted in March 2019 even though the report is dated 2019. Frontier's work therefore relates to out of date assumptions including December 2018 (SSMC) rather than May 2019 (SSMD). This also means Frontier have not considered the rebuttal to these arguments as published in SSMD.[254] We also refer Frontier to CMA's provisional determinations in NERL appeal, dated March 2020. This shows CMA's view on aiming up appears to align with UKRN as it notes "given that the premium would apply to assets already in place as well as promoting new investments, it might only need to be small to be effective".[255] We note that before arriving at this view the CMA considered a report from Frontier as provided by ENA.[256]

Consultancy report 8:

Author	Prepared for	Report
HMK Advisory	Citizens Advice	February 2020 – RIIO-2 Cost of Capital[257]

[254] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=138

[255] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=211

[256] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=207

[257] https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Energy%20Consultation%20responses/RIIO-2%20Cost%20of%20Capital%20Final%20Report.pdf

Arguments raised	Ofgem comment
Consumers have overpaid historically, as returns have been overly high. HMK support the introduction of a wedge for expected outperformance, advising that ofgem should take this approach forward to prevent future excess returns.	We consider it appropriate to learn from previous price controls and this has informed our approach for RIIO-2. We note that HMK's view is supported by the NAO's (National Audit Office) report on RIIO-1.[258]
HMK suggest that incentivising investment is not necessary given favourable conditions, and provided an example of demand for a National Grid bond. HMK also highlight that most funding was from self-generated funds, with little new equity involved over 2007 to 2019.	In making these draft determinations for RIIO-2 we have sought to ensure that efficient licensees can finance their activities, taking into account the delivery of necessary investment. The proposed returns and supporting mechanisms balance investor and consumer interests.
The review of investment managers' forecasts now points to an average TMR of 4.2% CPIH real, compared to Ofgem's 5.5%. Ofgem should update this analysis.	We present updated analysis of these forecasts and display new results within Step 2 (see chapter 3). Our analysis also indicates a decrease although we caveat the interpretation of this within chapter 3.
The DDM evidence should include historical dividend growth as the basis for dividend growth, rather than GDP growth.	We agree that the use of historical dividend growth would lead to a lower figure than historical GDP growth. Networks have argued that historical GDP growth is an underestimate and analyst forecasts should be used. Given the subjectivity involved in DDM evidence we have placed limited weight on this analysis, although we agree with HMK's observation that using historical growth would lead to a lower inference.
OFTO values are a year out of date, since when rates have fallen.	We present updated analysis on OFTO IRRs and display new results within Step 2 (see chapter 3).
Infrastructure funds' discount rates need to apply a view around the beta used by the funds.	We present updated analysis on infrastructure funds and display new results within Step 2 (see chapter 3).
For equity beta, US comparators are relevant and have betas of 0.27, significantly below Ofgem's range.	We have considered US comparators in our beta decomposition analysis. However, we consider that the direct relevance of US comparators is limited due to two key factors. Firstly, the risks faced under the US regulatory regimes are materially different to the RIIO-2 price control. Secondly, the underlying index and firms included in the index differ (with annual equity returns differing).

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[258] https://www.nao.org.uk/press-release/electricity-networks/

Arguments raised	Ofgem comment
Ofgem should do further work on beta given the absence of a robust data set.	We have undertaken further work on beta in a number of areas, including beta decomposition, European comparators, relative risk, and GARCH. We have also provided updated analysis on equity, asset and debt betas. This beta work is referred to in step 1
The AR-ER wedge is underestimated as historic outperformance has been 2-3%; at least half of previous outperformance should be included in Ofgem's calculations.	We have conducted analysis on historic outperformance across sectors. We have applied normalisation to ensure that the size of the wedge is appropriate for RIIO-2.

Appendix 4 - Company points raised on debt

Debt Point Raised	Made by	Ofgem consideration and response
Trailing average should be based on weighted average life of debt in sector	SGN, NGET, NGGT, SPT	The weighted average quoted for GDNs is given as 17yrs and for energy industry generally 19yrs. We do agree that the weighted average life of network company debt is relevant to calibration of the index but we do not agree it is necessarily relevant to setting the trailing average period, but is instead relevant to selecting a benchmark index that is comprised of bonds with broadly similar tenors as network company debt. We would suggest that either a combination of the A/BBB non-financial 10yr+ indices or a Utilities 10yr+ index would represent a reasonable match in terms of tenor of the constituents. The assertion that the trailing average should match the weighted average life assumes no new debt since the start of any such trailing average period (and therefore by implication no RAV growth funded through debt). Therefore, even on this theoretical basis, once new debt is captured the theoretical optimal trailing average would be shorter than the embedded debt weighted average life. Another way to consider this question still on a mainly theoretical basis is to consider the amount of debt as a proportion of the overall sector debt book that is expected to be refinanced/financed in each year of RIIO-2 and infer a trailing average length from this based on the average percentage to be raised. However, these theoretical approaches would not capture any achieved outperformance from, for example: • EIB debt (which has typically been agreed at below commercial market rates) • Issuing a mix of short term and ultra long term debt (a so-called 'barbell issuance strategy'), which with the generally prevailing yield curve shape in the UK could be expected to provide a lower combined yield than issuing only 15-20yr debt • Issuing less in times of clear market disruption than the index would implicitly assume • Issuing some floating rate debt As one of the benefits of full indexation is the incentive properties for companies to raise the most cost effective finance, such that consumers could benefit from any contracted lower cost embedded finance in subsequent price controls, it would be perverse to not then consider actual embedded debt costs across the sectors when calibrating the index. Therefore, we believe it is appropriate and in line with Ofgem's duties for it to consider actual average debt costs when calibrating allowances for RIIO-2.
Setting trailing average too short would mean some efficiently issued embedded debt would fall	SGN, Cadent	We do not consider that when issuance was raised is as important as recognising its costs and arriving at a reasonable proxy for expected debt costs across the sectors. We have recognised the costs of any such embedded debt (whenever raised) by incorporating it into

Debt Point Raised	Made by	Ofgem consideration and response
out of the index trailing average		our cost of debt model at the rate it was raised at and incorporating it into the forecast of debt costs until any such instruments mature. The CMA have previously accepted[259] that a trailing average period may not reflect the actual timing of issuance but focused on whether the index calibration provided a reasonable proxy for the embedded debt costs of networks.
Small company/ infrequent issuer premium	SGN	SGN's argument is that an allowance based on index averages exposes networks to interest rate and credit risk and that this risk is higher the less frequently a network issues debt. They request a premium for this and base the quantification of this premium on swaption pricing. This is discussed in the Cost of Debt chapter.
Derivatives should be included in the assessment of sectors debt costs	NERA, NGN, Cadent	Given the lack of a homogenous approach to the use of derivatives from network companies, it does not seem clear to us that derivatives are a necessary feature of funding a notionally efficient operator. Instead, the use of derivatives appears to be a management and shareholder risk management choice. One exception is the use of cross currency swaps to return any foreign currency issuance to GBP, which appear to have been universally used where foreign currency debt has been issued. Given GB network companies have their revenues 100% in GBP, we would consider the use of cross currency swaps to return foreign currency liabilities to GBP liabilities to be necessary for a prudent operator. In considering sector debt costs, we have therefore considered the post-swap GBP equivalent costs of foreign currency issuance.
Derivatives should be excluded in the assessment of sectors debt costs	NGGT, NGET	National Grid suggest that derivatives should not be included in this assessment as they were taken out by companies in the expectation that the networks and their owners, rather than consumers, would be exposed to the risks and impacts of these. They also state that "there would appear to be little if any overall benefit to consumers if derivatives across all the energy network sectors were included".[260] We have not included derivatives (other than those used to convert non GBP issuance to GBP) in the calibration of the index and explain the rationale for this in the Cost of Debt chapter.
Similarities across four energy network sectors means cost of debt should be expected to be the same across sectors so same trailing average should be used. Some subsectors are too small and include atypical companies.	NGET, NGGT	We agree that calibrating allowances to sectors that include only a small number of companies may lead to those allowances being skewed by the financing decisions of a small number of companies and/or lead to pass through mechanisms in subsectors with only one company (eg GT), which we ruled out at SSMD stage due to not meeting our objectives for a cost of debt allowance. However, we do not have forecast totex or associated debt issuance forecasts for the ED sector, have not considered notional gearing for that sector and have also not been through as detailed a

[259] CMA (2015), "British Gas Limited Vs the Gas and Electricity Markets Authority – Final Determination'. Para 8.32

[260] Page 52, NGET A15.01_Finance Annex

Debt Point Raised	Made by	Ofgem consideration and response
		debt cost verification exercise for ED sector costs as they are not yet at Business Planning stage. If we were to accept NG's suggestion to include ED in the calibration cross check this would imply a debt allowance calibration for the ED sector, which we do not think is appropriate at this stage, particularly given we are not yet at a stage where we can have regard to ED financeability for RIIO-2. We consider the volume of debt within the GD&T sectors at over £23bn (excluding intercompany loans) to be sufficient to draw robust estimates of average debt costs and therefore what would represent a reasonable debt allowance for a notional efficient operator in GD&T sectors.
Deflating the nominal iBoxx by breakeven inflation would lead to under-recovery of nominal debt costs.	NGET, NGGT, SHET. SPT	NGET/NGGT propose the use of the 2% bank of England target to deflate the nominal iBoxx. Other alternatives proposed include using outturn or average outturn inflation. SHET characterise this point slightly differently as the additional costs of nominal borrowing and focus on this as a reason they believe a 15bps premium should be added to the debt allowance. NERA cover this in their report for SPT. We propose using the OBR long term forecast to deflate the iBoxx so the concern that the use of breakeven inflation would lead to under recovery of nominal debt costs will not apply. We cover our reasons for our proposal in the Cost of Debt chapter.
11-15yr would be minimum required to ensure sufficient funding of all in costs under a range of scenarios.	SHET	We have performed a detailed analysis of the sufficiency of different index calibrations under a range of scenarios. The results of this analysis are included in the Cost of Debt chapter.
A 10yr trailing average because it didn't also allow for additional costs of borrowing would have underfunded if a company issued 20yr debt.	SHET	We note SHET's estimate of 20yr tenor debt costing ~60bps more than 10yr debt is different to their consultant, Oxera's analysis which suggests this would be 30bps. We are proposing to provide networks with an additional allowance for additional costs of borrowing in RIIO-2.
Standard timeframe for prefunding is 6months but this could be extended to 12 months	SHET	We note the different view expressed by SHET than that assumed by NERA of 12-24months. The cost of carry chart provided in Figure 6[261] did not precisely state which indices were used for the assessment of cost of carry. However, we have conducted our own analysis on this and present the findings in the Cost of Debt chapter.
There is a premium associated with issuing nominal debt compared to inflation linked debt	SHET	SHET suggest that because the inflation implied in nominal corporate debt (through looking at breakeven inflation) is 15bps higher than realised inflation and because 75% of the debt assumed for the notional company is nominal that a 15bps additional cost should be added to the cost of debt allowance.

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[261] Page 19, SD18 T2BP- RPT- 0007 Financeability Annex

Debt Point Raised	Made by	Ofgem consideration and response
		We believe that as the allowance proposed for RIIO-2 is referencing a nominal iBoxx index and we are no longer proposing to deflate the nominal iBoxx by breakeven inflation (as we did in RIIO-1), that this point is not relevant for RIIO-2.
There is a premium associated with issuing inflation linked debt compared to nominal debt	SGN	We note this view is opposed to SHET's view that nominal debt attracts a premium. We consider that the potentially higher spread on corporate inflation linked debt could be considered to be offset by the potentially lower real yield on inflation linked government bonds that is referenced by SHET in looking at breakeven inflation compared to realised inflation. Therefore, in the round, inflation linked corporate debt could reasonably be considered to be economically similar to nominal corporate debt when all factors are considered.
There is a differential between issuing BBB rated debt and A rated debt and because the notional company target rating is BBB+ a 10bps premium should be added to the combined A/BBB iBoxx indices	SHET	We don't agree that a notional regulated network with a BBB+ rating would issue at spreads wider than the combined A/BBB iBoxx indices. Those indices have a broader range of corporates included in them that are subject to greater cyclical risk. Although corporate bond pricing is influenced by rating it is not the only factor. However, this concern raised by SHET and others prompted us to consider whether other indices that do not have particular rating category eligibility criteria might better match regulated utility bond issuance. We cover this in the Cost of Debt chapter.
The trailing average period selected may influence maturity choice for networks issuing new debt, incentivising shorter term issuance	SHET, SPT	The 10 year trailing average in RIIO-1 is argued to have incentivised shorter term issuance, which may not be the most efficient tenor. We are not in a position to judge the most efficient or appropriate tenor of debt and this is a matter for networks and their shareholders. However, we have selected an index which is comprised of bonds with a tenor broadly matching that of network issuance. We do not believe the trailing average period should influence the tenor of debt but is instead intended to capture a broad range of market conditions in which networks may have fixed the interest rate on their debt. If the tenor of network issuance over time does shorten we may need to consider selecting an index with shorter dated bonds in future price controls.
Taking reasonable positions on NERA's advice for the GDN sector would suggest an allowed rate for debt of 3.44% (CPIH Real)	WWU	WWU suggest the NERA estimated 85bps underperformance vs the 11-15yr trailing average and 68bps for additional borrowing costs should be added to the 11-15yr forecast to arrive at an assumed average debt allowance of 3.44%. However, the NERA report states that the modelling assumptions include "For trans., liquidity, cost-of-carry, new issue premium and CPI switching related costs, we assume 68 bps for both embedded and new debt, based on the mid-point estimate set out in our "Additional cost of borrowing" report for ENA".[262] Therefore, we believe their stated underperformance vs the 11-15yr already includes this assumed cost so adding both underperformance and

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[262] page 4 NERA Cost of debt at RIIO-2 A report for gas distribution networks

Debt Point Raised	Made by	Ofgem consideration and response
		these assumed costs to the allowance would double count these assumed costs. Further critique of the assumed costs is provided in response to NERA's report.
WWU debt was raised efficiently so should be compensated for by cost of debt allowance (advocating company specific allowance)	WWU	WWU have submitted two confidential reports by Oxera. As these are marked as confidential we will not respond here to detailed arguments made therein. However, we have considered them carefully and in response to WWU's general point that their debt has been raised efficiently so should be compensated by the debt allowance we would confirm that any mention by Ofgem of remunerating efficiently incurred debt costs relates to those costs in general across sectors and not to the individual debt costs of individual networks. We have set out in the SSMC and SMMD why we do not think company specific allowances based on individual actual company debt costs would provide the necessary incentive properties or protection for consumers. WWU's arguments are based around whether particular debt or derivative instruments were conducted at market rates at the time. This is a useful check that any instruments we take into account in our overall index calibration have been incurred at market rates in determining averages across sectors. However, allowing for a pass through for each individual network's debt costs subject to an efficiency check would expose each network's customers to that network's decisions on debt type, tenor, timing and risk management. We consider it more appropriate that a network company's shareholders are instead exposed to these risks, in common with corporates in the broader market.
Simple average rather than weighted average should be used for assessing sector average costs.	SPT	We consider and respond to this point in Appendix 2 as the point was also made by NERA in "Cost of Debt at RIIO-2: A report for Gas distribution Networks".

Appendix 5 - Company points raised on financeability

The following provides a summary of the main points raised by networks regarding financeability in their Business Plan submissions. This summary has been collated by Ofgem following a review of networks core Business Plans and finance/ financeability annexes. This summary may not be exhaustive but is intended to capture the main points raised and provide a response to these points.

Financeability Point Raised	Made by	Ofgem consideration and response
Concerns about the sustainability of equity capital flows due to Ofgem's proposed notional dividend yield being lowered to 3%. Their data on utility dividend yields and FTSE All Shares shows the dividend yield for most of the listed water and energy companies in the UK averaging, over the past decade, at 5%, higher than Ofgem's assumption. Equity investors expect superior dividend yield from utility stocks and would expect compensation in return for accepting a lower current yield.	Cadent, NGET, NGGT, SGN, NGN, SSE, SPT	Dividend yields should be consistent with the underlying cost of equity and investment needs of the business. It is not the role of the regulator to preserve historical dividend yields when evidence indicates a lower cost of equity than has previously been allowed. We consider a 3% dividend assumption is appropriate for the notional company with the remaining equity return coming through RAV growth. The 2009-19 average payout ratio (dividends/ earnings per share) for FTSE 100 stocks was 46.0% and for Stoxx Europe 600 was 44.2%. If we adjust the payout ratios of the GB listed energy stocks (SSE and NG) to 50.0% (dividend cover of 2.0x – slightly below market averages) we calculate dividend yields of approximately 3.0%. As investors are remunerated by both current dividend yield and future growth in assets a 3.0% assumption seems reasonable. We do not restrict dividends for actual companies so to the extent they exhibit lower growth or outperform compared to our notional company assumptions we consider it acceptable for companies to determine their own dividend policy, provided they are transparent and well justified.
Customers will be worse off in the long term under Ofgem's working assumptions, compared to increasing the cost of equity. There is a risk of underinvestment and intergenerational value transfers between generations of customers.	SHET	As discussed in the Cost of Equity chapter we believe it is in consumers best interests to set the equity allowance at the appropriate, market evidenced, level. Trade-offs between current period financeability, investment incentives and intergenerational value have been considered.

Financeability Point Raised	Made by	Ofgem consideration and response
An injection of equity would add pressure to credit metrics	SHET	It is unclear why an injection of equity should add pressure to the credit metrics. Our analysis indicates that lower gearing supports debt credit metrics.
Notional company financial metrics are under pressure and give limited headroom for downside scenarios. Stress test results indicate limited headroom because some metrics fall below indicative Baa1/BBB+ levels	SHET, SPT, Cadent	We are comfortable that the regulatory determination is financeable under the set of regulatory assumptions set out for RIIO2. We would expect some stress test results to indicate pressure on ratings in those scenarios. We do not consider it necessary for the notional company to maintain Baa1/BBB+ credit quality even under quite severe stress tests. A key reason for targeting a higher credit quality than the investment grade minimum licence requirement in the base case is that this would provide headroom above investment grade in the event of downside scenarios. We are comfortable with the headroom for downside scenarios for the notional efficient operator.
AICR (or PMICR) for the notional company falls below Moody's stated threshold levels.	SHET	While we consider the results of this credit metric in our in the round assessment we do not consider that falling below a particular level in one single metric should be an indicator of whether an entity is financeable or not. We are comfortable that the package proposed in this Draft Determination, including sector specific notional gearing assumptions, is financeable.
To ensure target credit rating of Baa1 and dividend yield of 3% a change in capitalisation rate and reduction in notional gearing would be required.	SHET	We have considered qualitative and quantitative metrics and have reduced our notional gearing assumption from a working assumption of 60% for ET companies to a proposed level of 55%. We are comfortable that the package proposed in this Draft Determination, including sector specific notional gearing assumptions, is financeable.
Sector specific notional gearing could be considered with reference to scale of investment in different sectors in order to allow for maintenance of appropriate credit metrics in RIIO-2.	SPT	We agree that scale of investment and other factors such as maintenance of broadly comparable credit quality are relevant, and they have been a consideration in setting sector specific notional gearing levels.
Switch to CPIH increases consumer bills. The switch should not be made to support short term credit metrics at	SHET, SPT, WWU, NG	The appropriate inflation measure has been considered primarily on the basis of its legitimacy and reflectivity of

Financeability Point Raised	Made by	Ofgem consideration and response
the expense of longer term financeability.		economy-wide inflation. A shift from RPI to CPI(H) was not proposed in order to support short-term credit ratios. In the long-term we would expect the inflation index to be NPV neutral, assuming that this is applied correctly.
Ofgem needs to ensure its parameters for RIIO-2 do not cause problems in future price controls if continued and check that financeability ratios do not deteriorate post-RIIO-2 due to switch to CPIH reducing RAV growth and return (or other factors).	SHET, SP, NG	We agree that considering trends and implications for financeability in the longer term is a consideration, however by definition a detailed financeability assessment can only be conducted for the upcoming price control due to, parameters beyond this not being known. We have considered financeability beyond the RIIO2 price control and do not consider that the current approach creates future issues.
Switch from RPI to CPIH was not made by Ofgem for OFTO Tender Round 6, partly due to the lack of liquid swap market and transparency. These same issues apply to RIIO-2, undermining the price control's stability and predictability.	SGN	What is appropriate for a single asset project financing with high gearing (such as an OFTO project) is not necessarily the same as what could be considered appropriate for a large scale corporate credit with significant equity headroom that is there to absorb potential mismatches in inflation measures (most corporates do not have 100% revenue/cost inflation matching).
Ofgem's assumption on proportion of index-linked debt is not plausible. Inflation linked debt, and particularly CPIH inflation linked debt is not widely available.	SHET	We have undertaken a detailed review of the debt portfolios of actual networks and our assumption on the proportion of index-linked debt is consistent with that. In addition we note Ofwat's assumption of 33% inflation linked debt in the water sector and see no reason why a notional network company would have reduced access to inflation linked issuance compared to a notional water company, given the similarities in RAV and allowance inflation.
Capitalisation rate adjustments may be a lever that can address short-term cashflows, in the longer term a difference between the notional capitalisation rate and actual capitalisation policy can result in an accounting discrepancy and/or will not improve assessments of credit quality.	SPT, NGN	We agree that long-term divergence between notional capitalisation rates and actual capitalisation policy is a potential drawback of addressing financeability issues through capitalisation rates. However, based on experience in the water sector, although Moodys and Fitch take a different approach from Standard and Poors, it may be that small adjustments can be

Financeability Point Raised	Made by	Ofgem consideration and response
		considered to improve credit metrics and credit quality.
Financeability issues are better addressed through an equity injection or a single alternative lever, for which there is regulatory precedent (rather than through capitalization adjustments).	SPT	We agree that companies should consider their dividend policy and equity injections to address financeability problems for the actual company.
Actual company financeability constraints should be factored into Ofgem's decisions on allowances.	WWU	Actual company financeability issues are not necessarily for Ofgem to address (although actual market data is considered by Ofgem in developing its model of the notional company). We note National Grid's opposing view that it is appropriate to "Assess financeability for a notionally efficient company with a capital structure consistent with that used to determine the weighted average cost of capital. This ensures companies and their shareholders bear the risk of their capital structure and financing, not customers"[263]. Through the Business Planning process and our own modelling we have an awareness of actual company potential financial performance but there are a number of ways a company and their shareholders could address these issues and it is not for Ofgem to predict (or direct) how they will do this. We believe it is reasonable (for example) to expect shareholders to be willing to supply finance in periods of weaker cash flow. We are consulting on adding to our checks and reporting on financial resilience as part of this Draft Determination.
Rating agencies have concerns regarding Ofgem's RIIO-2 approach, moving towards a less positive stance on the stability and predictability of regulation scoring in their methodology, which may negatively impact consumer interests in the long-term.	WWU, SGN	Rating agency reactions to Ofgem's RIIO-2 approach will be kept under review. We do not place full weight on the approach from any single agency, but consider a broader set of quantitative and qualitative measures used to assess credit quality for networks. We note the change in Moody's scoring of regulatory stability and predictability in the water sector in May 2018. While

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[263] [263] https://www.nationalgrid.com/uk/electricity-transmission/document/132196/download, page 62

Financeability Point Raised	Made by	Ofgem consideration and response
		we don't agree that a similar assessment would be warranted for energy networks we have run a stress test of Moody's rating methodology assuming a one notch lower score for this sub factor. We are satisfied that this does not change the methodology implied rating below Baa1.
Instead of looking at whether nominal returns are the same, Ofgem should consider whether the change from compensation for realised inflation to realised and expected inflation will be neutralised.	WWU	We disagree that there is a change in compensation that needs to be neutralised. The financeability metrics are considered in light of cashflows. The appropriate inflation measure has been considered primarily on the basis of its legitimacy and reflectivity of economy-wide inflation. The basis for compensation remains realised inflation – but a superior measure of realised inflation.
Bringing forward revenue from future price controls into RIIO-2, through accelerating RAV depreciation allowance or reducing capitalisation rates is not appropriate and/or is not good regulatory practice. There is not a case for consumers who pay bills beyond RIIO-2 to benefit, at the expense of RIIO-2 consumers paying higher bills.	WWU, NGET, NGGT	We have been conscious of the effects of intergenerational equity and the impact of financeability of future price controls. We are comfortable that the regulatory package is financeable and does not come at the expense of intergenerational equity issues or future financial distress. Accelerating depreciation or reducing capitalisation rates can be appropriate where a financeability constraint arises because of cashflow timing issues because both these measures would provide higher cashflow during the price control.
Increased regulatory, political and industry risks and elevated volatility compared to the wider market mean it is appropriate to target higher ratios and more headroom on credit metrics	SGN	We disagree with the premise that political, regulatory and industrial risks faced in RIIO-2 are materially different from RIIO-1. We are proposing both equity and debt allowance indexation which our analysis indicates reduces networks' exposure to macroeconomic shocks (which we believe is particularly important given the uncertainty surrounding the impact of Covid-19 on risk free and corporate borrowing rates). We assess the equity risk of our network companies via the beta factor

Financeability Point Raised	Made by	Ofgem consideration and response
		which measures systematic, non-diversifiable risk. As there are no pure play GB energy network companies which are quoted, we use a group of GB utility companies which includes the 3 water companies. SSE in particular has a large percentage of its assets deployed in unregulated businesses in thermal generation, renewables and supply (although the retail business has recently been sold to Ovo). If there is a long term movement in risk of the utility sector it would be captured by a change in the beta factor. We also note that there was a good deal of volatility of the sector following the announcement by the Opposition Party that it would renationalise the utilities. With the recent General Election in 2019 that risk has now subsided.
Assuming RPI linked debt for the notional company creates a mis-match between debt indexation and CPIH indexation of the RAV.	SGN	The Ofgem base case for financeability purposes assumes CPIH debt as this is more conservative for this analysis. However, we do not consider it obvious that the notional company should be assumed to have CPIH linked debt rather than RPI linked debt so we consider it appropriate to consider financial forecasts on both bases. We do not consider it necessary for companies to switch RPI linked debt into CPIH debt just because RAV and allowances will be CPIH linked. In a normal corporate financing structure (as distinct from for example project financings that tend to have much higher gearing) the equity buffer can absorb inflation mismatches, as it has done historically between majority notional debt and RPI RAV inflation. As noted by Oxera in its advice to Ofwat[264] in analyzing a switch of revenue and RAV inflation to CPI or CPIH "CPI is less volatile than RPI, and this reduces the volatility of a significant proportion of firm value. This result holds for a range of notional capital structures considered, including financing structures that include a substantial proportion of RPI-linked

[264] https://www.ofwat.gov.uk/wp-content/uploads/2016/04/Oxera_Indexation-of-future-price-controls-in-the-water-sector.pdf, page 61

Financeability Point Raised	Made by	Ofgem consideration and response
		debt. There is also no assumption that existing RPI-linked debt needs to be refinanced as a result of any change. Since there is no material change in the volatility of firm value, there is unlikely to be any change to the firm's ability to service existing RPI-linked liabilities—hence, there is no obvious rationale for refinancing these liabilities early".
Using capitalisation rate as a financeability lever is ineffective because it is not taken into account by ratings agencies	SGN, Cadent, NGN	We recognise that Moody's and Fitch have said that they seek to adjust back out 'speed of money' adjustments to capitalisation. However, S&P have indicated that they take a different view[265]. Ultimate investors and lenders may also see credit benefit in this measure. We remain of the view that if there is a cashflow issue that is expected to be short term due to a lagged effect of a change in rates environment that could be expected to feed into cost of debt more slowly than cost of equity, that measures that address this can be valid ways to improve credit quality. We note that NGET and NGGT has a somewhat opposing view that changes to capitalisation rates represent "The simplest to understand and arguably most economic lever to use". However, they did note that in their view use should be limited to marginal changes otherwise it would likely be disregarded by rating agencies. We have not though proposed any adjustment to natural capitalisation rates in our draft determinations.
Using depreciation as a financeability lever is ineffective because it is not taken into account by ratings agencies	SGN, Cadent, NGN	We recognise that Moody's and Fitch have said that they seek to adjust back out 'speed of money' adjustments to regulatory depreciation. However, S&P have indicated that they take a different view[266]. Ultimate investors and lenders may also see credit benefit in this measure. We remain of the view that if there is a cashflow issue that is expected to be short term due to a lagged effect of a change in rates environment that could be expected to

[265] "the regulator has adjusted its guidance on pay-as-you-go…. which supports cash flow generation in the near term and could protect credit metrics somewhat", https://www.spglobal.com/ratings/en/research/articles/191217-ofwat-s-final-determination-leaves-u-k-water-companies-credit-quality-under-duress-11289728, published 17th Dec 2020

[266] S&P's stated key metric for network companies is FFO/Net debt, which includes depreciation allowances.

Financeability Point Raised	Made by	Ofgem consideration and response
		feed into cost of debt more slowly than cost of equity, that measures that address this can be valid ways to improve credit quality. We have not though proposed any financeability related adjustments to regulatory depreciation in our draft determinations.
Other Financeability levers such as those proposed to be considered by Ofgem (eg natural de-gearing, equity injection, liability management,) will not be effective	SGN	We note from other Business Plan submissions (NGN for example[267]) that some of these mitigating measures (and others considered) were considered effective in addressing actual company financeability constraints.
Other possible financeability levers considered by networks (eg interest profiling, whole business securitisation structures) will either not be effective or will cause intergenerational issues.	SGN	We welcome consideration of other financeability levers or mitigating measures by networks and recognise that some measures are more effective than others, depending on the constraint identified. We remain of the view that equity injection and/or reduction of dividends are appropriate mitigating measures for networks who face actual company constraints due to capital structure and/or financing choices they have made.
FFO/net debt is a constraining factor when assessing notional company financeability in the GT sector.	NGGT	We are comfortable that the package proposed in these Draft Determinations for the GT sector is financeable and is not constrained by FFO/Net debt.
Equity injection to address financeability constraints will not be possible because the return offered is too low and/or the sector is riskier than the return being offered	NGGT, SPT, WWU	Allowed equity returns have been set at a level commensurate with the market based evidence. We are therefore of the view that the return is sufficient and that equity injection is therefore possible and a valid way to address potential financeability constraints.
Target ratings are only considered to have been met if the key ratios are above the middle of the rating agency stated thresholds for those rating categories.	NGET, NGGT	Our assessment has drawn on the approach of different rating agencies and metrics. Our assessment has considered both quantitative and qualitative metrics. We do not agree that for a company to be considered financeable or broadly of a certain credit quality that each individual credit metric for each rating agency needs to be above the mid point of the range for that rating category.
The T2 framework must enable financeability under all credible totex	NGET	We have considered both baseline totex and baseline plus illustrative uncertainty

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[267] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/NGN-RIIO-GD2-Business-Plan-2021-2026.pdf, page 191, table 7.8.

Financeability Point Raised	Made by	Ofgem consideration and response
scenarios. To do otherwise would risk constraining investment and risk delivery of the Net Zero targets		mechanism totex cases in our financeability assessment. Naturally Ofgem's view and NGET's view on what might represent a 'credible' totex scenario may differ. Given additional pressure on key credit metrics at higher illustrative UM totex levels, and significant uncertainty around eventual totex requirements, we propose reducing notional gearing, which helps to maintain stronger credit metrics.
Any outperformance assumption used to adjust the equity allowance downwards from the cost of equity cannot credibly be used in financeability assessment because the rating agencies will disregard it.	NGET, NGGT, Cadent	As set out in chapter 3 we consider there is considerable evidence that information asymmetry can lead to expected outperformance of 0.25%. We consider this evidence is robust and that it is therefore reasonable to assume that the notional company will earn this return. We are proposing an ex post adjustment mechanism to protect investors if expected outperformance does not materialise. This mechanism would make it an even more robust assumption that the notional company would earn this revenue and that it should therefore be included in financeability assessments.
The addition of potentially contestable projects (for example that are in future decided to be funded through competition proxy model) would have a negative impact on financeability and should be included in a RIIO-2 financeability assessment.	NGET	Any move of these projects to Competition proxy model would be assessed on a project by project basis in the period, including an assessment of the impact on notional financeability across NGET.
A 0.5% change in the inflation wedge would mean that AICR deteriorates significantly	NGET, NGGT	Other networks do not indicate this relationship for this stress test (either in submitted BPFMs or company own models). We do not agree with the way NGET/NGGT ran this scenario in their submitted model (which was what was then used to produce Figure A22.01.15 in NGGT's submitted finance annex for example). NG's model increases the assumed nominal cost of debt significantly in this scenario. This does not reflect the reality that the vast majority of nominal debt assumed in the notional company has already been contractually fixed and will not change with changes in either outturn inflation or inflation expectations. We consider the Ofgem developed BPFM better reflects this stress test.

Financeability Point Raised	Made by	Ofgem consideration and response
Notional gearing should be set at the average sector actual gearing level, otherwise it is not representative and/or notional gearing should not be reduced from one price control to the next.	SGN, NGN	We don't consider it necessary to match the average gearing level of networks in each sector for the notional company to be representative of a notional efficient operator. It is for the regulator to set a financeable and prudent notional structure and provide reasonable allowances. It would be reasonable for this to be based on other market benchmarks, not just actual networks gearing levels. Basing notional gearing solely on the past behaviour of networks would be passive and circular. We are proposing an equity issuance allowance to support the reduction in notional gearing so consider that our proposed allowances are reasonable.

Appendix 6 – Financial values for Gas Distribution networks

East	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	3255.0	3246.9	3235.3	3221.7	3200.8	16159.7	3231.9
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	3255.0	3246.9	3235.3	3221.7	3200.8	16159.7	3231.9
RAV additions (after disposals)	162.1	161.2	161.3	156.1	146.8	787.5	157.5
Depreciation	-170.2	-172.7	-174.9	-177.0	-178.8	-873.6	-174.7
Closing asset value	3246.9	3235.3	3221.7	3200.8	3168.8	16073.5	3214.7
Recalculated allowances							
Fast pot expenditure	112.4	109.6	112.3	106.0	107.7	547.9	109.6
Non-controllable opex	101.5	101.7	98.9	97.7	96.7	496.6	99.3
RAV depreciation	170.2	172.7	174.9	177.0	178.8	873.6	174.7
Return	88.3	85.5	83.2	81.3	79.5	417.8	83.6
Equity issuance cost	8.0	0.0	0.0	0.0	0.0	8.0	1.6
Additional income	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incentives and outperformance revenue	3.2	3.2	3.2	3.2	3.1	15.9	3.2
Other Revenue	2.0	2.0	2.0	2.0	2.0	9.8	2.0
Core DARTs	17.5	15.3	0.0	0.0	0.0	32.9	6.6
Tax allowance	32.1	30.4	30.7	31.1	31.7	156.1	31.2
Price Control Revenue							
Revenue excluding DRS	535.2	520.4	505.1	498.2	499.5	2558.4	511.7
Directly remunerated services	6.9	6.7	6.5	6.3	6.1	32.6	6.5
Total revenue	542.1	527.1	511.6	504.5	505.7	2591.0	518.2

London	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2361.9	2330.7	2332.8	2332.5	2324.8	11682.6	2336.5
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	2361.9	2330.7	2332.8	2332.5	2324.8	11682.6	2336.5
RAV additions (after disposals)	91.6	125.5	125.2	119.8	115.5	577.6	115.5
Depreciation	-122.7	-123.4	-125.5	-127.5	-129.1	-628.3	-125.7
Closing asset value	2330.7	2332.8	2332.5	2324.8	2311.2	11632.0	2326.4
Recalculated allowances							
Fast pot expenditure	97.8	94.3	93.6	90.5	88.9	465.0	93.0
Non-controllable opex	73.5	73.6	71.8	70.9	70.2	360.1	72.0
RAV depreciation	122.7	123.4	125.5	127.5	129.1	628.3	125.7
Return	63.8	61.5	60.1	58.9	57.9	302.1	60.4
Equity issuance cost	5.8	0.0	0.0	0.0	0.0	5.8	1.2
Additional income	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incentives and outperformance revenue	2.3	2.3	2.3	2.3	2.3	11.5	2.3
Other Revenue	1.5	1.5	1.5	1.5	1.5	7.3	1.5
Core DARTs	10.4	9.0	0.0	0.0	0.0	19.4	3.9
Tax allowance	22.6	21.0	21.3	21.7	22.2	108.8	21.8
Price Control Revenue							
Revenue excluding DRS	400.4	386.7	376.0	373.3	372.0	1908.4	381.7
Directly remunerated services	4.2	4.1	4.0	3.8	3.7	19.8	4.0
Total revenue	404.5	390.8	379.9	377.1	375.8	1928.2	385.6

North West	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2307.7	2332.3	2331.9	2329.0	2317.8	11618.6	2323.7
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	2307.7	2332.3	2331.9	2329.0	2317.8	11618.6	2323.7
RAV additions (after disposals)	145.4	123.4	122.9	116.4	109.9	618.0	123.6
Depreciation	-120.8	-123.8	-125.8	-127.6	-129.0	-627.1	-125.4
Closing asset value	2332.3	2331.9	2329.0	2317.8	2298.6	11609.5	2321.9
Recalculated allowances							
Fast pot expenditure	87.0	84.5	83.4	78.7	79.2	412.9	82.6
Non-controllable opex	93.0	93.3	90.2	88.8	87.5	452.9	90.6
RAV depreciation	120.8	123.8	125.8	127.6	129.0	627.1	125.4
Return	63.0	61.5	60.0	58.8	57.6	301.0	60.2
Equity issuance cost	5.7	0.0	0.0	0.0	0.0	5.7	1.1
Additional income	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0
Incentives and outperformance revenue	2.3	2.3	2.3	2.3	2.3	11.5	2.3
Other Revenue	2.0	2.0	2.0	2.0	2.0	9.8	2.0
Core DARTs	12.1	10.5	0.0	0.0	0.0	22.6	4.5
Tax allowance	23.4	22.3	22.5	22.8	23.2	114.2	22.8
Price Control Revenue							
Revenue excluding DRS	409.2	400.3	386.2	381.0	380.8	1957.5	391.5
Directly remunerated services	4.4	4.3	4.2	4.1	4.0	21.0	4.2
Total revenue	413.6	404.6	390.4	385.1	384.8	1978.5	395.7

West Midlands	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	1740.3	1749.9	1752.0	1756.6	1754.3	8753.1	1750.6
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	1740.3	1749.9	1752.0	1756.6	1754.3	8753.1	1750.6
RAV additions (after disposals)	100.7	95.1	99.1	93.9	92.5	481.3	96.3
Depreciation	-91.1	-93.0	-94.6	-96.2	-97.5	-472.4	-94.5
Closing asset value	1749.9	1752.0	1756.6	1754.3	1749.3	8762.1	1752.4
Recalculated allowances							
Fast pot expenditure	68.6	68.2	66.7	64.8	63.7	331.9	66.4
Non-controllable opex	61.9	62.0	60.3	59.5	58.7	302.5	60.5
RAV depreciation	91.1	93.0	94.6	96.2	97.5	472.4	94.5
Return	47.4	46.2	45.2	44.4	43.7	226.9	45.4
Equity issuance cost	4.3	0.0	0.0	0.0	0.0	4.3	0.9
Additional income	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incentives and outperformance revenue	1.7	1.7	1.7	1.7	1.7	8.6	1.7
Other Revenue	1.1	1.1	1.1	1.1	1.1	5.7	1.1
Core DARTs	8.8	7.7	0.0	0.0	0.0	16.5	3.3
Tax allowance	18.0	17.1	17.2	17.4	17.6	87.3	17.5
Price Control Revenue							
Revenue excluding DRS	302.9	297.0	286.8	285.2	284.1	1456.1	291.2
Directly remunerated services	3.9	3.8	3.7	3.6	3.5	18.5	3.7
Total revenue	306.9	300.8	290.5	288.8	287.7	1474.6	294.9

Northern	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2232.5	2245.0	2262.4	2277.3	2284.5	11301.6	2260.3
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	2232.5	2245.0	2262.4	2277.3	2284.5	11301.6	2260.3
RAV additions (after disposals)	128.4	135.7	136.0	130.7	125.6	656.5	131.3
Depreciation	-115.9	-118.4	-121.0	-123.6	-125.8	-604.7	-120.9
Closing asset value	2245.0	2262.4	2277.3	2284.5	2284.4	11353.5	2270.7
Recalculated allowances							
Fast pot expenditure	94.9	93.4	93.0	91.5	91.4	464.2	92.8
Non-controllable opex	95.9	95.8	93.6	92.1	90.1	467.4	93.5
RAV depreciation	115.9	118.4	121.0	123.6	125.8	604.7	120.9
Return	60.8	59.4	58.5	57.7	57.0	293.5	58.7
Equity issuance cost	5.5	0.0	0.0	0.0	0.0	5.5	1.1
Additional income	1.6	0.0	0.0	0.0	0.0	1.6	0.3
Incentives and outperformance revenue	2.2	2.2	2.2	2.3	2.3	11.2	2.2
Other Revenue	2.3	2.3	2.3	2.3	2.3	11.5	2.3
Core DARTs	4.2	4.2	4.2	4.2	4.2	21.0	4.2
Tax allowance	20.0	18.7	19.1	19.5	19.9	97.1	19.4
Price Control Revenue							
Revenue excluding DRS	403.3	394.4	393.9	393.1	392.9	1977.6	395.5
Directly remunerated services	0.7	0.7	0.7	0.7	0.7	3.6	0.7
Total revenue	404.0	395.2	394.6	393.8	393.6	1981.2	396.2

Scotland	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	1741.5	1750.3	1767.9	1789.0	1796.9	8845.6	1769.1
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	1741.5	1750.3	1767.9	1789.0	1796.9	8845.6	1769.1
RAV additions (after disposals)	100.6	111.4	117.0	106.3	97.7	533.0	106.6
Depreciation	-91.8	-93.7	-96.0	-98.3	-100.2	-480.0	-96.0
Closing asset value	1750.3	1767.9	1789.0	1796.9	1794.5	8898.6	1779.7
Recalculated allowances							
Fast pot expenditure	69.3	71.1	66.4	64.9	67.6	339.3	67.9
Non-controllable opex	49.0	48.9	48.1	48.0	47.9	241.8	48.4
RAV depreciation	91.8	93.7	96.0	98.3	100.2	480.0	96.0
Return	47.4	46.4	45.8	45.4	44.8	229.8	46.0
Equity issuance cost	4.3	0.0	0.0	0.0	0.0	4.3	0.9
Additional income	-0.4	0.0	0.0	0.0	0.0	-0.4	-0.1
Incentives and outperformance revenue	1.7	1.7	1.8	1.8	1.8	8.8	1.8
Other Revenue	2.2	2.2	2.2	2.2	2.2	11.1	2.2
Core DARTs	4.1	2.8	2.8	1.5	0.0	11.3	2.3
Tax allowance	16.9	16.0	15.2	15.6	15.9	79.5	15.9
Price Control Revenue							
Revenue excluding DRS	286.3	283.0	278.2	277.6	280.3	1405.4	281.1
Directly remunerated services	12.1	11.8	11.4	11.1	10.8	57.2	11.4
Total revenue	298.4	294.7	289.7	288.7	291.1	1462.6	292.5

Southern	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	3898.4	3913.7	3927.9	3930.3	3939.2	19609.4	3921.9
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	3898.4	3913.7	3927.9	3930.3	3939.2	19609.4	3921.9
RAV additions (after disposals)	219.0	221.9	214.1	223.9	224.7	1103.6	220.7
Depreciation	-203.7	-207.7	-211.7	-215.0	-218.6	-1056.8	-211.4
Closing asset value	3913.7	3927.9	3930.3	3939.2	3945.2	19656.2	3931.2
Recalculated allowances							
Fast pot expenditure	120.2	122.4	123.1	121.6	123.0	610.3	122.1
Non-controllable opex	161.2	161.3	159.3	159.0	158.7	799.4	159.9
RAV depreciation	203.7	207.7	211.7	215.0	218.6	1056.8	211.4
Return	106.1	103.4	101.2	99.6	98.4	508.7	101.7
Equity issuance cost	9.6	0.0	0.0	0.0	0.0	9.6	1.9
Additional income	-0.7	0.0	0.0	0.0	0.0	-0.7	-0.1
Incentives and outperformance revenue	3.9	3.9	3.9	3.9	3.9	19.4	3.9
Other Revenue	3.8	3.8	3.8	3.8	3.8	18.9	3.8
Core DARTs	6.2	4.2	4.2	2.3	0.0	16.9	3.4
Tax allowance	38.4	36.6	37.2	37.8	38.3	188.2	37.6
Price Control Revenue							
Revenue excluding DRS	652.3	643.2	644.4	642.9	644.7	3227.5	645.5
Directly remunerated services	9.3	8.8	8.2	7.6	7.0	40.8	8.2
Total revenue	661.6	652.0	652.6	650.5	651.6	3268.3	653.7

Wales & West	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2221.8	2219.1	2220.9	2210.4	2200.9	11073.0	2214.6
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	2221.8	2219.1	2220.9	2210.4	2200.9	11073.0	2214.6
RAV additions (after disposals)	114.0	120.3	110.0	112.4	114.1	570.6	114.1
Depreciation	-116.7	-118.5	-120.4	-121.8	-123.2	-600.7	-120.1
Closing asset value	2219.1	2220.9	2210.4	2200.9	2191.7	11042.9	2208.6
Recalculated allowances							
Fast pot expenditure	93.3	91.7	91.0	89.7	89.6	455.3	91.1
Non-controllable opex	92.9	95.4	96.5	97.6	100.3	482.7	96.5
RAV depreciation	116.7	118.5	120.4	121.8	123.2	600.7	120.1
Return	60.3	58.6	57.1	55.8	54.8	286.6	57.3
Equity issuance cost	5.5	0.0	0.0	0.0	0.0	5.5	1.1
Additional income	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incentives and outperformance revenue	2.2	2.2	2.2	2.2	2.2	10.9	2.2
Other Revenue	2.7	2.7	2.7	2.7	2.7	13.3	2.7
Core DARTs	7.0	7.0	7.0	7.0	7.0	35.2	7.0
Tax allowance	20.8	19.8	20.4	20.8	21.1	103.0	20.6
Price Control Revenue							
Revenue excluding DRS	401.4	395.8	397.3	397.6	400.9	1993.1	398.6
Directly remunerated services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total revenue	401.4	395.8	397.3	397.6	400.9	1993.1	398.6

Table 44: GD, baseline allowed returns, and forecast RoRE upside/downside

			Cadent	NGN	SGN	WWU
Baseline	A	Baseline allowed return on equity	3.95%	3.95%	3.95%	3.95%
	B	Baseline allowed return on debt	1.74%	1.74%	1.74%	1.74%
	C	Notional gearing	60%	60%	60%	60%
	D = C*B +(1-C)*A	Baseline allowed return on capital	2.63%	2.63%	2.63%	2.63%
Upside	E	Business Plan incentive	0.00%	0.04%	0.00%	0.00%
	F	Totex	1.10%	1.25%	1.15%	1.17%
	G	Common ODIs	0.41%	0.44%	0.41%	0.45%
	H	Bespoke ODIs	0.00%	0.00%	0.00%	0.00%
	I = A+E+F+G+H	RoRE upside	5.46%	5.67%	5.51%	5.57%
Downside	J	Business Plan incentive	0.00%	0.00%	0.01%	0.00%
	K	Totex	1.10%	1.25%	1.15%	1.17%
	L	Common ODIs	0.82%	0.87%	0.81%	0.90%
	M	Bespoke ODIs	0.00%	0.00%	0.00%	0.00%
	N=A-J-K-L-M	RoRE downside	2.03%	1.83%	1.98%	1.88%

Source: Ofgem analysis

Appendix 7 – Financial values for Transmission networks and SOs

NGET	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	14,340.4	13,695.1	13,585.3	13,339.6	13,099.7	-	13,612.0
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	14,340.4	13,695.1	13,585.3	13,339.6	13,099.7	-	13,612.0
RAV additions (after disposals)	230.0	743.8	599.5	593.5	567.0	2,733.9	546.8
Depreciation	(875.2)	(853.6)	(845.3)	(833.4)	(815.0)	(4,222.6)	(844.5)
Closing asset value	13,695.1	13,585.3	13,339.6	13,099.7	12,851.6	-	13,314.3
Recalculated allowances							
Fast pot expenditure	246.3	212.4	203.0	198.1	201.8	1,061.6	212.3
Non-controllable opex	155.4	155.4	155.4	155.4	155.4	777.1	155.4
RAV depreciation	875.2	853.6	845.3	833.4	815.0	4,222.6	844.5
Return	381.0	359.9	346.8	334.5	323.9	1,746.1	349.2
Equity issuance cost	35.2	-	-	-	-	35.2	7.0
Additional income	(64.9)	-	-	-	-	(64.9)	(13.0)
Incentives and outperformance revenue	13.8	13.4	13.3	13.0	12.8	66.4	13.3
Other Revenue	9.9	9.9	9.9	9.9	9.9	49.3	9.9
Core DARTs	(130.8)	(132.5)	(131.5)	(127.7)	(126.9)	(649.3)	(129.9)
Tax allowance	128.9	114.5	115.1	115.0	113.2	586.7	117.3
Price Control Revenue							
Revenue excluding DRS	1,650.0	1,586.7	1,557.2	1,531.7	1,505.1	7,830.8	1,566.2
Directly remunerated services	173.4	172.2	171.2	167.4	166.6	851.0	170.2
Total revenue	1,823.5	1,758.9	1,728.5	1,699.1	1,671.8	8,681.8	1,736.4

SHET	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	3012.4	3628.0	3811.8	3865.8	3891.4	0.0	3641.9
Transfers	492.4	0.0	0.0	0.0	0.0	492.4	98.5
Opening asset value (after transfers)	3504.8	3628.0	3811.8	3865.8	3891.4	0.0	3740.4
RAV additions (after disposals)	320.4	389.6	269.4	247.2	163.9	1390.5	278.1
Depreciation	-197.2	-205.8	-215.5	-221.5	-222.3	-1062.3	-212.5
Closing asset value	3628.0	3811.8	3865.8	3891.4	3833.0	0.0	3806.0
Recalculated allowances							
Fast pot expenditure	67.5	63.3	56.8	56.5	59.7	303.8	60.8
Non-controllable opex	47.8	52.4	57.5	60.5	62.8	281.0	56.2
RAV depreciation	197.2	205.8	215.5	221.5	222.3	1062.3	212.5
Return	92.8	94.5	95.2	95.1	94.1	471.7	94.3
Equity issuance cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Additional income	-32.4	0.0	0.0	0.0	0.0	-32.4	-6.5
Incentives and outperformance revenue	3.5	3.7	3.8	3.8	3.8	18.6	3.7
Other Revenue	1.6	1.6	1.6	1.6	1.6	8.0	1.6
Core DARTs	-21.4	-22.3	-22.3	-22.3	-22.3	-110.7	-22.1
Tax allowance	12.8	11.7	13.3	14.6	16.2	68.6	13.7
Price Control Revenue							
Revenue excluding DRS	369.5	410.5	421.3	431.4	438.2	2071.0	414.2
Directly remunerated services	22.3	22.3	22.3	22.3	22.3	111.6	22.3
Total revenue	391.8	432.8	443.6	453.7	460.5	2182.5	436.5

SPT	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2471.6	2534.5	2685.8	2697.5	2663.5	0.0	2610.6
Transfers	35.0	105.2	0.0	0.0	0.0	140.1	28.0
Opening asset value (after transfers)	2506.5	2639.7	2685.8	2697.5	2663.5	0.0	2638.6
RAV additions (after disposals)	194.4	222.6	190.5	140.7	100.0	848.2	169.6
Depreciation	-166.4	-176.6	-178.8	-174.7	-152.0	-848.4	-169.7
Closing asset value	2534.5	2685.8	2697.5	2663.5	2611.5	0.0	2638.6
Recalculated allowances							
Fast pot expenditure	33.4	32.4	32.3	32.1	32.4	162.6	32.5
Non-controllable opex	34.2	34.9	34.7	34.5	37.0	175.3	35.1
RAV depreciation	166.4	176.6	178.8	174.7	152.0	848.4	169.7
Return	68.5	70.2	69.3	67.8	65.8	341.7	68.3
Equity issuance cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Additional income	-13.5	0.0	0.0	0.0	0.0	-13.5	-2.7
Incentives and outperformance revenue	2.5	2.6	2.7	2.6	2.6	13.0	2.6
Other Revenue	2.0	2.0	2.0	2.0	2.0	10.0	2.0
Core DARTs	-6.2	-7.0	-7.4	-8.9	-10.6	-40.1	-8.0
Tax allowance	17.0	17.5	17.9	17.5	13.4	83.3	16.7
Price Control Revenue							
Revenue excluding DRS	304.2	329.2	330.2	322.5	294.5	1580.7	316.1
Directly remunerated services	10.2	10.4	10.7	10.9	10.6	52.8	10.6
Total revenue	332.7	339.6	341.0	333.3	305.1	1651.7	330.3

NGESO	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	206.8	277.3	312.2	345.0	364.1	1505.4	301.1
Transfers	19.0	0.0	0.0	0.0	0.0	19.0	3.8
Opening asset value (after transfers)	225.8	277.3	312.2	345.0	364.1	1524.4	304.9
RAV additions (after disposals)	102.1	94.1	99.2	93.0	84.6	472.9	94.6
Depreciation	-50.6	-59.2	-66.4	-73.9	-79.9	-329.9	-66.0
Closing asset value	277.3	312.2	345.0	364.1	368.8	1667.4	333.5
Recalculated allowances							
Fast pot expenditure	138.8	141.5	129.1	131.1	131.0	671.5	134.3
Non-controllable opex	0.8	0.8	0.8	0.8	0.8	3.8	0.8
RAV depreciation	50.6	59.2	66.4	73.9	79.9	329.9	66.0
Return	5.7	6.7	7.6	8.4	8.7	37.1	7.4
Equity issuance cost	0.6	1.0	0.0	1.1	0.0	2.7	0.5
Additional income	1.3	1.3	1.3	1.3	1.3	6.5	1.3
Incentives and outperformance revenue	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Revenue	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Core DARTs	15.1	17.0	12.5	12.5	12.5	69.6	13.9
Tax allowance	1.1	1.7	0.4	1.8	2.8	7.8	1.6
Price Control Revenue							
Revenue excluding DRS	213.9	229.1	218.1	230.8	237.0	1128.8	225.8
Directly remunerated services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total revenue	213.9	229.1	218.1	230.8	237.0	1128.8	225.8

NGGT TO	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	5969.0	5850.4	5765.0	5710.7	5647.6	0.0	5788.6
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	5969.0	5850.4	5765.0	5710.7	5647.6	0.0	5788.6
RAV additions (after disposals)	180.3	214.6	248.3	243.2	244.4	1130.7	226.1
Depreciation	-298.9	-300.0	-302.5	-306.3	-309.5	-1517.3	-303.5
Closing asset value	5850.4	5765.0	5710.7	5647.6	5582.5	0.0	5711.3
Recalculated allowances							
Fast pot expenditure	108.9	115.5	104.6	103.0	100.1	532.0	106.4
Non-controllable opex	153.8	153.7	154.1	154.4	154.8	770.8	154.2
RAV depreciation	298.9	300.0	302.5	306.3	309.5	1517.3	303.5
Return	160.6	153.2	147.8	143.7	140.2	745.5	149.1
Equity issuance cost	7.5	0.0	0.0	0.0	0.0	7.5	1.5
Additional income	-21.1	0.0	0.0	0.0	0.0	-21.1	-4.2
Incentives and outperformance revenue	5.8	5.7	5.7	5.6	5.5	28.4	5.7
Other Revenue	24.0	24.0	24.0	24.0	24.0	120.0	24.0
Core DARTs	54.2	33.7	33.7	33.7	33.7	189.1	37.8
Tax allowance	54.5	47.5	47.5	48.0	48.6	246.1	49.2
Price Control Revenue							
Revenue excluding DRS	847.0	833.4	820.0	818.7	816.5	4135.6	827.1
Directly remunerated services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total revenue	847.0	833.4	820.0	818.7	816.5	4135.6	827.1

NGGT SO	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	152.7	148.8	146.0	154.6	154.5	0.0	151.3
Transfers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opening asset value (after transfers)	152.7	148.8	146.0	154.6	154.5	0.0	151.3
RAV additions (after disposals)	34.1	34.8	45.5	37.9	23.9	176.2	35.2
Depreciation	-38.1	-37.6	-36.9	-38.0	-38.4	-188.9	-37.8
Closing asset value	148.8	146.0	154.6	154.5	140.0	0.0	148.8
Recalculated allowances							
Fast pot expenditure	69.3	66.6	66.3	65.7	65.7	333.6	66.7
Non-controllable opex	0.2	0.2	0.2	0.2	0.2	1.0	0.2
RAV depreciation	38.1	37.6	36.9	38.0	38.4	188.9	37.8
Return	4.1	3.9	3.9	3.9	3.7	19.4	3.9
Equity issuance cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Additional income	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incentives and outperformance revenue	0.1	0.1	0.1	0.2	0.1	0.7	0.1
Other Revenue	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Core DARTs	1.6	1.8	1.8	1.8	1.8	9.0	1.8
Tax allowance	2.2	2.0	1.3	1.4	2.0	8.9	1.8
Price Control Revenue							
Revenue excluding DRS	115.7	112.2	110.5	111.3	111.9	561.6	112.3
Directly remunerated services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total revenue	115.7	112.2	110.5	111.3	111.9	561.6	112.3

Table 45: ET, GT and ESO, baseline allowed returns, and forecast RoRE upside/downside

			SHET	SPTL	NGET	NGGT	ESO
Baseline	A	Baseline allowed return on equity	3.70%	3.70%	3.70%	3.95%	5.28%
	B	Baseline allowed return on debt	1.47%	1.74%	1.74%	1.74%	-0.05%
	C	Notional gearing	55%	55%	55%	60%	55%
	D = C*B +(1-C)*A	Baseline allowed return on capital	2.47%	2.63%	2.63%	2.63%	2.35%
Upside	E	Business Plan incentive	0.00%	0.00%	0.00%	0.00%	0.00%
	F	Totex	0.62%	0.67%	0.50%	0.68%	0.00%
	G	Common ODIs	0.21%	0.27%	0.17%	0.51%	0.00%
	H	Bespoke ODIs	0.00%	0.00%	0.07%	0.11%	10.57%
	I = A+E+F+G+H	RoRE upside	4.53%	4.64%	4.44%	5.25%	15.85%
Downside	J	Business Plan incentive	0.39%	0.23%	0.22%	0.18%	0.00%
	K	Totex	0.62%	0.67%	0.50%	0.68%	0.00%
	L	Common ODIs	0.97%	1.05%	1.07%	0.62%	0.00%
	M	Bespoke ODIs	0.00%	0.00%	0.07%	0.11%	4.23%
	N=A-J-K-L-M	RoRE downside	1.72%	1.75%	1.86%	2.36%	1.05%

Source: Ofgem analysis

Appendix 8 – Consultation questions

Allowed return on debt questions

FQ1.   Do you agree with our approach to estimating efficient debt costs and setting allowances for debt costs?

FQ2.   Do you agree with our proposal to use the iBoxx GBP Utilities 10yr+ index rather than a combination of iBoxx GBP A and BBB 10yr + non-financial indices?

FQ3.   Do you agree with our proposal that the RAV growth profile of SHET continues to be materially different to other networks and therefore warrants continuation of a bespoke RAV weighted allowance calculation?

FQ4.   Do you have any views on the model to implement equity indexation, as published alongside this document, (the "WACC allowance model.xlsx") or on the annual update process?

Equity beta questions

FQ5.   In light of RIIO-2 Draft Determinations and Ofwat's final determinations for PR19, do you believe that energy networks will hold similar systematic risk during RIIO-2 to water networks during PR19?

FQ6.   Is there evidence of a material difference in systematic risk between:

a)   RIIO-1 and RIIO-2,

b)   distribution and transmission networks,

c)   gas transmission and electricity transmission,

d)   gas and electricity?

Step-2 implied cost of equity consultation questions

FQ7.   Do you have any views on how we should consider further the gearing impact on beta and cost of capital estimates?

FQ8.   Do you agree with our interpretation of cross-checks?

Step-3 allowed return on equity consultation questions

FQ9.   What is your view on the overall in-the-round assessment of allowed returns to equity? Is our judgement of 3.95% at 60% notional gearing reflective of the combined analysis through Steps 1, 2, and 3?

FQ10.   What is your view on the expected outperformance estimate of 0.25% at 60% notional gearing? Do you recommend alternative analysis techniques or do you have suggested improvements to the analytical files published alongside this consultation?

a)   "AR-ER database.xlsx"

b) "Residual outperformance.xlsx"

c) "Simple MAR application model.xlsx"

FQ11. What is your view on an ex-post adjustment for baseline equity returns? Is there an alternative mechanism or implementation approach that you think could better meet our stated objectives? Do you have specific views on averaging, pooling or suggested simplifications?

Financeability questions

FQ12. Do you agree with our approach to assessing financeability?

FQ13. Do you agree with our approach to determining notional gearing for each notional company?

FQ14. Do you have any evidence that would suggest we should consider adjusting our notional company financing assumptions due to the impact of COVID-19?

Corporation tax questions

FQ15. Do you agree with our proposal to pursue Option A?

FQ16. Do you agree with our proposals to roll forward capital allowance balances and to make allocation and allowance rates Variable Values in the RIIO-2 PCFM?

FQ17. Do you agree with the proposed additional protections? In particular:

a) do you have any views on a materiality threshold for the tax reconciliation? Do you think that the "deadband" used in RIIO-1 is an appropriate threshold to use?

b) Do you have any views on our proposals to retain the Tax Trigger and Tax Clawback mechanisms from RIIO-1?

c) Do you have any views on the proposed process for the Tax Review?

d) Do you have any views on the proposed board assurance statement?

Return adjustment mechanism questions

FQ18. Do you agree with our proposal to introduce a symmetrical RAMs mechanism as described above?

FQ19. Do you agree with our proposal to introduce a single threshold level of 300 basis points either side of the baseline allowed return on equity?

FQ20. Do you have any other comments on our proposals for RAMs in RIIO-2?

FQ21. Do you agree with our proposal to implement CPIH inflation?

FQ22. Do you agree with our proposals, including the policy alignment for GT and GD, and to recover backlog depreciation for GT RAV additions (2002 to 2021) over 20 years from the start of RIIO-2?

FQ23.   Do you agree with our proposed assumptions for capitalisation rates?

FQ24.   For one or more of the aggregations of totex we display in Table 40, should we update rates ex-post to reflect reported outturn proportions for capex and opex?

RAV opening balance questions

FQ25.   Do you agree with our proposal to use the closing RIIO-1 RAV balances as opening balances for RIIO-2?

FQ26.   Do you agree with our proposal to use estimated opening RIIO-2 balances until we have finalised the closing RIIO-1 RAV balances?

RIIO-1 close-out questions

FQ27.   Do you agree with the three categories of adjustments outlined below?

FQ28.   Do you agree with our approach in using estimated values for closeout adjustments until we are able to close out the RIIO-1 price controls?

Disposal of assets questions

FQ29.   Do you agree that proceeds from the disposal of assets during RIIO-2 should be netted-off against totex from the year in which the proceeds occur?

FQ30.   Do you agree that we should carry out a review where an asset is transferred to a holding company and then subsequently sold to a third party?

Time value of money questions

FQ31.   Do you agree with our proposal to apply one interest rate to revisions to PCFM inputs and charging errors, based on a short-term cost of debt?

FQ32.   Do you agree with the margin-based approach, and the methodology used to calculate a margin of 110bps?

FQ33.   Do you have any reason why the marginal cost of capital for revisions to PCFM inputs and charging errors should remain distinct from each other, or why WACC may remain a more appropriate time value of money for a particular subset of prior year adjustmens?

Revenue forecasting questions

FQ34.   Do you agree with our proposal to include forecasts for most PCFM variable values for the purposes of the AIP?

FQ35.   Considering re-openers as set out in these Draft Determinations, do you agree with our proposal to exclude them from any forecasting? If not, please submit specific examples or analysis of the potential materiality of actual spend versus initial allowances.

FQ36.   Do you agree that additional reporting on executive pay/remuneration and dividend policies will help to improve the legitimacy and transparency of a company's performance under the price control?

Base Revenue definition and ODI cap/collar questions

FQ37.   Do you agree with the proposed definition of Base Revenue?

FQ38.   Do you agree with the proposal to fix the values used for ODI caps and collars at final determinations?