BEFORE THE COMPETITION AND MARKETS AUTHORITY

IN THE MATTER OF AN APPEAL UNDER SECTION 11C OF THE ELECTRICITY ACT 1989 AND SECTION 23B OF THE GAS ACT 1986

B E T W E E N :

NATIONAL GRID ELECTRICITY TRANSMISSION PLC

NATIONAL GRID GAS PLC

Appellants

and

GAS AND ELECTRICITY MARKETS AUTHORITY

Respondent

SUBMISSION ON PR19 FINAL REPORT
ENERGY LICENCE MODIFICATION
RIIO-2

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SECTION 1: INTRODUCTION AND SUMMARY

A. Introduction

1.1 This submission is made by National Grid Electricity Transmission plc (**NGET**) and National Grid Gas plc (**NGG**) (together the **Appellants**) in support of the appeals brought by the Appellants against GEMA's RIIO-T2 Decision made on 3 February 2021 (the **Appeals**).[1]

1.2 On 9 April 2021, the CMA published its Final Report in the PR19 Redetermination (**PR19 FR**).[2] The purpose of this submission is to clarify and update the evidence submitted by the Appellants on 3 March 2021 in their Notices of Appeal and supporting documentation (the **March Appeal Documents**) insofar as the March Appeal Documents refer to and rely on the CMA's PR19 PFs and the Aiming Up Working Paper or the cost of capital working paper, published on 8 January 2021 (together the **PR19 Working Papers**) so as to take into account the CMA's findings in the PR19 FR.[3]

1.3 In accordance with the CMA's directions,[4] and consistent with the overriding objective, the Appellants' submission is focused on those aspects of the CMA's PR19 FR that introduce new evidence which is materially relevant to the Appeals.[5]

1.4 The Appellants make no additional submissions on points arising in the PR19 PFs or the PR19 Working Papers which are referred to in the March Appeal Documents but where the CMA's position on these points in the PR19 FR remains unchanged. However, for completeness and to assist the CMA when considering these issues, the Appellants have provided a table which reconciles the relevant paragraph references from the PR19 PFs and the PR19 Working Papers with the corresponding references in the PR19 FR in the Annex.

1.5 The Appellants' submission is supported by an Expert Witness Statement of Mike Huggins, Director, Frontier Economics, dated 23 April 2021 (**MH2**) and the exhibit, "Frontier comment on PR19" prepared for National Grid, dated 23 April 2021 (the **Frontier PR19 Report**).

B. Summary

1.6 The CMA's approach in the PR19 FR provides strong support for the Appellants' submission that GEMA erred in setting the COE for RIIO-2 and in introducing the outperformance wedge.

1.7 GEMA's COE error is illustrated by incorporating the common market parameters determined in the PR19 FR into GEMA's COE estimate. RFR and TMR are market parameters that should be common to the energy and water sectors. Moreover, the drivers for aiming up within the COE range apply at least equally, and in some cases to a greater extent, in the energy sector than in the water sector.

1.8 Importantly, the beta used to determine the COE for RIIO-2 must reflect the higher systematic risks associated with the energy sector compared to water. GEMA's proposed beta in the FD takes this at least partially into account and is higher than the water beta determined by the CMA in PR19 FR, although nonetheless too low.

1.9 Using the PR19 FR figures for RFR, TMR and aiming up, combined with GEMA's beta estimate for energy networks produces a COE of 5.1%. Although simplistic, this application of the PR19 FR confirms a clear and material error with GEMA's COE of 4.55%.

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1 The CMA granted permission to hear the Appeals on 31 March 2021 subject to the Appeals being heard together.

2 CMA, Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations, Final report, 17 March 2021 (**PR19 FR**) [**MH2/2.1**].

3 Where appropriate, the Appellants have adopted the same defined terms in this submission as were used in the March Appeal Documents.

4 Letter from the CMA to all parties dated 15 April 2021.

5 Where the Appellants do not comment on points arising in the PR19 FR this should not be taken as an endorsement of those points.

1.10 Once further adjustments are made to correct methodological errors in GEMA's beta determination a COE of 5.3% is derived, providing strong support for the Appellants' submission that GEMA erred in setting the COE for RIIO-2 and that a materially higher COE is appropriate.

1.11 As set out in the March Appeal Documents, and taking into account the further factors set out in this submission, the Appellants consider that a COE of no less than 5.6% is justified for RIIO-2.

1.12 With regards to the outperformance wedge, clearly the CMA was not able to consider the merits of GEMA's outperformance wedge in the context of the PR19 Redetermination. However, the CMA did set out some important principles that are relevant to the assessment of this mechanism in the present appeals. In particular, the CMA confirmed its decision to remove the gearing outperformance sharing mechanism (**GOSM**) on the basis that there were other more targeted mechanisms that could be used and that Ofwat's proposed approach was a significant departure from regulatory precedent. The Appellants consider that similar objections apply to GEMA's outperformance wedge.

1.13 Moreover, analogies can be drawn with the CMA's findings in the PR19 FR that it is wrong to assume that companies will outperform simply based on historic outperformance, and that overall balance of risk across the price control package of incentives should be taken into account when setting the allowed return,[6] which further supports the Appellants' submissions on the outperformance wedge.

6 PR19 FR, paragraphs 9.1278, 9.1337 **[MH2/2.1]**.

SECTION 2: COST OF EQUITY

A. CAPM Selectivity error

2.1 The Appellants' submissions on the CAPM Selectivity error are set out in section 3, part B of their respective Notices of Appeal as well as in sections D to G of DP1 and sections 3 to 5 of the Frontier Cost of Equity Report (MH1/1).

2.2 The PR19 FR demonstrates material errors in GEMA's approach to determining the COE for RIIO-2. It strongly supports the Appellants' submissions that GEMA's approach to determining RFR, beta and TMR was wrong.

2.3 Of these three CAPM parameters, RFR and TMR are market parameters that are common across different sectors. The CMA noted in the PR19 FR that "*the approach to setting the RFR should be based on similar considerations for different sectors*".[7] Similarly, GEMA acknowledged that "*Given the TMR is not sector specific, the CMA's provisional findings [in the NERL redetermination] are a relevant consideration for our RIIO-2 price control proposals*."[8]

2.4 As such, the CMA's determination of RFR and TMR in the PR19 FR is highly relevant, particularly in respect of aspects of the CMA's methodology that had been widely consulted upon in the PR19 PFs and PR19 Working Papers. On both of these common market parameters the CMA concluded that a much higher range and point estimate was appropriate than that determined by GEMA as a result of the selective methodology GEMA applied.

2.5 The third CAPM parameter, beta, is market specific. It must take account of the energy companies' exposure to systematic risks relative to the broader market.

2.6 Whilst the Appellants' position remains that GEMA's own determined beta range is too low,[9] GEMA's proposed beta in the FD is, as expected, higher than the water beta determined by the CMA in PR19 FR. Even if GEMA's beta range is combined with the CMA's determined ranges for TMR and RFR, the resulting COE range is significantly higher than the COE determined by GEMA in the FD. This very clear difference in COE ranges demonstrates that GEMA's overall COE in the FD is too low.

<u>Risk-free Rate</u>

2.7 The CMA's approach to determining the RFR is unchanged from the PR19 PFs. As such, it supports the Appellants' submissions regarding the errors in GEMA's approach to determining the RFR and is completely aligned with the approach advanced by the Appellants in the March Appeal Documents.[10]

2.8 In the March Appeal Documents, the Appellants noted that GEMA's approach of relying solely on ILGs to estimate the RFR was flawed and resulted in a COE that was too low.[11] This view is supported in the PR19 FR, which stated:[12]

> *These considerations suggest that a CAPM based on the ILG rate alone may understate the return required by investors on equities…*

2.9 GEMA's downward-biased approach to determining the RFR is also evident when it is compared to the CMA's determined RFR range. GEMA's RFR in the FD is towards the bottom of the range

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7 PR19 FR, paragraph 9.51 **[MH2/2.1]**.
8 DD, Finance Annex, paragraph 3.21 **[NOA1/9]**.
9 NGET Notice of Appeal, paragraphs 3.88 to 3.124; and NGG Notice of Appeal, paragraphs 3.88 to 3.124.
10 NGET Notice of Appeal, paragraphs 3.14 to 3.87; NGG Notice of Appeal, paragraphs 3.14 to 3.124; DP1, section E.
11 NGET Notice of Appeal, paragraphs 3.33 to 3.47; NGG Notice of Appeal, paragraphs 3.33 to 3.47; NGET, DP1, paragraphs 74 to 91; NGG, DP1, paragraphs 70 to 87.
12 PR19 FR, paragraph 9.106 **[MH2/2.1]**.

in the PR19 FR.[13] However, once differences in date ranges and GEMA's presentational inclusion of a forward rate adjustment (which the CMA considered "*not to be appropriate*" in the PR19 FR)[14] are taken into account, GEMA's point estimate is effectively at the bottom of the CMA's range.[15]

2.10 The CMA noted that the bottom of its range would be likely to underestimate the RFR, saying that "*the 'true' rate of RFR in the market is likely to be above this level*".[16]

2.11 In their Notices of Appeal, the Appellants noted that GEMA's estimation of the RFR was wrong because:[17]

(a) it failed to take account of the shortcomings of ILGs as a proxy for the RFR;

(b) it was wrong not to take account of AAA-rated corporate bonds as a proxy for the RFR;

(c) the nominal gilt cross-check is not robust and has been misapplied;

(d) it used SONIA swap rates that are not a suitable cross-check for the RFR; and

(e) the problems with GEMA's proxy cannot be corrected by RFR indexation.

2.12 The PR19 FR supports the Appellants' submissions that GEMA erred in relation to each of the above points.

2.13 First, GEMA relied solely on ILGs to determine the RFR. The CMA noted that this would be likely to underestimate the RFR:[18]

> *On balance, the CMA has accepted arguments and evidence that the ILG rate available to the government is unlikely to be a perfect proxy for the RFR, and that the 'true' rate of RFR in the market is likely to be above this level*.

2.14 Second, the CMA has specifically rejected one of the arguments used by GEMA to justify not using AAA corporate bonds yields. The CMA rejected GEMA's disputing of the relevance of the Brennan CAPM model, noting that:[19]

> *… we consider it unlikely that the yield on ILGs is a perfect representation of a theoretical RFR (or the average market participant rate in the Brennan approach). We consider that, on balance, it is likely that the RFR appropriate for a range of relevant investors sits above the return available from ILGs, but below the level suggested by the return on AAA bonds.*

2.15 Third, the CMA rejected the use of deflated nominal bonds, stating:[20]

> *… we do not believe that the inclusion of deflated nominal bonds is likely to materially improve our estimate of the RFR.*

2.16 Fourth, the CMA rejected the use of SONIA swap rates as a cross-check, noting:[21]

> *…it is not sufficiently clear that SONIA swaps rates are a suitable input into or cross check for our long-term RFR estimate.*

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13 PR19 FR, Table 9-2 **[MH2/2.1]**.
14 PR19 FR, paragraph 9.234 **[MH2/2.1]**.
15 FD Finance Annex, Table 11, page 49 sets out: spot RFR (-1.74%) + forward curve (+0.16%) = -1.58%. GEMA proposes that the RIIO-2 RFR will be updated annually **[NOA1/12]**.
16 PR19 FR, paragraph 9.158 **[MH2/2.1]**.
17 NGET Notice of Appeal, paragraphs 3.14 to 3.87; and NGG Notice of Appeal, paragraphs 3.14 to 3.87.
18 PR19 FR, paragraph 9.158 **[MH2/2.1]**.
19 PR19 FR, paragraph 9.264 **[MH2/2.1]**.
20 PR19 FR, paragraph 9.185 **[MH2/2.1]**.
21 PR19 FR, paragraph 9.197 **[MH2/2.1]**.

2.17 Fifth, while neither Ofwat nor the CMA proposed indexation of the RFR for the PR19 Redetermination, its findings are relevant to GEMA's construction of the indexed basis for RIIO-2. The PR19 FR supports the Appellants' submissions that determining the RFR based on a single month average risks distortion due to short term volatility. The CMA noted:[22]

> *… in our view this is potentially still too short to reasonably mitigate the risk of short-term market fluctuations. We consider that a 6-month period would provide a suitable balance of ensuring the use of up-to-date data while avoiding the issues of short-term mark volatility.*

Beta

2.18 The CMA has clarified its approach to determining its beta range in the PR19 FR, but its methodology appears to be essentially identical to the approach it adopted in the PR19 PFs. The CMA's approach supports the Appellants' submissions in the March Appeal Documents regarding the errors in GEMA's approach to selection of comparators when determining the beta.[23]

2.19 As set out in the Frontier PR19 Report, the main issue for the CMA to consider in respect of beta will be the choice of peer group for comparing beta.[24] The risks associated with the energy sector are greater than those in the water sector.[25] Even though GEMA determined a higher beta for energy than the CMA concluded for water in PR19, GEMA's methodology and choice of comparators is flawed. Notably, the PR19 FR provides further evidence that GEMA's reliance on evidence from the water sector was erroneous.

2.20 In the PR19 FR, the CMA did not use any energy company betas as relevant comparators for determining water company betas,[26] reflecting the fact that water and energy companies face different risks and have different betas.

2.21 Once this error is corrected for, and relevant comparators from the energy sector (notably, the beta for National Grid) are given appropriate weight it is clear that GEMA's determined beta is too low, which has a consequential effect on its determination of the COE.[27]

Total Market Return

(1) TMR overall

2.22 The PR19 FR provides strong support that GEMA's approach to determining the TMR in RIIO-2 was flawed. In the PR19 FR, the CMA widens its TMR range and then identifies a point estimate of 6.81%, which is the mid-point of the range.[28] This mid-point (6.81%) is above the top of GEMA's range (6.75%), demonstrating that GEMA's TMR range is plainly wrong. This is further demonstrated by GEMA's point estimate (6.5%) being below the bottom end of the TMR range that the CMA found (5.6% RPI-real) based on the same historical ex-post evidence that GEMA used.[29]

2.23 The CMA's approach of considering a range of evidence contrasts with GEMA's selective approach and is more consistent with the position in the Appellants' March Submission Documents.[30]

2.24 Notwithstanding differences between the Appellants' approach in the March Appeal Documents and that of the CMA in the PR19 FR, the Appellants respect the depth of work that has gone into

22 PR19 FR, paragraph 9.208 **[MH2/2.1]**.
23 See further NGET Notice of Appeal, paragraphs 3.120 to 3.124, and NGG Notice of Appeal, paragraphs 3.120 to 3.124, and DP1, section F.
24 Frontier PR19 Report, paragraphs 11 to 13 **[MH2/1]**.
25 NGET Notice of Appeal, paragraphs 3.104 to 3.107, and NGG's Notice of Appeal, paragraphs 3.104 to 3.107.
26 PR19 FR, paragraph 9.479 **[MH2/2.1]**.
27 Frontier PR19 Report, paragraph 40 **[MH2/1]**.
28 PR19 FR, Table 9-37, page 1099 **[MH2/2.1]**.
29 Frontier PR19 Report, paragraph 15(b) **[MH2/1]**.
30 NGET Notice of Appeal, paragraphs 3.125 to 3.299; NGG Notice of Appeal, paragraphs 3.125 to 3.299; DP1, section G.

the CMA's PR19 FR. In the following sections, the Appellants comment on the key aspects of the approach to determining the TMR in the PR19 FR that are relevant to the Appeals.

(2) Historic Ex-Post approach to determining the TMR

2.25 GEMA relies on a historic ex-post approach to determine its TMR range. It justified its decision on the basis that "*a long-run average of outturn market returns is the best single objective measure of investor expectations of the TMR*".[31]

2.26 A comparison of the CMA's conclusions based on an assessment of historic ex-post data with GEMA's conclusions further demonstrates the bias in GEMA's interpretation of the data. GEMA's point estimate for TMR (6.5%) sits below the range that the CMA has identified for TMR based on its own analysis of historic ex-post evidence.

2.27 The CMA's approach in the PR19 FR differs to GEMA's approach in the FD in two material ways.

2.28 First, GEMA did not take account of RPI deflated TMR estimates but erroneously decided to rely solely on CPI deflated estimates. The CMA places equal weighting on RPI deflated TMR estimates and CPI deflated estimates, stating that "*both these data series have relevant strengths and weaknesses in the context of estimating real historic returns*".[32]

2.29 The CMA's approach of using RPI and CPI deflated TMR estimates is consistent with the approach put forward by the Appellants in the March Appeal Documents.[33] However, before reaching the numbers in its determined range, the CMA adjusted its RPI deflated TMR estimates by 30bps to reflect its view that "*on balance, RPI-deflated returns are likely to overstate expected total market returns on an RPI-real basis going forward*".[34]

2.30 The proposed TMR range in the Appellants' March Appeal Documents did take account of different strengths of CPI and RPI series by making adjustments to account for certain aspects of the RPI methodology.[35] As set out in the Frontier PR19 Report, the CMA's 30bps adjustment is an upper bound for the appropriate adjustment and a smaller deduction may be more appropriate.[36]

2.31 Second, GEMA solely determined its TMR range on estimates based on a small uplift above the geometric mean. This contrasts with the approach adopted by the CMA, which considered a range of evidence concerning various approaches to estimating the average TMR. The CMA concluded that:[37]

> *On balance, we consider that using the arithmetic mean is preferable due to its simplicity and transparency, and also given that at the current time, there is no reason to conclude that one perspective, either that of the capital budgeter or of the portfolio investor, is 'correct'. We note that approach (b) would give a similar mid-point estimate to the simple arithmetic average (as some estimators produce higher figures and others lower) but a significantly broader range of values. In the absence of compelling evidence to support the ends of this broader range, we prefer to use the arithmetic mean point estimate. As a result, we have revised our analysis (as set out in Figure 9-3) to focus on estimates of the arithmetic mean calculated over various time horizons*.

2.32 The CMA adopted an approach of using overlapping and non-overlapping averages, which differs from the approach adopted in the PR19 PFs and the March Appeal Documents. As noted in the Frontier PR19 Report, the CMA's approach in the PR19 FR is simpler but departs from the

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31 SSMC, Finance Annex paragraph 3.12 **[NOA1/5]**. Confirmed in SSMD, Finance Annex, paragraph 3.104 **[NOA1/7]**.
32 PR19 FR, paragraph 9.295 **[MH2/2.1]**.
33 NGET Notice of Appeal, paragraphs 3.152 to 3.178; NGG Notice of Appeal, paragraphs 3.152 to 3.178; DP1, section G.
34 PR19 FR, paragraph 9.296 **[MH2/2.1]**.
35 See, for example, Frontier Cost of Equity Report, paragraphs 5.5.8 to 5.5.13 **[MH1/1]**.
36 Frontier PR19 Report, paragraph 18(c)(iv) **[MH2/1]**.
37 PR19 FR, paragraph 9.328 **[MH2/2.1]**.

established practice of using a broader range of approaches to averaging.[38] Notwithstanding the Appellant's preference for Frontier's approach of using a broader range of approaches to averaging, the CMA's approach is clearly supportive of the Appellant's position that GEMA's averaging methodology for determining TMR was flawed. As explained in the Frontier PR19 Report, Frontier's method is robust and has the benefit of establishing a stable foundation for future regulatory determinations as it accounts for a range of averaging methods.[39]

(3) Historic Ex-Ante approach to determining the TMR

2.33 In the PR19 FR, the CMA reduced the lower bound of its TMR range from 6.20%[40] to 6.15%.[41] The TMR lower bound in the PR19 FR relies on historic ex-ante evidence which was not signalled in the PR19 PFs or PR19 Working Papers and, therefore, was not considered in the March Appeal Documents.[42] The CMA's approach of using a historic ex-ante approach to determine the lower bound of the TMR range places significant weight on an approach that is less robust than the historic ex-post approach.

2.34 In any event, GEMA has not relied on historic ex-ante evidence, opting to rely on historic ex-post data,[43] and therefore this approach cannot give any support to GEMA's erroneous TMR determination in the FD.

2.35 Further, the UKRN Report also did not recommend considering a historic ex-ante approach.[44]

2.36 Additionally, as set out in the Frontier PR19 Report, the Appellants note that the estimate from the CMA's historic ex-ante analysis using the DMS decomposition method seems low compared with previous iterations of similar analysis.[45]

(4) TMR cross-checks

2.37 In the PR19 FR, the CMA considered that it could not draw strong conclusions from comparisons of international returns due to the need to rely on significant assumptions:[46]

> *We recognise the theoretical arguments for looking at international comparisons as a potential guide to expected returns in the UK, but we note that it is difficult to draw strong conclusions from this evidence….while US dollar returns on the UK market could be considered as a cross-check on the CPI/RPI debate, it relies on purchasing power parity holding and we consider that to be a strong assumption.*

2.38 The Appellants agree with the CMA, which supports the submissions put forward by the Appellants in the March Appeal Documents that GEMA's TMR cross-check was irrelevant and wrongly applied.[47]

CAPM Selectivity overall

2.39 The CMA's determination of the COE in the PR19 FR supports a finding that GEMA erred when setting the COE in the FD. The CMA's methodology and conclusions on common market parameters (RFR and TMR) demonstrate that GEMA failed to have regard to relevant evidence and relied on flawed assumptions, assertions and interpretations. As shown in Section F, when a more appropriate energy sector beta is combined with the CMA's approach to determining the COE the errors in GEMA's approach are readily observable, given that even after taking account of GEMA's view of relative risk, it has set the COE lower in energy than water. Further, the beta

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38 Frontier PR19 Report, paragraph 18(a) **[MH2/1]**.
39 Frontier PR19 Report, paragraph 18(a)(ii) **[MH2/1]**.
40 PR19 PFs, paragraph 9.222 **[NOA1/17]**.
41 PR19 FR, paragraph 9.397 **[MH2/2.1]**.
42 PR19 FR, paragraph 9.395 **[MH2/2.1]**.
43 SSMC, Finance Annex paragraph 3.12 **[NOA1/5]**. Confirmed in SSMD, Finance Annex, paragraph 3.104 **[NOA1/7]**.
44 See UKRN Report, recommendation 5 on page 48 **[NOA1/16]**.
45 Frontier PR19 Report, paragraph 19(a) **[MH2/1]**.
46 PR19 FR, paragraph 9.392 **[MH2/2.1]**.
47 NGET Notice of Appeal, paragraphs 3.207 to 3.211; NGG Notice of Appeal, paragraphs 3.207 to 3.211.

methodology in the PR19 FR supports the Appellants' view that GEMA erred by placing too much reliance on water sector comparators when determining the beta in the energy sector. When a more appropriate energy sector beta is combined with the CMA's approach to determining the COE, the errors in GEMA's approach are even clearer.

B. Cross-checks error

2.40 The Appellants' submissions on the Cross-checks error are set out in section 3, part C of their respective Notices of Appeal, as well as in section H of DP1 and section 7 of the Frontier Cost of Equity Report (MH1/1).

2.41 GEMA applied a set of cross-checks to the range produced by its "step 1" CAPM assessment in the FD. GEMA's use of cross-checks was wrong because it was unjustifiably selective, and repeatedly involved: (i) placing weight on cross-checks which stakeholders have shown to be flawed; and (ii) failing to give due consideration to the valid alternative cross-checks which stakeholders proposed. As a result, GEMA's approach was biased downwards, which resulted in a failure to recognise that its CAPM-derived COE range was too low, and which wrongly led GEMA to adjust downwards its COE range.

2.42 In the PR19 FR, the CMA based its COE range for PR19 on CAPM evidence, rather than on cross-checks, which are a form of secondary evidence.[48] The CMA determined an appropriate range for each of the CAPM parameters, from these calculated a range for the COE, and then selected a COE point estimate by considering the appropriate extent to aim up above the mid-point of that range.[49] The CMA's decision to set the COE exclusively by reference to the CAPM, and not to make adjustments based on cross-checks, contradicts GEMA's approach in the FD of adjusting the COE range downwards based on cross-checks evidence.

2.43 Although the CMA did not find it necessary to determine a COE range based on cross-checks, it did use cross-checks to see if they were consistent with the range determined from the CAPM evidence.[50] In doing so, the CMA provided clear views on the relevance and applicability of a number of the cross-checks that were considered by GEMA in the FD, and in the Appellants' Notices of Appeal, as set out further below.

*Market to Asset Ratios (**MARs**)*

2.44 In the FD, GEMA relied on MARs to support the bottom end of its cross-checks range, concluding that they implied CPIH-real returns at or below 4.2%. This was in spite of stakeholders pointing out that MARs are a short-term, forward-looking and market implied measure and in the current economic environment are prone to produce a lower estimated COE than the longer-term estimate produced by the CAPM.

2.45 The Appellants therefore welcome the CMA's confirmation in the PR19 FR that evidence from MARs must be reviewed with caution. In particular, the CMA stated:

> *…we remain cautious about using market prices to determine the point estimate for the cost of equity or overall cost of capital…*[51]
>
> *[MARs are] unlikely to give a sufficiently clear picture of whether the cost of capital allowance is higher or lower than is required across all companies in the sector.*[52]

48 PR19 FR, paragraphs 9.5 and 9.1238 **[MH2/2.1]**.
49 PR19 FR, paragraph 9.7 **[MH2/2.1]**.
50 PR19 FR, paragraph 9.1345 **[MH2/2.1]**.
51 PR19 FR, paragraph 9.1365 **[MH2/2.1]**.
52 PR19 FR, paragraph 9.1360 **[MH2/2.1]**.

2.46 The CMA's comments support the Appellants' submissions that GEMA erred in failing to take into account the noisy, volatile and unreliable characteristics of MARs.[53]

Broker forecasts

2.47 In the FD, GEMA appeared to rely on its DD conclusion that the investment managers' TMR cross-check implied a COE of 5.0% as support for the upper bound of its cross-checks range. This was in spite of the fact that investment managers' forecasts are merely subjective stated preference evidence, and, moreover, are downwards-biased due to the basis on which such forecasts are made.

2.48 The Appellants therefore welcome the CMA's comments acknowledging the weaknesses in this type of evidence:[54]

> *We consider that caution is warranted when interpreting broker forecasts…These estimates may also prove to be no more accurate than our own assessment, or may be specifically tailored to particular investors or house views rather than representing the cost of capital demanded by the average or marginal investor in the sector. In addition, there may be circularity in these estimates if analysts assume costs of equity close to those set by the regulator rather than conducting their own assessments.*

2.49 The CMA's comments support the Appellants' submission that GEMA should not have used investment managers' TMR forecasts to infer the upper bound of its COE range of 5.0%.[55]

ARP-DRP

2.50 The Appellants submitted that GEMA erred in failing to take account of additional cross-checks which would have supported a higher upper end to the COE range. One of those cross-checks was the Asset Risk Premium – Debt Risk Premium comparison (**ARP-DRP**) cross-check, proposed by Oxera.[56]

2.51 The Appellants welcome the CMA's confirmation that Oxera's ARP-DRP work is *"conceptually sensible"*.[57] In the PR19 FR the CMA effectively did cross-check its proposed COE by reference to ARP-DRP analysis.[58] This adds support to the Appellants' submission that GEMA should have taken account of alternative cross-checks, including ARP-DRP comparisons, which would have supported a higher upper end to the COE range than that adopted by GEMA.

Financeability

2.52 In the FD, GEMA did not carry out a financeability cross-check on the COE. As set out in Section J of DP1,[59] while GEMA carried out a debt financeability cross-check in the FD, it failed to carry out an assessment of the financeability of the allowed equity return. GEMA's failure to carry out an equity financeability assessment meant that it failed to identify that its determined allowed equity return does not enable the notional company to consistently meet its financeability requirements.

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53 NGET Notice of Appeal, paragraph 3.284; NGG Notice of Appeal, paragraph 3.284; DP1, section H; Cost of Equity Report, section 7.4 **[MH 1/1]**.

54 PR19 FR, paragraph 9.1365 **[MH2/2.1]**.

55 NGET Notice of Appeal, paragraph 3.287 – 3.290; NGG Notice of Appeal, paragraph 3.287 – 3.290; DP1, section H; Cost of Equity Report, section 7.4 **[MH1/1]**.

56 NGET Notice of Appeal, paragraph 3.277 – 3.281; NGG Notice of Appeal, paragraph 3.277 – 3.280; DP1, section H; Cost of Equity Report, section 7.5 **[MH1/1]**.

57 PR19 FR, paragraph 9.1386 **[MH2/2.1]**.

58 PR19 FR, paragraph 9.1386 **[MH2/2.1]**.

59 This submission makes reference to witness statements submitted with the March Appeal Documents. Separate versions of each witness statement were provided in respect of NGET and NGG. Where sections in the witness statements are referred to, these are common across both Appellants; where paragraph numbers are referred to, separate references are given for each Appellant.

2.53 The CMA was clear in the PR19 FR that *"We consider financeability to provide a relevant cross-check on the choice of the cost of equity"*.[60] The CMA also confirmed that a sufficient cost of capital is the key element for ensuring that companies will be financeable, and that this involves ensuring that both the cost of debt and the cost of equity are sufficient.[61] GEMA failed to undertake such a cross-check to its COE, instead opting to reduce notional gearing where financeability concerns were identified.[62] This is analogous to the approach Ofwat took in changing Pay As You Go (**PAYG**) rates in order to artificially achieve financeability, which the CMA rejected in the PR19 FR.[63]

2.54 The CMA's comments lend support to the Appellants' submissions that GEMA should have carried out a financeability cross-check on the COE.[64]

C. Aiming up error

2.55 The Appellants' submissions on aiming up are set out in section 3, part D of their respective Notices of Appeal, as well as section I of DP1 and section 8 of the Frontier Cost of Equity Report (MH1/1).

2.56 In the FD, GEMA decided not to aim up when selecting its point estimate of the COE for RIIO-2. GEMA's decision not to aim up was both unjustified and harmful, for the reasons set out in full in the March Appeal Documents. GEMA decided not to aim up in spite of the CMA's position in favour of aiming up in the PR19 PFs, which were published in September 2020, and were therefore available to GEMA when making its decision in the FD.

2.57 In the PR19 FR, the CMA has maintained its consistent view, which was expressed in both the PR19 PFs and a subsequent Aiming Up Working Paper published in January 2021, that it is appropriate to select a point estimate above the middle of its COE range. The CMA aimed up in the PR19 FR by selecting a point estimate 25bps above the middle of its COE range, and stated clearly that:[65]

> *…we consider that there are a number of benefits from choosing a point estimate of the cost of equity above the middle of the range.*

2.58 The CMA's rationale for and factors to consider in selecting a point estimate of the COE above the mid-point of the range are largely unchanged from its Aiming Up Working Paper, and these were addressed in section 3, part D of the Appellants' Notices of Appeal. In the PR19 FR, the CMA summarised the reasons supporting a decision to aim up as:[66]

> *…addressing the level of risk to investment in the sector associated with setting the cost of equity too low, particularly in the context of a sharp reduction since AMP6, and also addressing asymmetry in the broader financial settlement.*

2.59 Each of the CMA's reasons for deciding to aim up in the PR19 FR apply at least equally, and in some cases to a greater extent, in the energy sector. A brief summary of the CMA's reasons for supporting aiming up is set out below, together with an explanation of how these reasons support the submissions made in the March Appeal Documents.

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60 PR19 FR, paragraph 9.1399 **[MH2/2.1]**.
61 PR19 FR, paragraph 10.72 **[MH2/2.1]**.
62 NGET, Notice of Appeal, paragraphs 3.402.
63 PR19 FR, paragraphs 10.82 – 10.84 **[MH2/2.1]**.
64 NGET Notice of Appeal, paragraphs 3.399 – 3.402; NGG Notice of Appeal paragraphs 3.399 – 3.402; DP1, section J; Cost of Equity Report, section 8.7 **[MH1/1]**.
65 PR19 FR, paragraph 9.1402 **[MH2/2.1]**.
66 PR19 FR, paragraph 9.1402 **[MH2/2.1]**.

Uncertainty in the CAPM parameters

2.60 The CMA's PR19 FR acknowledges that a COE estimate produced by the CAPM is subject to parameter uncertainty: *"The CAPM cost of equity is not directly measurable and the parameters are subject to both theoretical debate and statistical uncertainty."*[67]

2.61 The CMA's decision in the PR19 FR is the latest in a series of regulatory precedents supporting aiming up, and strengthens the Appellants' submission in the March Appeal Documents that GEMA failed to pay due regard to the weight of regulatory precedent which supports aiming up.[68] Uncertainty in estimation of the CAPM parameters is a factor which applies equally in the energy sector as it does in the water sector.

Promoting investment

2.62 The CMA's PR19 FR sets out that *"expectations of insufficient investment returns based on the current cost of capital may discourage companies from identifying and proposing otherwise desirable investment projects"*.[69] The CMA added that this factor *"is potentially important at a time when there has been a material decline in returns and there remains significant uncertainty over the measurement of the cost of equity."*[70]

2.63 This factor applies at least as strongly, if not more strongly, in the energy sector as in the water sector, particularly in view of the investment needed to achieve the transition to Net Zero. In the PR19 FR, the CMA recognised that the energy sector involves greater risks than the water sector, stating, "*The risks associated with water are different to energy, and there is no direct comparator to the cost of 'blackouts*'."[71]

2.64 The CMA's reasoning in the PR19 FR therefore firmly supports the Appellants' submission in the March Appeal Documents that GEMA's failure to aim up will undermine energy companies' incentives to invest.[72]

Asymmetry in the choice of parameters

2.65 In the PR19 FR, the CMA noted that its methodological approach to setting the TMR and RFR contributed to the reduction in the COE from the previous price control period. The CMA therefore expressed caution on the basis that:[73]

> *We recognise that there may be risks associated with implementing material changes of this type.*

2.66 The CMA's concern about potential asymmetry in the choice of parameters, particularly in the context of a sharp reduction since the previous price control period, applies equally to energy companies.

Asymmetry of risk in the package

2.67 In the FD, GEMA considered that aiming up to account for asymmetric risk in the RIIO-2 framework was "unwarranted".[74]

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67 PR19 FR, paragraph 9.1238 **[MH2/2.1]**.

68 NGET, Notice of Appeal, paragraphs 3.332 – 3.346; NGG, Notice of Appeal, paragraphs 3.332 – 3.346; DP1, section I; section 8.4 of the Frontier Cost of Equity Report **[MH1/1]**.

69 PR19 FR, paragraph 9.1273 **[MH2/2.1]**.

70 PR19 FR, paragraph 9.1285 **[MH2/2.1]**.

71 PR19 FR, paragraph 9.1274 **[MH2/2.1]**.

72 NGET, Notice of Appeal, paragraphs 3.372 – 3.377; NGG, Notice of Appeal, paragraphs 3.372 – 3.377; DP1, section I; Cost of Equity Report, section 8.5 **[MH1/1]**.

73 PR19 FR, paragraph 9.1315 **[MH2/2.1]**.

74 FD, Finance Annex, page 67, paragraph 3.179 [**NOA1/12**].

2.68 In the PR19 FR, the CMA reiterated the view it adopted in the Aiming Up Working Paper that "*asymmetry continues to be potentially relevant to the choice of a point estimate for the cost of capital*."[75] As explained in the Appellants' March Appeal Documents, this factor applies at least as strongly, if not more strongly, to energy companies as it does to water companies.[76]

Relevance of the PR19 FR to RIIO-2

2.69 The CMA's PR19 FR is clear that where the key factors discussed above are present, it is appropriate to select a point above the mid-point of the range, and that an element of judgement is involved in determining the extent of aiming up that is appropriate.

2.70 As shown above, and as explained in the Appellants' Notices of Appeal,[77] consideration of these same factors points to the need for a greater extent of aiming up for RIIO-2 than for PR19. GEMA's failure to determine that aiming up is appropriate for RIIO-2 is clearly wrong when the relevant evidence for energy is properly taken into account.

2.71 In the FD, GEMA relied on the fact that the CMA had not aimed up in its NATS Final Report to justify its decision to not aim up.[78] The CMA's PR19 FR confirmed the Appellants' submission[79] that the CMA's decision to 'aim straight' in the NATS Appeal is not a comparable precedent, due to specific features of how the NATS investment programme was designed:[80]

> *We also considered these points in the CAA/NATS Provisional Determination. Although we concluded that the midpoint was appropriate in that review, this was because of the way that the investment programme was designed, involving government and wider stakeholders in relevant governance. We also highlighted in CAA/NATS the risk that, in other contexts, customers' interests could be served by a small premium to the cost of capital to avoid an 'opex bias'.*

2.72 Finally, the CMA's PR19 FR supplemented its rationale for aiming up above the mid-point with two additional points. Both of these points are also relevant to the equivalent RIIO-2 considerations:

(a) The CMA sets out logic that setting the cost of capital too low may increase future investment needs, noting that *"the current cost of capital can have a direct impact on the level of future investment and the future costs to customers".*[81] This further supports the Appellants' submissions in the March Appeal Documents.[82]

(b) The CMA has also clarified that it is appropriate to take account of the step change in the level of the TMR and RFR since the previous price control when assessing the risks of asymmetry in the choice of CAPM parameters. The CMA's position that account should be taken of the sharp reduction in the COE since the previous price control, and that this should be reflected in the degree of aiming up, is consistent with the Appellants' submissions in the March Appeal Documents.[83]

D. Insufficient COE Error

2.73 The CMA's approach in the PR19 FR provides strong support for the Appellants' submission that GEMA erred in setting the COE for RIIO-2.

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75 PR19 FR, paragraph 9.1344 **[MH2/2.1]**.
76 NGET, Notice of Appeal, paragraph 3.354; NGG, Notice of Appeal, paragraph 3.354; DP1, section I; section 8.6 of the Frontier Cost of Equity Report **[MH1/1]**.
77 NGET, Notice of Appeal, section 3, part D; NGG, Notice of Appeal, section 3, part D.
78 NGET, Notice of Appeal, paragraph 3.324(a); NGG, Notice of Appeal, paragraph 3.324(a).
79 NGET, Notice of Appeal, paragraph 3.352; NGG, Notice of Appeal, paragraph 3.352; DP1, section I.
80 PR19 FR, paragraph 9.1392 **[MH2/2.1]**.
81 PR19 FR, paragraph 9.1273 **[MH2/2.1]**.
82 NGET, DP1, paragraph 531; NGG, DP1, paragraph 519.
83 NGET, DP1, paragraph 397; NGG, DP1, paragraph 393.

2.74 As set out in the Frontier PR19 Report, superficially, the COE determined in the PR19 FR (3.76% to 5.21%)[84] resembles the range proposed by GEMA for RIIO-2 (3.85% to 5.24%).[85] However, even a cursory examination of the CMA's approach in the PR19 FR reveals that GEMA's approach in RIIO-2 was flawed. The beta used to determine the COE must reflect the companies' exposure to systematic risk in the market. When the beta used in the PR19 FR is increased to reflect the higher systematic risks associated with the energy sector compared to water, the flaws in GEMA's approach are clear.[86]

2.75 Whilst the Appellants' position remains that the beta range determined by GEMA in the FD is too low, this approach of using GEMA's beta with the CMA's approach to COE in the PR19 FR reveals a mid-point COE of 4.84%. The mid-point of GEMA's COE range in the FD is 29bps lower than the mid-point of this adjusted CMA range. It is clearly wrong to determine that energy companies, with demonstrably higher risk,[87] require a lower COE than water companies.

2.76 The PR19 FR also supports the Appellants' submissions in the March Appeal Documents that GEMA erred by failing to aim up in the FD.[88] In particular, the PR19 FR recognises the adverse impact on investment levels and future consumers if the cost of capital is set too low, as well as the need to take account of the step change in the level of the TMR and RFR compared to previous price controls, combined with the need for significant new investment in the next regulatory period. Once the 25bps aiming up adjustment applied in the PR19 FR is added in a COE of 5.09% is derived.

2.77 As set out in the Frontier PR19 Report,[89] once further adjustments are made to correct methodological errors in GEMA's beta determination and aiming up (resulting in a COE of 5.33%), the CMA's approach in the PR19 FR provides strong support for the Appellants' submission that GEMA erred in setting the COE for RIIO-2.

2.78 As noted in the Frontier PR19 Report,[90] the remaining difference to the 5.6% minimum COE put forward by the Appellants and Frontier in the March Appeal Documents comprises: (i) minor differences in the timing of the collection of RFR evidence; (ii) differences in the detail of how the TMR range should be determined; and (iii) the Appellants' view that a slightly higher quantum of aiming up is appropriate in the context of energy networks, because of the need for significant private sector investment to ensure the necessary capacity and capability of the transmission system to meet government targets on the road to Net Zero.

2.79 The analysis described above is summarised in Figure 1 below, illustrating that the GEMA and CMA PR19 FR decisions are highly inconsistent when properly considered.

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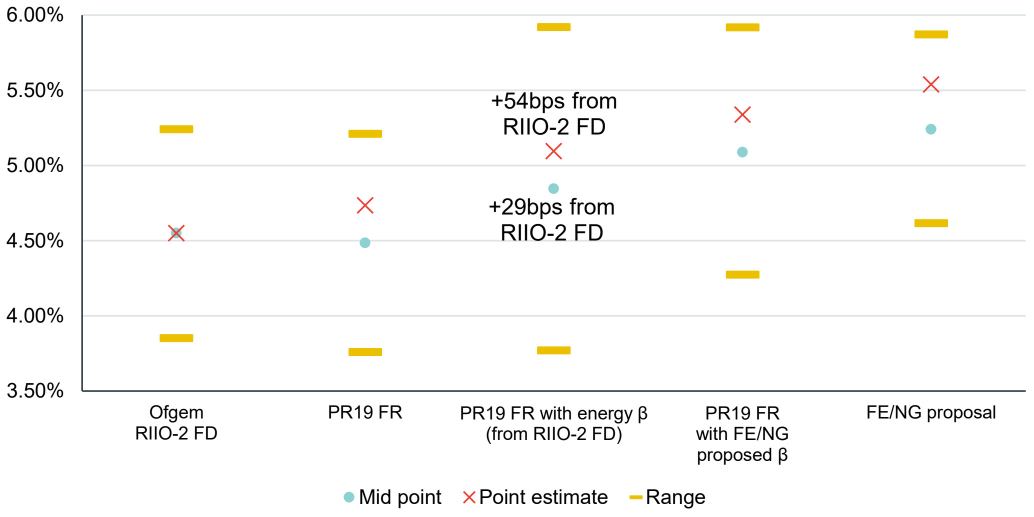
84 Figures are presented in CPIH-real terms unless otherwise stated.
85 Frontier PR19 Report, paragraph 30 **[MH2/1]**.
86 Frontier PR19 Report, paragraphs 34 to 40 **[MH2/1]**..
87 NGET Notice of Appeal, paragraph 3.418; NGG Notice of Appeal, paragraph 3.417; DP1, section L; Cost of Equity Report, section 4, paragraph 4.3.6 **[MH1/1]**.
88 See NGET and NGG's Notices of Appeal, section 3, sub-section C; DP1, section I; Cost of Equity Report, section 8 **[MH1/1]**.
89 Frontier PR19 Report, paragraph 40 **[MH2/1]**.
90 Frontier PR19 Report, paragraph 41 **[MH2/1]**.

Figure 1: Comparison of the COE set out in GEMA's RIIO-2 FD, CMA's PR19 FR and the March Appeal Documents



SECTION 3: OUTPERFORMANCE WEDGE

3.1 The Appellants' submissions on the outperformance wedge are set out in section 4 of their respective Notices of Appeal, as well as in section D of CB1 and in section 4 of the Frontier Wedge Report (MH1/2).

3.2 In summary, the Appellants submitted that GEMA's introduction of the outperformance wedge was wrong for the following two reasons:[91]

(a) The outperformance wedge is unjustified because making a deduction from allowed returns after the price control has been calibrated is wrong, GEMA had already made use of an extensive range of regulatory tools to address information asymmetry, GEMA's decision was poorly reasoned, and the outperformance wedge would have a discriminatory and disproportionate impact on different licensees.

(b) The outperformance wedge is harmful because it undermines productivity incentives, damages incentives to invest, damages investor confidence and undermines equity financeability in RIIO-2.

3.3 In the PR19 FR, the CMA noted that GEMA had referred to the outperformance wedge in connection with its submissions on aiming up, stating:

> *Ofgem agreed with the CMA that the cost of capital could be adjusted for asymmetry and noted at its hearing that it has also adjusted the cost of capital for asymmetry in its RIIO-2 determinations, although in the energy sector it expects company outperformance. It agreed with Ofwat that in practice it was likely that, given the existence of incentives for outperformance, companies would not face net penalties.*[92]
>
> *We also observed that Ofgem said that it had taken an approach of assuming outperformance based on historical performance, and that its approach differed from Ofwat's which had explicitly decided not to assume any outperformance.*[93]

3.4 Clearly the CMA was not able to consider the merits of GEMA's outperformance wedge in the context of the PR19 Redetermination. However, the CMA did set out some important principles that the Appellants consider are relevant to the assessment of this mechanism in the present appeals. First, the CMA considered Ofwat's introduction of a GOSM, and concluded that this was not justified. Given the GOSM was a new and novel mechanism for PR19 as the outperformance wedge is for RIIO-2, the Appellants submit that there are some helpful points of read-across about the threshold for introducing new regulatory mechanisms which are relevant to the CMA's assessment of the outperformance wedge, namely:

(a) In response to Ofwat's concerns about the risks of high gearing, the CMA noted that *"a number of mechanisms and incentives already exist that mitigate the risk that companies will choose high levels of gearing."*[94] This supports the Appellants' submission that given the extensive range of existing and new regulatory tools used by GEMA in RIIO-T2 to address information asymmetry effectively there is no need for a new mechanism which makes a final, significant deduction from allowed returns.[95]

(b) The CMA noted that it was *"…concerned that a GOSM as proposed by Ofwat would represent a significant break from a well-established regulatory approach without offering enough evidence to justify doing so."*[96] The CMA's comment is an example of the principle that regulatory intervention should be targeted only at cases where action is needed, but is

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91 NGET, Notice of Appeal, paragraph 4.3; NGG, Notice of Appeal, paragraph 4.3.
92 PR19 FR, paragraph 9.1331 **[MH2/2.1]**.
93 PR19 FR, paragraph 9.1334 **[MH2/2.1]**.
94 PR19 FR, paragraph 9.1198 **[MH2/2.1]**.
95 NGET, Notice of Appeal, paragraphs 4.30 – 4.67; NGG, Notice of Appeal, paragraphs 4.30 – 4.67.
96 PR19 FR, paragraph 9.1223 **[MH2/2.1]**.

also consistent with the Appellants' submission that the regulatory uncertainty (both actual and perceived) represented by the outperformance wedge would damage investor confidence.[97]

3.5 Second, the CMA noted that *"Incentives are part of normal regulation and operational outperformance is a desirable outcome."*[98] This supports the Appellants' submission that company outperformance benefits consumers by increasing productivity and service improvements.[99] As explained in CB1 and the Appellants' Notices of Appeal, the outperformance wedge distorts the normal incentive features of the regulatory framework, and thereby undermines future productivity gains, to the detriment of consumers.[100]

3.6 Third, on whether it is appropriate to assume that companies will continue to outperform simply based on historic outperformance, the CMA concluded that *"[w]e are not persuaded it is consistent for Ofwat to both set new and increasingly stretching targets for PCs in PR19 and also to assume that companies will outperform against those targets."*[101]

3.7 This supports the Appellants' submission that GEMA was wrong to make a final, significant deduction from allowed returns after the price control has been calibrated, in particular in circumstances where there is no reason why past performance is a reliable guide to future performance.[102] For both Appellants, CB1 explains how RIIO-2 has *"massively raised the hurdle which companies must clear to deliver any outperformance at all"* by (inter alia) more stretching efficiency challenges, reduced sharing factors under the totex incentive mechanism, and a new PCD regime with clawback of allowances in the event of under-delivery of outputs.[103]

3.8 Fourth, the CMA recognised that *"some examples [were] given…of individual ODIs where the balance of risk is likely to not be truly symmetrical, such as supply interruptions."*[104] However, the CMA was *"not persuaded that this implied that the package of PCs as a whole could be reliably assumed to be more or less asymmetric that we had assumed."*[105] The CMA concluded that *"[t]o the extent that the PCs [Performance Commitments] have been set at reasonable targets, and the financial ODIs [Outcome Delivery Incentives] are symmetric, we have concluded that this should represent a fair balance of risk across the package of incentives."*[106]

3.9 The CMA's preference for a broad review of the balance of risk across the package of incentives will also be relevant when assessing GEMA's justification and rationale for introducing the outperformance wedge. Figure 5 in DP1 shows that the RoRE range for ODIs is strongly negatively skewed for NGET, and although more balanced for NGG, other features of the RIIO-2 package nonetheless result in asymmetric skew to the downside.[107]

3.10 In conclusion, although the PR19 FR did not directly consider the outperformance wedge, several important principles expressed by the CMA strongly support the Appellants' submission that GEMA's decision to impose the outperformance wedge was wrong.

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97 NGET, Notice of Appeal, paragraph 4.119; NGG, Notice of Appeal, paragraph 4.119.
98 PR19 FR, paragraph 9.1334a **[MH2/2.1]**.
99 NGET, Notice of Appeal, paragraph 4.74; NGG, Notice of Appeal, paragraph 4.74.
100 NGET, Notice of Appeal, paragraphs 4.106 – 4.115, CB1, paragraphs 97 – 109; NGG, Notice of Appeal, paragraphs 4.106 – 4.115, CB1, paragraphs 96 – 108.
101 PR19 FR, paragraph 9.1278 **[MH2/2.1]**.
102 NGET, Notice of Appeal, paragraph 4.30 – 4.43; NGG, Notice of Appeal, paragraph 4.30 – 4.43.
103 NGET, CB1, paragraphs 83 – 89; NGG, CB1, paragraphs 82 – 88.
104 PR19 FR, paragraph 9.1337 **[MH2/2.1]**.
105 PR19 FR, paragraph 9.1337 **[MH2/2.1]**.
106 PR19 FR, paragraph 9.1337 **[MH2/2.1]**.
107 NGET, DP1, figure 5, page 100; NGG, DP1, figure 5, page 99.

SECTION 4: STATEMENT OF TRUTH

The Appellants believe that the facts stated in this submission are true.

Signed:

Dated: 23 April 2021

Darren Pettifer, Head of Regulatory Finance, National Grid
For and on behalf of National Grid Electricity Transmission plc and National Grid Gas plc

ANNEX: PR19 PFS AND PR19 FR CROSS-REFERENCES

The Appellants' Notices of Appeal and witness statements refer to the PR19 PFs and PR19 Working Papers. The Appellants' main submission on the PR19 FD, together with the Frontier PR19 Report, updates and clarifies the evidence previously submitted by the Appellants. The below table notes where references to the PR19 PFs and PR19 Working Papers can be updated to references to the PR19 FR. The Appellants have not updated references to the PR19 PFs or Working Papers where the context of the reference means that the PR19 PFs or Working Papers remain the appropriate reference or where there is no appropriate reference in the PR19 FR. In accordance with the overriding objective, the Appellants have not addressed every new or updated statement in the PR19 FR.

Where references are marked with an asterisk (*), this indicates that the wording of the reference has changed between the PR19 PFs/Working Paper and the PR19 FR, but that change does not materially change the point made in the Notice of Appeal or witness statement.

National Grid document	NGET document reference	NGG document reference	PR19 PFs or Working Papers reference	PR19 FR reference
Notice of Appeal	3.37	3.37	PR19 PFs 9.76	9.104*
Notice of Appeal	3.4	3.40	PR19 PFs 9.135	9.108* 9.158* 9.264*
Notice of Appeal	3.59	3.59	PR19 PFs 9.93 PR19 PFs 9.137	9.149* 9.162*
Notice of Appeal	3.83	3.8	PR19 PFs 9.87	9.100 – 9.102*
Notice of Appeal	3.163	3.163	PR19 PFs 9.168	9.308 – 9.310*
Notice of Appeal	3.165	3.165	PR19 PFs 9.160	9.295(d)*
Notice of Appeal	3.168	3.168	PR19 PFs 9.166	9.304
Notice of Appeal	3.176	3.176	PR19 PFs 9.160	9.295
Notice of Appeal	3.284	3.284	Aiming up Working Paper 91	9.1358* 9.1360*
Notice of Appeal	3.335	3.335	PR19 PFs 48	9.1394
Notice of Appeal	3.338	3.338	PR19 PFs 9.667 - 9.668	9.1388* 9.1269* 9.1226*
Notice of Appeal	3.353	3.353	Aiming up Working Paper 115	9.1395
Notice of Appeal	3.355	3.355	Aiming up Working Paper 35	9.1280*

National Grid document	NGET document reference	NGG document reference	PR19 PFs or Working Papers reference	PR19 FR reference
Notice of Appeal	3.355	3.355	Aiming up Working Paper 44	9.1274
Notice of Appeal	4.65	4.65	PR19 PFs 9.624	9.1223*
Notice of Appeal	4.98	4.98	PR19 PFs 9.628	9.1223*
Notice of Appeal	4.118	4.118	Aiming up Working Paper 42	9.1388 9.1269*
DP1	86	82	PR19 PFs 9.76	9.104*
DP1	86	82	PR19 PFs 9.80	9.99*
DP1	86	82	PR19 PFs 9.88	9.108*
DP1	86	82	PR19 PFs 9.135	9.158*
DP1	87	83	PR19 PFs 9.137	9.100 – 9.102*
DP1	96	92	PR19 PFs 9.93, 9.137 and 9.87	9.149* 9.162*
DP1	96	92	PR19 PFs 9.93, 9.137 and 9.87	9.151*
DP1	96	92	PR19 PFs 9.93, 9.137 and 9.87	9.151*
DP1	122	118	PR19 PFs 9.138	9.208*
DP1	137(c)	133(c)	PR19 PFs Tables 9-24 and 9-26	9.241 – 9.244*
DP1	249 (b)	245(b)	PR19 PFs 9.168	9.310*
DP1	249(d)	245(d)	PR19 PFs 9.160(d)	9.295(d)*
DP1	253	249	PR19 PFs 9.161	9.296
DP1	260	256	PR19 PFs 9.161	9.295*
DP1	299	295	PR19 PFs 9.221	9.60*
DP1	389	385	PR19 PFs 9.666	9.1273

National Grid document	NGET document reference	NGG document reference	PR19 PFs or Working Papers reference	PR19 FR reference
DP1	397	393	Aiming Up Working Paper 103	9.1390* 9.1398*
DP1	406	402	Aiming Up Working Paper 47	9.1274*
DP1	419(c)	414(c)	Aiming Up Working Paper 48	9.1275*
DP1	419(d)	414(d)	Aiming Up Working Paper 48	9.1269
DP1	421(c)	416(c)	Aiming Up Working Paper 48	9.1268 9.1275
DP1	486(d)	477(d)	PR19 PFs 9.667	9.1388* 9.1269*
DP1	530	518	Aiming Up Working Paper 42(c)	9.1269
DP1	531	519	Aiming Up Working Paper 42(c)	9.1269
CB1	28	28	PR19 PFs 9.624	9.1223*