



Europe Economics

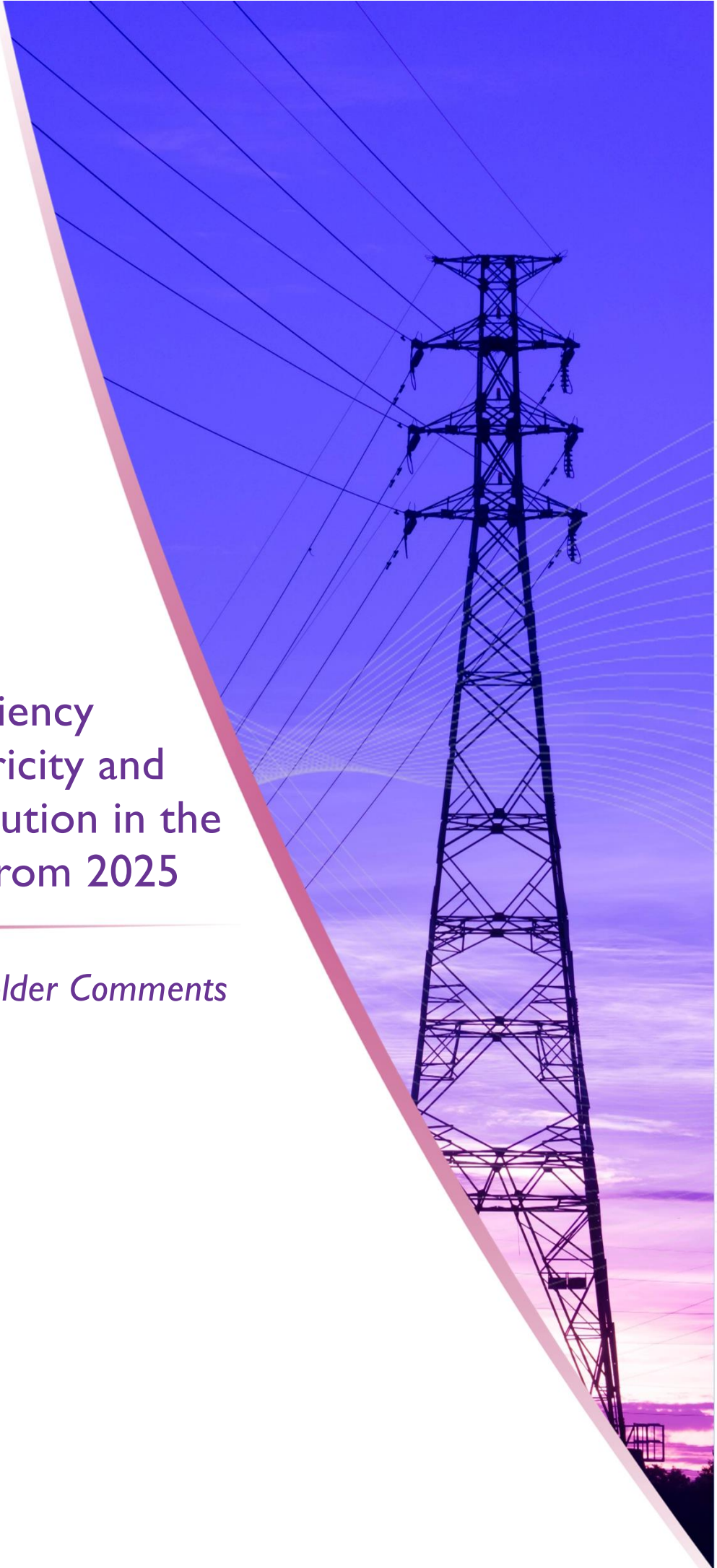
Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025

Our Response to Stakeholder Comments

June 2024

Europe Economics
330 High Holborn
London
WC1V 7QH

www.europe-economics.com



Europe Economics is registered in England No. 3477100. Registered offices at Holborn Gate, 330 High Holborn, London WC1V 7QH.
Whilst every effort has been made to ensure the accuracy of the information/material contained in this report, Europe Economics assumes no responsibility for and gives no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information/analysis provided in the report and does not accept any liability whatsoever arising from any errors or omissions.
© Europe Economics. All rights reserved. Except for the quotation of short passages for the purpose of criticism or review, no part may be used or reproduced without permission.

Contents

- 1 Introduction..... 1
- 2 Historical Cost Trend Analysis..... 2
- 3 Real Price Effects and Indexation 5
- 4 Frontier Shift Target..... 13
- 5 Extent to which Frontier Shift is Captured in the Trend..... 20

1 Introduction

This note responds to the points raised by stakeholders in relation to indexation and efficiency following VREG’s consultation on the tariff methodology for the 2025-2028 regulatory period (CONS-2024-02).¹ Fluvius submitted a report by its consultants Oxera alongside its response, and there were also responses from two other stakeholders (Gazelco and VVSG).

Having reviewed the points made by stakeholders, we do not consider that we need to make any changes to the recommendations in our final report.² Hence, we continue to recommend that:

- In the gas sector, no frontier shift challenge should be applied; and
- In the electricity sector, a frontier shift challenge should be applied of 1.1 per cent (if VREG decides not to allow a labour RPE) or 0.94 per cent (if VREG does allow a labour RPE).

This note is structured as follows:

- In Section 2, we address comments from stakeholders relating to our historical cost trend analysis;
- In Section 3, we respond to comments on our RPEs analysis;
- In Section 4, we consider points raised by stakeholders on our frontier shift analysis; and
- In Section 5, we discuss stakeholder comments on our analysis of the extent to which frontier shift is already captured in the trend.

¹ The consultation documents are available [online](#).

² Europe Economics, “Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025; Final report”, February 2024, available [online](#)

2 Historical Cost Trend Analysis

We first address stakeholder comments regarding energy transition costs, and then address other comments made by stakeholders.

Accounting for energy transition costs

Stakeholders had the following comments in relation to energy transition costs:

- Fluvius and its consultants Oxera, argued that Fluvius' costs are underestimated due to a lack of forward-looking analysis of the expected higher costs of the energy transition. Gazelco and VVSG similarly argued that VREG's proposed cost savings were inappropriate in light of Fluvius' forward-looking investment requirements.
- Oxera argued that Europe Economics has not sufficiently explored the extent to which VREG's trend methodology is suitable in the current context of the energy transition.

We respond to these points in turn.

Alleged underestimation of costs due to energy transition

We do not agree that the historical trend analysis has underestimated Fluvius' costs by not taking into account future costs of the energy transition. The responses provided by Oxera and Fluvius clearly demonstrate that energy transition costs are captured in the historical reference period used to estimate the cost trend. The data presented by Oxera in Figures 5.1 and 5.2 of its response shows that smart metering rollout costs are included in the historical costs from 2019 (the beginning of the historical reference period used to calculate the trend) and that these costs increase throughout the historical reference period.³ Oxera notes that the increasing smart metering rollout costs are likely to be "the major driver" of aggregate cost increases.⁴ The trend methodology means that the rate of increase of costs for the smart meter rollout that Fluvius experienced from 2019-2023 will be reflected in the slope of the trend (i.e. it will be less steeply sloping downwards, or more steeply sloping upwards) used to estimate future costs. Oxera also notes that Fluvius' costs related to grid reinforcement increased over the historical reference period.⁵ Similarly, Fluvius' response states that in 2022 it started a large investment programme related to the energy transition, such as grid reinforcement and new connections, the result of which was a marked increase in its costs in 2023.⁶ As 2023 is included in the historical reference period, these costs will also feed into the trend analysis and affect the slope of the trend, and therefore the estimated future costs. Therefore, it is incorrect for Fluvius to claim that the historical trend analysis does not take into account energy transition costs.

Suitability of VREG's trend methodology

The comments raised by Oxera and Fluvius regarding analysis of the suitability of VREG's trend methodology in the context of the energy transition are outside the scope of our report, as the specifications for our work take the trend methodology as given. Nonetheless, we do not agree with the arguments made by Oxera in Box 3.1 relating to lagged effects in the trend methodology.⁷ If the increase in energy transition costs accelerates in the next regulatory period, relative to the historical reference period, then Fluvius will recover these additional costs with a lag (i.e. not in the next regulatory period but in subsequent regulatory periods).

³ Oxera response, Figure 5.1 and Figure 5.2, p. 70-71.

⁴ Oxera response, p.71.

⁵ Oxera response, p.71.

⁶ Fluvius response, Argument 4

⁷ Oxera response, Box 3.1, p.39

This is because the accelerated energy transition costs would be captured in subsequent trend calculations, and any underestimation of Fluvius' costs during the energy transition would be offset in the long-run by an overestimation of its costs in the post-transition period. This is the intended design of the trend methodology framework, and it means that there is no systematic over- or underestimation of costs in the long run. Oxera's first argument against this framework appears to be that energy transition costs might not be temporary and instead will be sustained indefinitely, such that Fluvius never recovers its costs. This is illogical, as, by definition, the energy transition cannot continue indefinitely. The smart meter roll-out cannot continue forever, and when a net zero grid is achieved, there is no more "transitioning" to do. Oxera's two other arguments rely on an assumption of VREG changing its regulatory framework in the future, or failing to hold to its commitments in future regulatory periods. Neither of these arguments are a critique of the regulatory framework itself. Instead, they are unsupported assertions about VREG's future actions.

Other comments

Stakeholders had the following other comments in relation to the historical cost trend analysis:

- Fluvius and Oxera disagreed with the statement that removing COVID-19 savings and merger savings from the cost data is necessary to be able to observe efficiency trends.
- Fluvius and Oxera argued that the analysis of unit costs and disaggregated cost trends was not complete.
- Fluvius and Oxera asked for clarification of certain figures in the report that they had difficulty following.

We respond to these comments below.

Merger savings and Covid-19 costs

We do not agree with the comments from Fluvius and Oxera regarding cost data adjustments for merger savings and Covid-19 costs. The adjustments remove atypical factors from the historical costs so that the underlying trend in costs can be estimated. To clarify, we do not claim that these two adjustments alone are sufficient to isolate efficiency trends, as Oxera and Fluvius have interpreted our original report, but they are necessary adjustments before estimating the underlying trend in Fluvius costs. If these adjustments were not made, the estimated trend would be distorted by these one-off costs/savings. Oxera argue that the adjustments that were made will be noisy and create uncertainty in the data. However, the data for the Covid-19 costs and merger savings achieved came from Fluvius itself, who gave no indication that the data was uncertain or noisy. Oxera also argues against adjusting for Covid-19 costs on the basis it is not a one-off event, and argues for the introduction of an uncertainty mechanism to protect against such events in the future. Designing an uncertainty mechanism for external events such as Covid-19 was not in the scope of our work. In addition, we note that Fluvius' own data suggests that the additional costs of Covid-19 were very small, and designing an uncertainty mechanism to account for such costs would be a disproportionate undertaking.

Purpose of analysis of disaggregated cost trends and unit costs

The purpose of our analysis of disaggregated cost trends and unit costs in Section 3 of our report, which Oxera and Fluvius have questioned, was to provide VREG with information on what might be driving the overall trend in Fluvius' costs. The analysis does not feed into our conclusions or recommendations regarding the efficiency challenge. Fluvius and Oxera's claim that our unit cost analysis shows that Fluvius has improved productivity in both gas and electricity distribution in the last regulatory period is incorrect. The analysis does not show that Fluvius has achieved productivity growth in electricity once the scheduled merger savings are removed from Fluvius' costs. As we previously clarified to Fluvius, the unit costs in Section 3 overstate the underlying trend efficiency improvement made by Fluvius due to the inclusion of one-off merger savings.

Clarifications regarding figures in our report

The apparent inconsistencies in the figures in our report raised by Fluvius and Oxera are a result of adjustments for merger savings made when estimating the trend in costs, as stated below Table 3.2 in our report, and when estimating DSO-specific unit costs in Section 8. By contrast, the 1.0 per cent reduction in real electricity costs from 2019-2023 reported in Table 3.1 does not include an adjustment for merger savings, and nor do the unit costs reported in Section 3. Oxera also asked for clarity on the compound average growth rates of less than -100 per cent reported for cost activity trends – these are a result of some cost data being negative.

3 Real Price Effects and Indexation

This section summarises our response to the key points raised by stakeholders in relation to real price effects (RPEs) and indexation. We discuss in turn comments relating to:

- the scope of our RPE analysis, and other cross-cutting issues;
- our RPEs framework and criteria;
- the RPE analysis for specific cost areas; and
- whether there should be indexation for RPEs.

In each sub-section we first summarise the points raised by Fluvius and its consultants, Oxera, followed by our response.

Scope of RPEs and cross-cutting points

Stakeholders made the following cross-cutting points in relation to our RPEs assessment:

- Oxera argued against the exclusion of capital expenditure (capex) from the analysis.
- Oxera claimed that we made several errors when quoting or presenting regulatory precedent.
- Oxera also claimed that our report displays several cases of logical inconsistencies, including that the top-down approach to assessing RPEs of the kind adopted by Oxera in 2020 is not sufficiently robust.

Our response to these points is set out below.

Claim that exclusion of capital expenditure leads to incomplete assessment of RPEs

We reject Oxera’s suggestion that our analysis of RPEs is incomplete because we have not conducted an RPE assessment for capex. Most depreciation relates to historical capital expenditure (capex) and not new capex. Therefore, as explained in our final report for VREG,⁸ we do not consider it to be appropriate to apply RPE indexation to either the depreciation or return element of revenues. This is because most of the depreciation element of costs would not be expected to move in line with indices of current input prices.

Oxera overlooks an important point when referring to the use of RPEs for capex by other European regulators. In the Ofgem example to which Oxera refers, Ofgem applied RPEs to the capex element of total expenditure (totex), and did not apply RPEs to depreciation, as proposed by Oxera.

Issues regarding regulatory precedent

While Oxera would appear to be correct that BNetzA does in fact make an ex ante allowance for RPEs, we consider that Oxera has itself mischaracterised regulatory precedent in discussing the ACM’s approach to DSOs. ACM may examine the trend in unit costs over time and this may implicitly capture RPE effects (as does VREG’s own trend analysis). However, that is not the same as making a separate explicit allowance for RPEs.

Our focus on a selection of other European jurisdictions when reviewing the approaches to indexation used by other regulators is in line with the scope of the work commissioned by VREG.⁹ In addition, we note that the approach of the Norwegian water resources and energy directorate (NVE) cited by Oxera, in which

⁸ Europe Economics (2024): “Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025 – Final Report”, section 5.2.2 [\[online\]](#).

⁹ In particular, the specification issued by VREG (BE/VREG/0103) included the following requirement: “The report contains an overview of how regulators in a selection of (neighbouring) European countries index the permitted income of electricity and natural gas distribution system operators.”

tariffs for all companies are adjusted to account for industry-wide outperformance, is not relevant in the Flanders context. This is because Fluvius is the only operating company in Flanders, and hence such an approach would undermine incentives for cost efficiency.

We also disagree with the suggestion that our report dismissed the relevance of Ofgem's experience. On the contrary, Ofgem's experience at RIIO-I shows the importance of only including ex ante RPE allowances where there is robust evidence to support an RPE. In our report, we apply criteria which ensure that RPEs are only included where there is strong evidence to support them. In section 6.3 of our final report¹⁰ we explain why we do not support indexation for RPEs in the context of Flanders. For example, we highlight that in Flanders there are practical and timing issues with the input price indices that are available, and that RPE indexation would not be consistent with the regulatory framework that VREG uses as it would lead to double-counting.

Alleged logical inconsistencies

We do not agree that our report displays logical inconsistencies, as Oxera alleges. Our final report explains why we prefer our bottom-up approach to RPEs set out in section 5.2.1 of the report to the approach used by Oxera in 2020.¹¹ In particular, the suitability of a sector as a comparator for productivity analysis is a different question from whether it uses the same inputs as the energy distribution sector. Other sectors may be carrying out activities which are similar in nature to energy distribution even though the input materials that the sector uses may be different. Therefore, using the same set of comparators that are used to derive a frontier shift estimate may distort the results of the RPEs analysis.

In our view this does not give rise to any logical inconsistencies, nor does it cast any doubt on the suitability of our comparator sectors for the purposes of estimating Fluvius' scope for frontier shift.

RPEs framework and criteria

Stakeholders made the following points in relation to the RPEs framework and criteria used:

- Oxera argued that the RPEs framework developed and used by Europe Economics is biased towards rejection, demonstrated by the experience of UK water companies during the recent energy crisis.
- Oxera argued against the use of a materiality criterion in the framework.

Claim that our RPEs framework is biased towards rejection

We consider that our RPEs framework is appropriate, only recognising RPEs where there is robust evidence that they exist. Indeed, our RPEs framework has been endorsed by the UK Competition and Markets Authority (CMA). In its final report for the Ofwat Price Determinations, the CMA stated that:

“We decide that EE’s approach provides a reasonable balance between using RPEs when the evidence clearly demonstrates that it is necessary without over complicating the assessment, and therefore we use the same approach in our redetermination.”¹²

We also disagree with Oxera's argument that the increase in energy prices since the PR19 determinations shows that there is a problem with our framework. We do not consider that an ex post shock to an input price (in this case, for energy) provides any evidence regarding the appropriateness of the criteria used for

¹⁰ Europe Economics (2024): “Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025 – Final Report” [\[online\]](#).

¹¹ We also note that our approach relies on a detailed breakdown of Fluvius' operating costs which was not available at the time of Oxera's analysis.

¹² See paragraph 4.674 in CMA (2021): “Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations – final report” [\[online\]](#).

the ex ante assessment of the input price. The Ukraine war and the consequent effect on energy prices could not reasonably have been foreseen at the time of PR19.

In addition, we note that our final PR19 report concluded that “whether energy qualifies for an RPE mechanism depends on whether reliance is placed on BEIS forecasts for industrial electricity prices and on the weight that Ofwat attaches to the high wedge between growth in industrial electricity prices and CPIH prior to 2010.”¹³ Hence, we did not advise against energy indexation, but rather highlighted the evidence that needed to be weighed up by Ofwat in reaching its decision.

Use of a materiality criterion

We disagree with Oxera’s claims that our use of the materiality criterion is excessive and arbitrary.

In addition to its decision to use our RPEs framework in its redetermination, the CMA also suggested that it could be improved by including a materiality threshold.¹⁴ Therefore, we have considered the materiality of cost categories in our work for VREG. This also contradicts Oxera’s claim that we did not consider any lessons learned regarding the application of the framework before applying it in Flanders.

We also disagree with the suggestion that our use of the materiality thresholds is arbitrary. As noted in our final report for VREG,¹⁵ the five per cent threshold below which we consider that it is disproportionate to apply an RPE allowance for cost categories is based on regulatory precedent and is therefore not an arbitrarily selected figure.¹⁶

Comments on RPE analysis for specific cost areas

Stakeholders raised the following concerns in relation to the RPE analysis for specific cost areas:

- Fluvius and Oxera argued that it is inconsistent for Europe Economics to recommend not applying indexation for labour costs when it recommended applying indexation to labour costs for Ofwat at PR19.
- Fluvius and Oxera argued that it is not correct to use the fact that Fluvius is converting its statutory personnel into contracted labour as a reason for not recommending a labour RPE.
- Fluvius commented that Europe Economics’ analysis of historical data for labour covers a relatively short time period and excludes the years 2022 and 2023.
- Oxera argued against that the output price index of the Electricity, Gas, Steam and Air conditioning supply sector is not relevant for Fluvius’ energy costs.
- Fluvius and Oxera questioned the use of day-ahead energy prices in the energy RPE analysis given that our report says that they may not be representative of the prices that Fluvius pays.
- Fluvius argued that grid losses should be categorised as exogenous costs or indexed to energy prices.
- Oxera also raised some other issues regarding the analysis of administration costs.
- Fluvius argued that the analysis of other costs is incomplete.

We respond to these points below.

¹³ Europe Economics (2019): “Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations” p.35 [[online](#)].

¹⁴ See paragraphs 4.672 to 4.679 in CMA (2021): “Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations – final report” [[online](#)].

¹⁵ Europe Economics (2024): “Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025 – Final Report”, section 5.2.2 [[online](#)].

¹⁶ For further details on regulatory precedents, please see: Europe Economics (2023): “Review of Approach to Inflation and Input Prices taken by Network Rail – Final Report” [[online](#)].

Alleged inconsistency regarding indexation for labour costs

We reject Oxera's claim that our advice for VREG is inconsistent with our recommendation regarding the indexation of labour costs at PR19. As cited by Oxera, in our final report at PR19¹⁷ we recommended that Ofwat should consider an ex post indexation mechanism for labour. In the case for Flanders, our final report for VREG¹⁸ stated that for labour costs, our analysis would suggest an ex ante RPE allowance of 0.7 per cent per annum over the next regulatory period for both the electricity and gas sectors, if VREG places weight on FBP forecasts of future wage growth. At the same time, our final report also noted that:

- Based on our analysis past FBP forecasts have tended to overstate wage growth compared with subsequent outturn data; and
- The ongoing shift within Fluvius from statutory personnel to contractual workers is expected to lead to a reduction in wage rates over time, potentially offsetting some of the expected real wage growth for the 2025-2028 period.

The second of these factors is unique to Flanders, and was not therefore not a factor in our PR19 recommendation.

Therefore, in our final report we concluded that VREG will need to make a policy decision on whether to include an ex ante RPE allowance for labour in the net frontier shift estimate, and if so what the magnitude of that allowance should be.

The practical issues arising from the considerable time lag with which data on labour costs is published by Statbel (discussed later in this section) suggests that an indexation approach for labour costs may not be feasible in the Flanders context.

Impact of change in type of labour employed by Fluvius

We do not disagree with the observation made by Oxera that “If the process of converting statutory personnel into contracted labour has already begun, some of this expected cost reduction would already be captured in the trend methodology and in future updates.”¹⁹ Nevertheless, in our final report we have investigated and taken into account the extent to which the trend methodology already accounts for net frontier shift with or without a labour RPE.²⁰

In addition, we do not agree with Oxera's argument that using productivity improvements that have already been achieved by Fluvius to set future efficiency targets generates a perverse incentive. In fact, it is common practice for regulators across a range of sectors and jurisdictions to reset efficiency targets at each periodic review.

Please see our response regarding the impact of the energy transition on costs (including labour costs) in Section 2.

Historical data used to assess labour costs

As explained in our final report, we used data on Average Gross Monthly Salary (AGMS) of full-time workers by occupation published by Statbel²¹ for both general and executive labour. At the time of preparing our

¹⁷ Europe Economics (2019): “Real Price Effects and Frontier Shift – Final Assessment and Response to Company Representations” p.41 [[online](#)].

¹⁸ Europe Economics (2024): “Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025 – Final Report”, section 5.2.2 [[online](#)].

¹⁹ Oxera (2024): “A review of Europe Economics' proposals on indexation and efficiency incentives – Prepared for Fluvius”, p.36.

²⁰ For further details, please see Chapter 8 and footnote 81 of Europe Economics (2024): “Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025 – Final Report” [[online](#)].

²¹ Statbel (2023) ‘An overview of Belgian wages and salaries’ [[online](#)].

report, the data available covered the period between 2009 and 2021, hence our analysis excluded 2022 and 2023 due to the lack of available data for these years.²²

Using this data, our analysis indicated that none of the average annual wedges between growth in the relevant wage indices (for both general and executive labour) and CPI inflation were statistically significantly different from zero.²³

Use of the Electricity, Gas, Steam and Air conditioning supply sector price index

We note that our conclusions regarding whether or not energy qualifies for an RPE were not dependent on our consideration of the Electricity, Gas, Steam and Air conditioning supply sector (EGSA) output price index. Thus, excluding the EGSA would not affect our recommendation regarding energy costs.

In any case, as explained in our final report,²⁴ we consider that our recommendation of an energy RPE of 0 per cent over the next regulatory period represents the upper bound for any energy RPE assumption. The significant spike in energy prices observed in 2022 may well imply a negative wedge for the next regulatory period as energy prices continue to come down from their recent peak.²⁵

Use of day-ahead energy prices

We consider that the “day-ahead” price for energy is the closest available proxy for the price that Fluvius may have to pay, and hence provides an indication of whether there may be an RPE for Fluvius. However, it is not representative of the exact price that Fluvius will pay as a large industrial user, and hence we do not consider that it should be used as the basis for indexation.

Impact of grid losses on whether energy prices should be indexed

The decision regarding whether grid losses are categorised as endogenous or exogenous operational expenses is outside the scope of our report.

Regarding Fluvius’ proposal that grid losses should be indexed to energy prices, we note that:

- Our report explains the reasons why energy price indexation would not be appropriate in the context of Flanders.
- In its report for VREG on frontier shift for the current regulatory period, Oxera did not recommend an indexation mechanism for energy input prices.²⁶
- VREG does not propose any significant changes to the regulatory framework regarding indexation for the next regulatory period, which means that Fluvius has borne similar risks in the past.
- Fluvius is compensated for the risk that it bears through a weighted average cost of capital (WACC) that is above the risk-free rate.

²² As discussed later in this section, these series are published by Statbel with a considerable time lag.

²³ We note that our analysis of historical data assesses the statistical significance of the wedge between the input price and CPI rather than looking at whether the selected indices exceed CPI or not, as suggested by Fluvius.

²⁴ Europe Economics (2024): “Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025 – Final Report”, section 6.3.2 [\[online\]](#).

²⁵ For example, our analysis of Network Rail’s input prices for ORR identified a negative wedge for electricity for the control period between April 2024 to March 2029. For further details, please see: Europe Economics (2023): “Review of Approach to Inflation and Input Prices taken by Network Rail – Final Report” [\[online\]](#).

²⁶ Oxera (2020): “The necessity and magnitude of frontier shift for the Flemish electricity and gas distribution operators over 2021–24” [\[online\]](#).

Issues raised regarding the analysis of administration costs

We reject Oxera's suggestion that we do not define exactly what is included within 'administration' costs. In particular, page 41 of our final report clearly states that administration costs represent indirect costs (which are Fluvius' overhead costs) that have not been reallocated to the other cost categories.²⁷

The data provided by Fluvius did not allocate any of the costs we have labelled as "administration" to labour. Therefore, it was not possible for us to reallocate any of the administration costs to labour as suggested by Oxera, or indeed to create a new cost category capturing IT services.

In terms of the specific index used for the analysis of administrative costs, the "Professional, scientific, and technical activities; administrative and support service activities" output price index represents the price that this sector of the economy charges for its services, and hence it will also represent the price that other sectors pay for administration services. We did not find any other suitable index to use in our assessment of input price inflation for administration.

While we recognise that Fluvius may undertake these activities in-house, we consider that the output price index for administration that we have used represents the best available proxy of input price inflation for this area of costs. We note that input price indices will also reflect the prices paid in transactions between firms, and hence would also not provide a direct measure of how in-house costs are changing. We consider that it is appropriate to use market price indices for RPE analysis even when services are being provided in-house in order to provide a competitive benchmark for future changes in input prices.

Analysis of other costs

We reject Fluvius' claim that our analysis of 'other' costs is incomplete and that this is the result of the definitions we proposed for the RPEs cost categories. Indeed, the categories used for the RPEs assessment are reasonably typical for these exercises²⁸ and Fluvius also had ample opportunities throughout the study to further investigate and reallocate its costs to the relevant cost categories (including reallocating labour costs from administration, if it wished to do so).

RPE indexation

Stakeholders made the following points regarding the indexation of allowed revenue:

- Oxera argued that the periodic and timely publishing of data is not an essential aspect when deciding whether to index.
- Oxera considered the arguments around perverse incentives of indexation approaches to be weak for various reasons. In addition, Oxera stated that the logic behind the argument that indexation leads to an additional perverse incentive (relative to an ex ante allowance) was not clear.
- Oxera disagreed that applying indexation would lead to double counting.
- Oxera argued that Europe Economics does not understand the risks associated with setting fixed ex ante RPE allowances.

We discuss these issues below.

Importance of periodic and timely publishing of data

We do not agree with Oxera's suggestion that the periodic and timely publishing of data is not an essential aspect when determining the feasibility of an indexation approach.

²⁷ Europe Economics (2024): "Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025 – Final Report" [[online](#)].

²⁸ By way of example, for the RIIO-ED2 and RIIO-GD2 determinations, Ofgem used the following cost categories for the assessment of RPEs: general labour, specialist labour, materials, plant & equipment, transport and other.

In the case of Flanders, data on labour costs using Average Gross Monthly Salary (AGMS) of full-time workers by occupation series is published with a considerable time lag. For example, data covering the year 2021 data was published by Statbel in September 2023. In practical terms this means that any adjustment to input prices could only take place with an approximate 3-year lag. Any ex-post reconciliation exercise would face similar difficulties as an annual indexation mechanism due to the lack of timely data. For example, it would not be feasible to carry out a reconciliation exercise for the current regulatory period as data currently are only available for the first year (i.e. 2021).

In our view, potential adjustments to input prices with a substantial (3-year) lag do not represent a material improvement to consideration of the issue at periodic reviews which take place every four years.

Incentive impacts of indexation approaches

First, we disagree with Oxera's claim that the argument assumes that Fluvius is entirely free to change the composition of its inputs. This is not the case – our argument simply assumes that Fluvius has some flexibility regarding the composition of its inputs which would allow it to re-optimize its input mix in response to different incentives.

Similarly, we also disagree with Oxera's claim that the argument assumes that Fluvius has perfect foresight into the evolution of input prices in future. Again, our argument simply assumes that Fluvius has some expectation about the evolution of input prices in future that it could use to inform its decisions regarding its input mix.

Moreover, we do not consider Oxera's argument that a "notional company structure" could be used to be relevant in the Flanders context either, as there are no comparator companies available in Flanders with which Fluvius' input mix can be compared.

We consider that we have clearly set out in our report why ex post indexation may create a small additional perverse incentive in relation to the mix of inputs. In particular, it would create a perverse incentive over the long-term for Fluvius to shift its spending to costs areas for which RPE indexation applies. This is because such a strategy would reduce the firm's risk by increasing the proportion of its cost base which it is protected against input price volatility.

Issues around double counting

Oxera appears to have misunderstood our argument regarding the double counting with the trend analysis that arises in the case of an ex post indexation approach. In particular, our assessment did not assume that the trend analysis is conducted based on the tariff that Fluvius is allowed to charge in a regulatory period. Instead, we argue that it is precisely because the trend is calculated based on actual outturn endogenous costs that under an indexation approach the long-term RPE wedges would be included both in the trend analysis as well as in any indexation allowance, leading to double counting.

By way of example, if we assume that over the long-term there is a positive RPE wedge for labour, then this will reduce the slope of the trend that is calculated for Fluvius (as the trend will take account of the increase in labour costs). At the same time, Fluvius would also benefit from a labour RPE allowance during the next regulatory period through indexation, leading to double counting of the increase in labour costs. In order to avoid this issue with double counting, RPE effects would need to be stripped out from historical data which would be very hard to do in practice, and would represent a significant move away from the simple trend methodology currently employed by VREG.

By contrast, ex ante RPE allowances do not give rise to similar concerns regarding double counting as these can be incorporated into the net frontier shift assumption for the next regulatory period, followed by an assessment of whether net frontier shift is already captured by the linear cost trend.

Difference in risk allocation between ex ante RPE allowance and ex post indexation

We note that Oxera's claim that the "lack of indexation exposes Fluvius and consumers to additional unnecessary risk"²⁹ is incorrect. With no ex post RPE allowance the risk is borne by Fluvius, while ex post indexation shifts the risk to customers. Therefore, ex post indexation passes the risk of input price cost movements to customers but it does not remove it. Whether the risk of input cost movements should be borne by customers or Fluvius is a policy choice for VREG to make.

In our view there is no reason why this risk could not be borne by Fluvius under an ex ante RPE allowance, bearing in mind that the use of a WACC which is above the risk-free rate compensates the firm for bearing risk. We also note that its report for VREG on frontier shift for the current regulatory period, Oxera did not recommend an indexation mechanism for energy input prices.³⁰

²⁹ Oxera (2024): "A review of Europe Economics' proposals on indexation and efficiency incentives – Prepared for Fluvius", p.6.

³⁰ Oxera (2020): "The necessity and magnitude of frontier shift for the Flemish electricity and gas distribution operators over 2021–24" [[online](#)].

4 Frontier Shift Target

Stakeholders had the following comments in relation to the frontier shift target:

- Fluvius and Oxera, along with Gazelco and VVSG, disagreed with the frontier shift target of 1.1 per cent.
- Oxera argued that Fluvius is likely to have achieved higher productivity improvements than that estimated by EE in both gas and electricity, due to the assessment not including certain outputs.
- Oxera argued it is incorrect to use arithmetic means to calculate average TFP growth rates, rather than geometric means.
- Fluvius and Oxera argued it is inappropriate to base the frontier shift target on TFP data for the Netherlands because it assumes Dutch companies have the same scope for productivity growth as Belgian companies, and that such an approach is without precedent.
- Fluvius and Oxera argued the time periods used to analyse TFP are inappropriate because they are based on Eurozone business cycles, rather than individual countries.
- Fluvius and Oxera argued the additional years of TFP data in the Dutch dataset (1995-1998) are of little value given the time period is still an incomplete business cycle.
- Oxera argued that it is wrong to characterise some sectors as highly performing and other sectors as poorly performing in regard to TFP.
- Oxera argued that it is illogical to assume the lower bound for the frontier shift target should be based on the average across all comparator sectors
- Fluvius and Oxera argued it is incorrect to argue each comparator sector as potentially being a complete comparator for Fluvius' activities.
- Oxera argued the three sectors forming the upper bounds of the frontier shift range experienced growth in productivity due to scale effects, not frontier shift.
- Oxera disagreed with the arguments for aiming for the top end of the frontier shift range. Oxera argued that even if the link between interest rates and inflation is taken as given, the ECB is forecasting a reduction in interest rates to 2.75 per cent by 2026. Oxera also argued embodied technical shift is not relevant for the electricity and gas distribution sectors due to a low turnover of assets. Oxera disagreed that the VA TFP estimates support aiming for the upper end of the frontier shift range.
- Oxera argued insufficient consideration was given to arguments for aiming down for frontier shift. Oxera argued service quality requirements already require Fluvius to achieve frontier shift. Oxera also argued TFP estimates would overestimate frontier shift if the TFP estimates are also capturing scale effects or catch-up efficiency. Oxera also argued more weight should have been placed on TFP for the construction sector as it is the most suitable comparator.
- Fluvius and Oxera argued that the link between frontier shift and CPI indexation was not sufficiently discussed, and the CPI indexation will already capture economy-wide productivity growth.
- Fluvius argued against imposing a frontier shift challenge on top of a normatively determined capital cost compensation, since the cost of capital is intended to reflect the cost of financing for an efficient DSO.

We respond to these points below.

Frontier shift target of 1.1 per cent

We note that early in its response Oxera argues that:³¹

³¹ Oxera response, p.3

“it is likely that Fluvius has achieved higher productivity improvements than that estimated by EE in both gas and electricity.”

In doing so, Oxera concedes that the gas distribution sector is likely to have achieved frontier shift of higher than 1.1 per cent per annum over the historical reference period (our estimate of frontier shift achieved for the gas distribution sector). This is a key point to highlight before addressing the criticisms of the recommended 1.1 per cent frontier shift target from Oxera and Fluvius. In our view, it is inconsistent for Oxera to acknowledge that Fluvius is already achieving frontier shift at a higher rate than this in the gas distribution sector, but criticise the use of this frontier shift figure in the electricity distribution sector. We consider that the fact that Fluvius is already achieving a higher rate of frontier shift in gas means it is reasonable to expect that Fluvius can make similar gains in the electricity distribution sector.

Arithmetic versus geometric mean

Oxera is incorrect to assume that using a geometric mean of TFP is more appropriate than using an arithmetic mean. Oxera is correct to point out that the application of a geometric mean will lead to the TFP value being correct for the final year of the series in question, as it illustrates in its example.³² However, in the intervening years (years 1, 2, 3 and 4 in Oxera’s illustrative example), the geometric mean will give a figure which is typically too low unless there is no volatility in the TFP growth rate over the period. In a regulatory context, this means the efficiency challenge in the intervening years will be too low in the intervening years unless TFP growth is perfectly constant.

We can think about the funding implications of using a geometric mean in Oxera’s simple example in which a company’s productivity doubles in year 1 and then halves in year 2. If the company’s costs in year 0 are €100m, then (assuming constant output) its costs would fall to €50m in year 1 and then rise back to €100m in year 2, giving a total cost of €150m over the two-year period. If a regulator applied a geometric mean TFP target of 0 per cent, the company would receive €100m in year 1 and €100m in year 2, a total of €200m, overfunding actual costs by €50m. The point that Oxera has missed is that the regulator needs to get as close as possible to actual costs for all of the years of the regulatory period matter, not only in the final year.

Choice of country

We do not agree with the points raised by Oxera and Fluvius regarding the use of Dutch data in determining the frontier shift range. There are good reasons to believe that the scope for productivity growth in the Netherlands is similar to the scope for productivity growth in Belgium, and therefore to use TFP data from the Netherlands to inform the range for the frontier shift Fluvius can achieve. Indeed, Oxera itself, in its 2020 report for VREG, noted:³³

“The Netherlands is a relevant comparator economy that can provide useful information on the frontier shift potential in a neighbouring country of a similar size.”

In its 2020 report, Oxera also argued that the higher TFP figures for the Netherlands relative to Belgium supported selecting a frontier shift target from the higher end of its estimated range. We agree with Oxera’s previous position that productivity growth in the Netherlands is highly relevant in determining what is achievable by the energy distribution sector in Flanders.

We also note that the National Productivity Board of Belgium (NPB), the body tasked with studying the evolution of productivity in Belgium, regularly uses productivity data from the Netherlands (and France and

³² Oxera response, Figure 4.1, p.45

³³ Oxera (2020) “The necessity and magnitude of frontier shift for the Flemish electricity and gas distribution operators over 2021–24”, p.50

Germany) in its annual reports to compare Belgium’s productivity growth with that of its neighbours and uses these findings to frame its discussion of the TFP growth that Belgium could be achieving.³⁴

The use of TFP data for the Netherlands, rather than relying solely on Belgian TFP data, increases the robustness of our estimated frontier shift range. Table 4.I in Oxera’s report shows four sectors with varying TFP growth rates across countries (we note that it also shows four sectors with similar TFP growth rates across countries), and Oxera argue this suggests the economies are not comparable for these core sectors and time periods. In our view, the figures illustrate instead the volatility in TFP data, particularly in smaller economies such as Belgium, and therefore the use of multiple jurisdictions helps to offset the potential for noise or measurement error in TFP estimates for comparator sectors in small countries.³⁵ In the case of Belgium, given that TFP data for a relevant neighbouring country such as the Netherlands (as recognised by Oxera in 2020) is readily available, it would be an oversight not to make use of this data when determining a frontier shift range.

It is important to note that our approach makes use of both Belgium and Netherlands data, rather than using Netherlands data instead of Belgium data. It happens to be the case that the upper end of our range is (mostly) evidenced by sectors in the Netherlands, but if Belgium TFP data had provided the upper end of the range we would have incorporated it in the same way. It is also important to remember that the TFP data analysis simply defines the frontier shift range, not the frontier shift target itself. Separate argumentation is used for aiming towards the upper end of the range.

Choice of time period

We disagree with Oxera and Fluvius’ comments on the choice of time periods for the TFP analysis.

The eurozone business cycles we identified are in line with cycles identified by the Euro Area Business Cycle Network (EABCN). Evidence from the literature indicates that, while not every country in the Eurozone is synchronised in their business cycles (e.g. Greece), there is a core group of Eurozone countries, including Belgium and the Netherlands, that have strongly synchronised business cycles in the years we analyse.^{36,37} Therefore, the business cycles we have identified are appropriate for estimating TFP growth in Belgium or the Netherlands.

We accept the limitations of the EU KLEMS TFP data in regards to the years that are covered. Oxera and Fluvius are correct to point out that the additional years available in the Netherlands dataset still do not allow coverage of the full business cycle, though it is closer to a complete cycle than the Belgium data, which is of some value. Importantly, however, the range we determine is not based solely on evidence from the full Netherlands dataset, but instead is derived from a host of evidence from multiple sectors and time periods. As we set out in our report, the evidence for a 1.1 per cent upper bound (beyond the evidence from the full NACE II period for the Netherlands) includes the following:

- The “Manufacture of machinery and equipment n.e.c.” sector in Belgium achieved 1.1 per cent TFP growth in the pre-crisis period.
- Four sectors achieved 1.1 per cent TFP growth or higher in the Netherlands in the pre-crisis period.
- The “Manufacture of machinery and equipment n.e.c.” sector in the Netherlands achieved 1.6 per cent TFP growth in the post-crisis period.
- Two sectors in Germany achieved over 1.1 per cent TFP growth over the full NACE II period (excluding 2020) and in the post-crisis period.

³⁴ For example, see NPB’s 2023 Annual Report [[online](#)]

³⁵ We do not think such an approach is necessary in a much larger economy such as the UK, which is over five times the size of Belgium.

³⁶ Konstantakopoulou, I., & Tsionas, E. (2011). The business cycle in Eurozone economies (1960 to 2009). *Applied Financial Economics*, 21(20), 1495-1513.

³⁷ Belke, A., Domnick, C., & Gros, D. (2017). Business cycle synchronization in the EMU: Core vs. periphery. *Open Economies Review*, 28, 863-892.

- Three sectors in France and four sectors in Germany achieved 1.1 per cent TFP growth or higher in the pre-crisis period.
- The NACE I sector “Post and telecommunications” in the Netherlands achieved over 1.1 per cent TFP growth over the full NACE I period, and over the 1993-2007 business cycle.
- Two NACE I sectors in Belgium achieved over 1.1 per cent TFP growth over the 1981-1992 business cycle.
- Two NACE I sectors in France achieved over 1.1 per cent TFP growth over the full NACE I period and over both NACE I business cycles.
- Two NACE I sectors in Germany achieved over 1.1 per cent TFP growth over the 1993-2007 business cycle

Oxera have mischaracterised our PR19 work for Ofwat by saying we recommended using incomplete business cycles³⁸ – we used complete data cycles for the NACE I TFP analysis, and we were unable to use complete cycles for some NACE II periods due to data availability, not because we recommended it as an approach. The same is true in this case – data availability means full business cycles cannot be used for some NACE II periods. The only full cycle available in the NACE II data is the post-crisis period, and we have set out our reasons why using only post-crisis data is likely to underestimate the scope for frontier shift due to the recent reversal of the loose monetary policy that was a key driver of poor productivity growth in the post-crisis period.

Approach to aggregating across sectors

Oxera states there are six flaws in the approach taken to determine the upper bound of the frontier shift range. We address each of the six critiques in turn. None of Oxera’s arguments have led us to revise our proposed approach to aggregating TFP estimates across sectors.

Oxera’s first point is a semantic argument regarding our characterisation of certain sectors as “best performing”. To be clear, the term “best performing” is not a reflection on the performance of management in some sectors in comparison to management in other sectors, but is simply a term used to refer to the sectors that had the highest TFP growth.

We disagree with Oxera’s second point, that it is illogical for us to claim that basing the lower bound of the frontier shift target on something below the average across comparator sectors is inappropriate. The purpose of the analysis is to estimate a frontier shift “challenge”, and setting a target that is below the average level is not logically aligned with our understanding of the term “challenge”.

We accept that the computer programming, consultancy, and information service sector may not compare to the entirety of Fluvius’ activities. However, this sector does not drive our conclusion – the upper bound would still be estimated at 1.1 per cent even if this sector were removed on the grounds of insufficient relevance.

We disagree with Oxera’s argument that the Information and Communications sector is not relevant – its quotation of our discussion of that sector failed to highlight the crucial piece of information within that discussion, which is that the sector includes “the operation and maintenance of a network”, clearly comparable to Fluvius’ activities in electricity and gas distribution. Moreover, the relevance of this sector only increases when one considers the technological advances and digitalisation occurring in energy distribution.

Oxera did not comment on the third sector that supports our upper bound, manufacturing, presumably indicating it views this as a valid comparator for Fluvius’ activities as a whole.

We also note that Oxera’s overall critique of the choice of sectors is based on a misinterpretation of our approach. We did not select a 1.1 per cent target based on one or two sectors in a certain period. Instead,

³⁸ Oxera response, p.8

we reviewed the estimates for all sectors and all periods to determine a range, and then provided separate analysis regarding where in that range the target should be selected from.

We have already addressed Oxera's fourth point regarding the use of Dutch TFP data.

Oxera's fifth point states that the TFP estimates for the three sectors forming our upper bound capture scale effects as well as TFP. While this might be possible, Oxera provides no evidence of economies of scale being achieved in these sectors. Oxera is simply assuming that because the sectors have grown at a faster average rate than electricity supply, they must have obtained positive scale effects by default. However, scale effects can be positive or negative, because of the existence of both economies of scale and diseconomies of scale. There is no reason to assume scale effects have been positive in these sectors.

Oxera's sixth point is a misrepresentation of the CMA's verdict at the PR19 appeals, and of our approach. We have not set the frontier shift target on the estimated TFP for a subset of sectors, as Oxera claim. The comparator sectors' TFP estimates are used to determine a range, not a target. The CMA did not comment on the appropriateness of determining a range based on upper and lower bounds, it merely rejected approaches that focus only on higher performing sectors (which our approach clearly does not, since the range is informed by the data for all sectors). The CMA agreed with our view that a weighted average would introduce spurious accuracy. The CMA's approach to deriving a frontier shift target was to identify a single point estimate, rather than a range, from the compactor sectors, and then adjust this starting point based on other factors such as embodied technical shift.³⁹ This achieved a comparable result to our approach of aiming up within a range, based on these other factors. The approach led to the CMA deciding on a frontier shift target of 1 per cent, only 0.1 per cent lower than the 1.1 per cent target we recommended at PR19 using our framework.

Selecting a target from the range

We do not agree with the arguments made by Fluvius and Oxera regarding where in the frontier shift range the target should be selected from.

Forecasted interest rates continue to support selecting a target from the upper end of the range, despite Oxera and Fluvius' objections. While forecasters are anticipating that there will be a reduction in the ECB interest rate to 2.75 per cent in the future, they are not anticipating a return to the zero interest rate environment that existed prior to the recent inflation spike. The relationship between interest rates and TFP is not necessarily linear – while zombie firms were able to survive for an extended period of time at zero interest rates, similar firms may well not survive at 2.75 per cent, a substantially higher rate. Hence, interest rates do not necessarily need to be at pre-crisis levels to see a reversion to pre-crisis levels of productivity growth, they only need to be high enough to avoid the misallocation of resources and productivity dispersion experienced in the decade following the financial crisis.

There is a clear regulatory precedent for revising upwards frontier shift targets due to embodied technical change being excluded from EU KLEMS TFP estimates. Ofgem's most recent efficiency challenge of 1 per cent for electricity distribution recognised that EU KLEMS TFP data "does not fully capture embodied technical change"⁴⁰ and the CMA at PR19 decided there a valid conceptual basis for increasing its frontier shift estimate due to EU KLEMS TFP data not capturing embodied technical change.⁴¹ We disagree with Oxera's argument that embodied technical change is less relevant for electricity and gas distribution – embodied technical change is relevant in sectors undertaking a large amount of investment, which will be the case for Fluvius in the

³⁹ Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Final report' para 4.522

⁴⁰ Ofgem (2022) "RIIO ED2 Final Determinations Core Methodology Document" para 7.632

⁴¹ Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Final report' para 4.554

upcoming regulatory period on the basis of its own response in which it described at length the “huge investment process” it has begun.⁴²

Oxera is incorrect to state that the value added TFP estimates do not support aiming for the upper end of the range. The three highest performing sector in Belgium over the full period, based on value-added estimates, achieved annual productivity growth of 1.6 per cent, 1.5 per cent and 1.4 per cent, as clearly shown in Table A2.1 of our report. The average of these numbers is 1.5 per cent, which is higher than 1.1 per cent, clearly supporting aiming upwards in the range.

We do not agree with Oxera’s view that the financial incentives for service quality relate to frontier shift. None of the financial incentive mechanisms involve a performance stretch. The reference values at which Fluvius incurs no penalty from the interruptions mechanisms is set at the 60th percentile (our report recommended using the upper quartile). Fluvius is only required to (partially) catch-up to the current frontier performance for interruptions, based on its own historical performance, with no requirement to go beyond (or shift) the frontier. We also note there is strong regulatory precedent (set out in our financial incentives report) for comparing interruptions performance across DSOs, and the interruptions mechanism makes allowances for factors affecting performance beyond Fluvius’ control.

We do not agree with Oxera’s arguments for aiming down in the frontier shift range. The fact that TFP estimates capture catch-up efficiency and scale effects is not an argument for aiming down, because these effects can bias the estimates in either direction. Catch-up efficiency can have a positive or negative impact on TFP estimates, dependent on whether productivity dispersion (the spread between frontier firms and laggard firms) is increasing or decreasing within a sector. Scale effects can be positive or negative dependent on whether output is growing or falling and on whether there are economies or diseconomies of scale within a sector. Therefore, there is no clear reason for aiming up or down based on scale effects or catch-up efficiency being captured by TFP estimates.

We do not agree with Oxera that more weight should be given to construction than other comparators sectors. Construction TFP estimates have been shown to systematically underestimate TFP in the sector:

- Svelkauskas et al (2016) looked at productivity growth in the construction sector in the US, and noted that “Because high-quality output deflators are so scarce, many previous estimates of productivity growth, in the total construction sector or in individual industries, could potentially be quite inaccurate.”⁴³
- In a similar study of the Danish construction sector, Haugbølle et al (2019) found that “Calculations of construction productivity and its often surprisingly low level in comparison to other economic sectors are usually based on changes in price, which does not reflect changes in volume and quality”⁴⁴ and that “the statistical methods applied for measuring the productivity of building and construction are generally classified at the poorest level C as categorised by Eurostat (2001). The main reason is the use of deflators in which the value added by the building and construction sector is deflated with a cost index.”
- In Sweden, Borg and Song (2015) find “Current estimation procedures for computing building price indexes do not in an adequate way account for changes in the quality of new residential construction which results in upward biases of price changes, and consequently causes published productivity changes to be too low due to overdeflation.”⁴⁵

We do not agree that the energy transition is a reason to aim down in the frontier shift range. As discussed in our response to comments on the historical cost trend analysis, energy transition costs are already being

⁴² Fluvius response, Argument 4

⁴³ Sveikauskas, L., Rowe, S., Mildenberger, J., Price, J., & Young, A. (2016). Productivity growth in construction. *Journal of Construction Engineering and Management*, 142(10)

⁴⁴ Haugbølle, K., Larsen, J. N., & Nielsen, J. (2019). Construction productivity revisited: towards measuring performance of construction output. *Engineering, Construction and Architectural Management*, 26(5), 794-813.

⁴⁵ Borg, L., & Song, H. S. (2015). Quality change and implications for productivity development: housing construction in Sweden 1990–2010. *Journal of Construction Engineering and Management*, 141(1)

captured in the trend, increasing Fluvius' allowed revenue due to the increased volume of energy transition activity (such as smart metering roll-out) it has been undertaking since 2019.

Finally, we disagree with the argument made by both Fluvius and Oxera that efficiency changes captured by CPI indexation are a reason to reduce the frontier shift target. It is correct that CPI reflects economy-wide productivity growth, but it also reflects economy-wide RPEs. It is critical, therefore, that a consistent approach is taken to RPEs and frontier shift. Either both aspects should be estimated on the basis of an incremental comparison to the rest of the economy, or both should be calculated in absolute terms. We have used the latter approach. If the frontier shift target were to be adjusted for productivity growth captured in CPI, then the RPEs would need to be estimated in comparison to the RPEs for rest of the economy, rather than using the absolute wedge between input prices and CPI.

Application of frontier shift

In contrast to the position taken by Fluvius, we consider that it is appropriate to apply frontier shift to the entirety of Fluvius' cost base (i.e. to the return and depreciation elements of allowed revenues, as well as to opex). This is because the TFP growth figures that we used to inform our frontier shift estimate were estimated on the basis of the total costs of comparator sectors, including capital as well as labour and intermediates. Further, in competitive sectors we would expect companies to be efficiently financed, and hence the TFP estimates should reflect the productivity growth that has been achieved in comparator sectors by efficiently financed companies.

The return element of Fluvius' allowed revenues reflects the size of Fluvius' capital stock (i.e. its RAB) as well as the weighted average cost of capital (WACC). Hence, the application of the frontier shift challenge to the return element of revenues does not imply that Fluvius' allowed return is being reduced below the WACC that VREG has determined. Rather, it reflects that the fact that an increase in TFP would allow Fluvius to achieve higher output from any given level of capital stock, labour and intermediates.

5 Extent to which Frontier Shift is Captured in the Trend

Stakeholders had the following comments on our analysis of the extent to which frontier shift is captured in the trend:

- Fluvius and Oxera argued that the set of outputs considered in the analysis of unit costs is too limited and does not account for future activities of DSOs in the light of the energy transition.
- Fluvius and Oxera argued against using a single DSO in a single year as the basis for the efficiency frontier.
- Fluvius and Oxera argued that the approach assumes that Fluvius can replicate catch-up efficiency improvements already delivered in the electricity sector.
- Oxera argued that 2020-2022 cost data show that the smart meter rollout is driving aggregate cost increases.
- Fluvius argued that 2023 costs were high due to high energy prices and investment related to the energy transition and therefore do not represent a decline in productivity, while Oxera suggested excluding energy and financial expenses from the analysis.
- Oxera argued the analysis failed to account for the level of service quality delivered.
- Fluvius state that unit cost trends in Chapter 3 are not consistent with unit cost trends in Chapter 8.

We respond to these points below.

Alleged disconnect between costs and outputs

We disagree with Fluvius and Oxera’s argument that the set of outputs considered in the analysis of unit costs is too limited and does not account for future activities of DSOs in light of the energy transition.

Oxera’s own report shows that the output variables that we used — which are the number of users and the length of network (km) — are “energy transition cost drivers”. In particular, Oxera states:⁴⁶

“The activities, or **energy transition cost drivers**, considered by CWaPE were those that either related to network growth (**number of new connections, increased network length**, and number and cumulative power of new substations) or increases in peak demand.” [Europe Economics’ emphasis]

As shown by this regulatory precedent quoted by Oxera, both of our output variables are considered to capture the network growth that is likely to result from the energy transition.

We would accept in principle that volume could also usefully be included as an output in the analysis. The energy transition is likely to increase electricity demand - for example, due to the growth in electric vehicles and electric heat pumps. The CBB judgment in the Netherlands underscores the significance of increased volume from smaller consumers due to the energy transition, stating that "grid operators must strengthen the low-voltage grids and possibly also the overhead medium-voltage grids" to accommodate increased demand.⁴⁷

However, while in principle we support the inclusion of volume as a relevant output measure, we were unable to include it in our analysis as volume data for 2023 were unavailable.

⁴⁶ Oxera response, p.71.

⁴⁷ Fluvius response, argument 6.

We disagree with some of the variables proposed by Oxera as output indicators for the energy transition, such as meter renewals and the length of network maintained, renewed or replaced. These metrics reflect the activities undertaken by the DSO and are therefore inputs. They do not measure the outputs delivered to end-customers.

While smart meters are not a like-for-like replacement for existing meters, they can be considered as a more technologically advanced input, rather than as an additional output. Further, we note that while Fluvius will incur costs installing these meters, it is also expected to benefit from cost savings. In particular, smart meters should lead to customers reducing their consumption, particularly during peak periods, thus potentially allowing Fluvius to avoid or defer network reinforcement. Further, Fluvius will also benefit from reduced meter-reading costs.

Moreover, care is needed not to add too many output variables to the DEA analysis. Increasing the number of output variables in a DEA model may diminish its discriminative power, making it easier for DSOs to be categorized as efficient. This is because of the increased flexibility that the DEA program gains in assigning weights to outputs, potentially enabling it to identify virtually any DSO as efficient relative to a single input. Consequently, this undermines the usefulness of DEA in accurately pinpointing the most efficient DSOs.

Calculating frontier shift

We disagree with Oxera's assertion that Europe Economics' analysis did not account for outliers. In Section 8 of our report, we explicitly address Sibelgas as an outlier and incorporate this consideration into our conclusions in Section 8.6. Furthermore, we conducted sensitivity analyses in which we started the analysis in 2020 rather than 2019, ensuring that our results are not solely reliant on DSO performance in 2019. Indeed, in the electricity sector, Fluvius Limburg consistently emerged as the most efficient firm from 2019 to 2022, only ranking as the second most efficient in 2023.

Moreover, we refute Oxera's claim that we did not track the evolution of efficient cost levels over time, including whether the efficient DSO in 2019 was later surpassed by a previously inefficient firm. In assessing the appropriate frontier shift challenge, we consider how the most efficient firm in 2023 compares with the frontier, and we explicitly say that this firm "may or may not be the same DSO as the frontier firm in 2019".⁴⁸

Isolating catch-up efficiency

Fluvius and Oxera argue that the approach assumes Fluvius can replicate catch-up efficiency improvements already delivered in the electricity sector, since if the trend does not represent frontier shift it must instead represent catch-up efficiency gains. We note that Oxera did not address this issue in 2020 when it recommended applying a frontier shift challenge in the gas distribution sector without considering whether gas DSOs could continue to make catch-up gains.

We disagree with Oxera's and Fluvius' claim that DSOs have made significant catch-up efficiency gains over the historical reference period. Our analysis indicates that once costs are adjusted for VREG's regulatory target for merger savings, Fluvius did not make significant productivity gains between 2019 and 2023. This is evident in Table 8.4 of Europe Economics' report, which shows that most firms have seen their unit costs rise in the electricity sector.

Oxera's analysis has not demonstrated that firms have fully caught up to the frontier, and it has therefore provided no evidence that firms cannot make catch-up efficiency gains in the future. Indeed, our unit cost analysis and DEA show that electricity DSOs are significantly behind the efficiency frontier and hence have substantial scope for catch-up efficiency gains.

⁴⁸ See section 8.4 in Europe Economics, "Indexation and Efficiency Incentives for Electricity and Natural Gas Distribution in the Regulatory Period from 2025", Final Report, February 2024 [[online](#)].

2023 costs

We disagree with Fluvius and Oxera's claim that because the high costs in 2023 are primarily attributable to higher energy prices and to investments related to the energy transition, they should not be taken into account in the productivity analysis.⁴⁹

In relation to investments to support the energy transition, as explained earlier Oxera's own report shows that our output variables represent "energy transition cost drivers". It would therefore be inappropriate to remove energy transition costs from the endogenous cost base while continuing to use these energy transition cost drivers as output variables.

In relation to high energy prices, we disagree with Oxera's suggestion that analysis should be carried out to explore what the trend in productivity would look like if energy costs are excluded from the endogenous cost base. The fact that energy prices have been high in recent years is reflected in the CPI figures that we used to deflate costs. Excluding energy costs would therefore lead to an upwards bias to estimates of the productivity gains made by Fluvius. This is because the endogenous cost base would be deflated using CPI figures that take account of high energy prices, while the corresponding high energy costs incurred by Fluvius itself would have been removed from Fluvius' cost base.

Oxera is also incorrect to suggest that financial costs should be excluded from the analysis due to increases in financial expenses during the modelled period. The DSO-level data supplied by VREG that we used for our DEA analysis calculated the return element of costs as the DSO's RAB multiplied by a regulatory WACC figure, and hence these cost figures are not affected by any increase in Fluvius' actual cost of financing during the modelled period.

Interactions with service quality

Oxera argues that our analysis of the frontier shift achieved by Fluvius does not account for the service quality delivered by individual DSOs.⁵⁰ To address this concern, we have conducted additional analysis to assess whether the frontier firm systematically performed poorly across the quality of service measures used in the current tariff methodology over the period 2017-2022.

In the electricity sector, Fluvius Limburg (the frontier firm) is ranked around the median for most interruption metrics, except for low-voltage interruption duration. Similarly, in the gas sector, Fluvius Limburg is the best-performing DSO for most interruption metrics, except for low-pressure interruption duration.

Therefore, there is no evidence that the frontier firm, which has achieved low unit costs, systematically performs poorly across the current quality of service measures.

Unit costs - Chapter 3 versus Chapter 8

Fluvius states that the unit cost trends in Chapter 3 do not appear to be consistent with the unit cost trends in Chapter 8.

The unit costs are calculated differently in Sections 3 and 8 due to the different purposes of these sections of our report, and hence the unit cost trends reported in these two sections are not comparable. In Tables 3.3 and 3.4 of our report, we present unit costs for Fluvius' total reported costs, without making any adjustment for merger savings. This will overstate the underlying trend efficiency improvement made by Fluvius due to the inclusion of one-off merger savings.

In Section 8, we adjust costs using VREG's regulatory target for merger savings. The rationale for this is that in this section we are testing whether or not the trend that will be applied by VREG under its trend

⁴⁹ Fluvius response, argument 4.

⁵⁰ Oxera response, p.76.

methodology already captures frontier shift, and therefore we need to calculate costs using the same methodology that VREG uses.