Review of Ofgem's RIIO-ET3 Draft Determination on Opex and Risk & Contingency

Prepared for Scottish Power Transmission

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Executive Summary

We have assessed the extent to which Ofgem's RIIO-ET3 Draft Determination cost assessment is able to set companies' efficient opex and risk & contingency allowances

Scottish Power Transmission (SPT) has commissioned NERA to review the cost assessment Ofgem has conducted in its RIIO-ET3 Draft Determination, focused on the approaches used to set allowances for the Electricity Transmission Operators' (TOs') operating expenditure (opex) and risk and contingency (R&C) for the upcoming price control (2026-2031).

Ofgem's assessment of opex comprises of two main cost areas: Indirects (comprised of Closely Associated Indirects and Business Support) and Network Operating Costs (NOCs). To assess these cost categories, Ofgem uses different approaches in an attempt to identify the "efficient" level of expenditure required by TOs (e.g. regression analysis, unit costs comparisons, etc.)

However, Ofgem's methods to set opex allowances for the RIIO-ET3 price control are simplistic, and in some instance (e.g., for Indirects), fundamentally flawed. As a result, Ofgem's cost assessment conflates differences between companies' relative efficiency with differences in their costs for reasons not captured within Ofgem's cost assessment approaches.

In this report, we review the models proposed by Ofgem to set RIIO-ET3 allowances for NOCs, CAI, and BSC, assess the extent to which they are able to assess companies' efficient costs, and, where possible, propose improvements to Ofgem's modelling approaches which it should consider for its Final Determination.

Additionally, we have reviewed Ofgem's proposed risk and contingency (R&C) allowance. This represents the percentage uplift on ETO projects' "as bid" contract prices to cover any additional costs the TOs expect to incur due to unforeseen events that are outside their control.

Ofgem's historical regressions are wholly unsuitable for estimating the TOs' efficient indirect costs

Ofgem adopts a blended approach to setting TOs' baseline indirect allowances. For both CAI and BSC, Ofgem applies equal weight (50/50) on (i) a historical econometric regression using TOs' outturn data (2014-2024), and (ii) a forward-looking, company-specific analysis. Therefore, any errors or inaccuracies in Ofgem's regression models would impact materially on the TOs' indirect cost allowances.

Our review of Ofgem's historical regression modelling has identified a number of problems, as set out below:

- **Imprecision caused by a very small sample.** Ofgem estimates regressions using a limited number of observations for only 3 or 4 companies from 2014-24 (i.e. 33 observations for the CAI model, and 44 for the BSC model). In addition, the small number of companies in the sample are starkly different in terms of their size and the nature of their businesses. The extremely small sample and limited comparable data will tend to limit the robustness of the regression estimates;

- **Misleading inference from statistical tests**: Given the small sample sizes, the statistically significant coefficients and high adjusted R squared[1] of Ofgem's models cannot reasonably be interpreted as evidence that the regression equation estimates companies' efficient indirect costs reliably;

- **Implausibly high variation in efficiency scores from Ofgem's modelling**: Despite the high adjusted R squared, we observe large differences in companies' efficiency scores, as shown in Figure 1 and Figure 2 below. For the CAI model, companies' submitted costs are between 0.51 to 3.25 times their modelled cost over RIIO-ET3. For BSC, companies' submitted cost is between 0.89 to 1.88 times the modelled costs over RIIO-ET3. Regression residuals of this magnitude cannot credibly be ascribed – as Ofgem's approach implicitly assumes – to variation in efficiency across companies. Rather, the large differences between companies' submitted and modelled costs are far more likely to be driven by model mis-specification and their inability to control for differences between TOs' operations;

- **Evidence of model over-fitting of the model, due to differences between TOs' scale**: Our analysis suggests that Ofgem's regression models are "over-fitted".[2] The statistical performance of Ofgem's models deteriorates substantially when the large companies (NGET and/or NGGT) are removed from the dataset. Hence, Ofgem's modelled costs are largely driven by differences in the scale of the large company, relative to that of the smaller ones, instead of capturing the relationship between indirect costs and cost drivers. The consequence of this problem is that Ofgem's regression coefficients are estimated "spuriously", and its cost assessment results are highly inaccurate;

- **Failure to control for upward cost pressures**: Ofgem's use of historical data, and the exclusion of forecast data from the regression, assumes that the observed historical relationship remains constant over time. In fact, a statistical test for "structural breaks" in the modelled relationships shows that Ofgem's approach is not appropriate, as the relationship between costs and drivers changes in the future period. In practical terms, Ofgem's modelling does not capture factors, such as changes to regulatory/legislative requirements and the acceleration of transmission upgrades to support net zero, which will increase in TOs' indirect costs in RIIO-ET3;

- **Double-counting of ongoing efficiency**: Ofgem's regression models use historical cost data that already reflect past efficiency improvements, leading to double counting of Ofgem's ongoing efficiency (OE) adjustments when it uses its models to forecast ET3 costs. By relying on historical regressions to predict companies' indirect allowances, Ofgem effectively extends the past productivity trends into TOs' RIIO-ET3 allowances. However, Ofgem further stretches the efficiency requirements by applying the OE target to the indirect allowances, assuming that the TOs can achieve further productivity improvements beyond what is embedded within the regression model;

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[1]   The adjusted R squared is a statistical measure that evaluates the goodness of fit of a regression model, it indicates the percentage of variations in company's costs that is explained by the model.

[2]   Over-fitting is a statistical problem whereby the coefficients estimated in a regression model are materially influenced by the data for one particular company.

- **Endogenous cost drivers**: Ofgem has used drivers which are under management control, and/or are "endogenous" [3] for other reasons in its regression models, which creates bias in Ofgem's modelled regression coefficients, thus undermining the ability of its models to assess TOs' efficient indirect costs.

Figure 1: Difference between Modelled CAI Costs and Submitted CAI Costs as a Percentage of Submitted CAI Costs
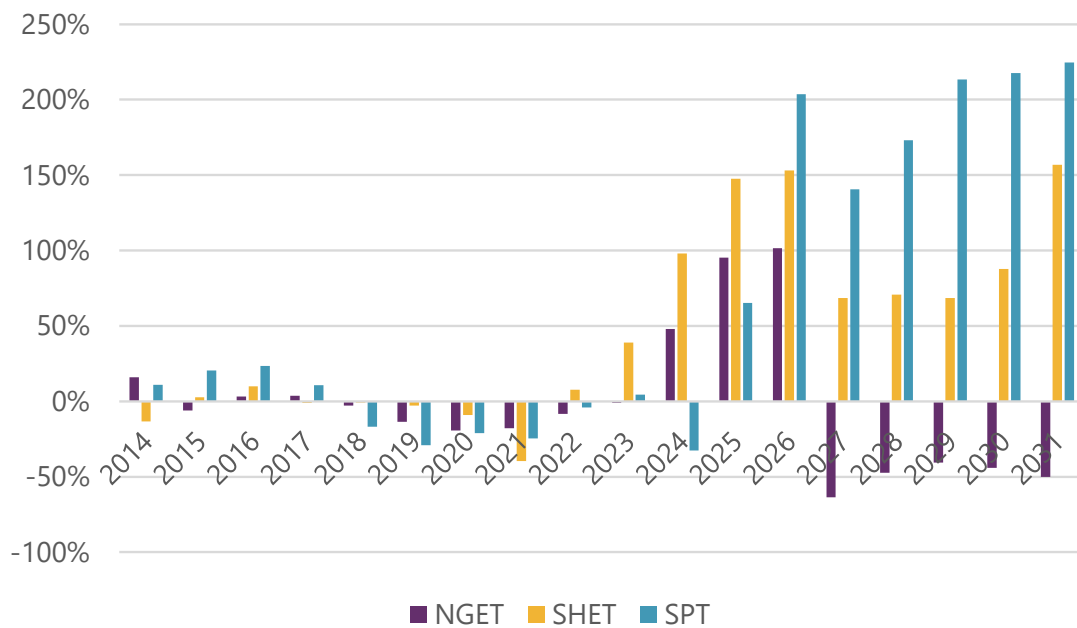
Source: NERA Analysis of Ofgem Benchmarking Files.

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[3]   The econometric problem of "endogeneity" arises when cost drivers are determined simultaneously with the dependent variable (i.e., indirect costs in this case). The presence of endogenous variables in regression models will lead to biased regression results, and violates one of the basic assumptions underpinning OLS regression.

Figure 2: Difference between Modelled BSC Costs and Submitted BSC Costs as a Percentage of Submitted BSC Costs
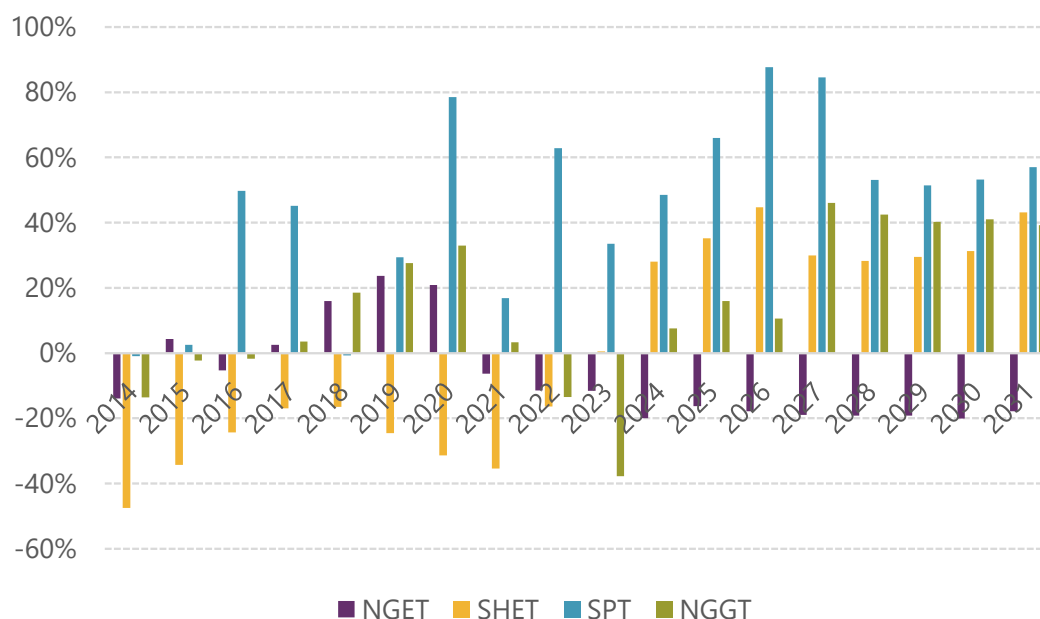
Source: NERA Analysis of Ofgem Benchmarking Files.

Despite the significant difference between the results under Ofgem's historical regression models and the company-specific analyses, we have seen no evidence showing Ofgem has attempted to assess the relative reliability of these alternative estimates, before triangulating them simplistically using a 50:50 average.

Due to the flaws in the historical regression modelling outlined above, Ofgem's historical regression modelling provides no insight on how TOs' efficient costs will evolve in the ET3 period, and risks underfunding their efficient indirect costs.

As a practical demonstration of this risk of underfunding, SPT's modelled costs calculated using the forward-looking ratio analysis are £360 million, or 199 per cent, higher than the one obtained through the regression model. For BSC, the trend analysis estimates a modelled cost £153.9 million, or 166 per cent, higher than that produced by the regression model (£180.6 million). Given the significant deficiencies of Ofgem's regression modelling, we suggest Ofgem does not ascribe any weight to its results in the ET3 cost assessment.

Ofgem's company-specific forward-looking analysis relies on arbitrary efficiency benchmarks and overly simplistic assumptions

We have also identified a number of problems with Ofgem's company-specific forward-looking analysis.

Ofgem's ratio analysis for CAI calculates the ratio of CAI to MEAV, as proposed in each company's business plan, for each year of the ET3 period. It then compares the mean and median of these 5 values It performs similar analysis using the CAI-to-capex ratio. Ofgem's approach then defines the median cost ratio to be the efficient level of expenditure for each year of the control period.

This approach has no basis in economics, and Ofgem offers no commercial reasoning to justify it. It serves to arbitrarily disallow TOs' cost proposals, depending on whether each ETO's mean costs exceed its median, annual costs over RIIO-ET3.

The time profile of CAI is substantially beyond TOs' control. Factors such as the characteristics of the capex programmes may affect a company's annual CAI-to-capex ratio considerably, which depends on customer and industry needs, and is not substantially within the TOs' control. Therefore, Ofgem's ratio analysis does not identify whether a company's CAI proposal is efficient. In addition, Ofgem's approach provides companies with incentives to submit flat cost projections (per unit of the driver) over time, so modelled cost will equal to their business plan.

Ofgem's BSC trend analysis is overly simplistic and is highly sensitive to the choice of the reference year. By assuming the company's BSC and the number of Full Time Equivalent (FTE) employees grow proportionately over RIIO-ET3, Ofgem's approach effectively assumes that the company's BSC to FTE ratio over RIIO-ET3 stays the same as forecasted in 2026. However, this approach:

- Ignores factors other than FTEs (e.g., share of contractors, timing of particular projects) that may also lead to variations in TO's BSC; and

- Is highly sensitive to the choice of reference year, and ignores the high volatility in TO's annual BSC to FTE ratios. In fact, Ofgem's choice of 2026 as reference year has set SPT's BSC to FTE ratio over RIIO-ET3 at the minimum level as observed in the historical data. Given the considerable uncertainty facing TOs, it is highly unlikely that they can predict annual data with high precision. Therefore, Ofgem's approach that relies on one single year for cost modelling is likely to generate misleading predictions.

However, while we find these limitations in Ofgem's forward-looking, TO-specific analysis, this approach leads to modelled indirect costs for SPT that aligns with the company's own view.

Given the significant problems with both the forecast and regression analyses, a pragmatic solution to the problems we have identified might therefore be to rely solely on the ratio analysis when determining SPT's ET3 allowances. The rationale for this approach is not that the forecast analysis is reliable per se, but, because neither approach provides a sufficiently reliable basis to conclude that SPT's business plan contains elements of inefficiency, the forward-looking analysis generates a result closer to SPT's business plan cost forecasts. This approach would therefore mitigate the risks of underfunding SPT's indirect activities due to inaccuracies in Ofgem's cost assessment. It would require assigning no weight to the historical regression analysis, and 100 per cent weight to the forecast analysis.

Ofgem's indirect Uncertainty Mechanism (UM) proposals with unjustified thresholds expose TOs to significant risks of cost under-recovery

Ofgem proposes not to provide full upfront funding for the indirects associated with schemes the TOs requested be subject to UMs, or are in the delivery pipeline.   Therefore, in addition to the ex ante baseline allowances, Ofgem proposes to fund indirects associated with more uncertain work during RIIO-ET3 via a Use-It-or-Lose-It (UIOLI) allowance for CAI and a mid-period re-opener for BSC.

Our review has identified a number of problems associated with Ofgem's indirect UM proposals.

First, both the TOs and Ofgem point to the inconsistency in TOs' approaches to allocating indirect costs funded through baseline ex ante allowances and the indirect UM. Since Ofgem's approach relies on TOs' baseline data to set allowances, the data inconsistencies means the breakdown between the baseline and UM indirect allowances Ofgem provides are themselves likely to be inconsistent.

Second, the thresholds Ofgem sets for the indirect UMs lacks justification and risks underfunding TOs' indirect costs to support UM-related capex projects. Specifically,

- For the CAI UIOLI allowance, Ofgem proposes to exclude load projects under £25 million. The threshold on project size is arbitrary and unjustified, and provides no allowances for the costs associated with growth in smaller projects.

- Ofgem's proposed 10 per cent CAI-to-capex ratio appears systematically to underfund TOs' indirect activities:

  – Ofgem does not explain how it has derived the 10 per cent CAI-to-capex ratio. It argues though that this value is in line with the RIIO-ED2 indirect scaler. However, this comparison would not justify the same scaler, as the electricity transmission and distribution are very different network types with different CAI costs incurred to support capex projects. In fact, our analysis, using a regression similar to that which derived the ED2 scaler, shows that TOs' have a higher CAI-to-capex ratio (14.1 per cent) than the DNOs (10.8 per cent);

  – Ofgem's expectation that "*some of the load investments within the scope of the CAI UIOLI might fall away*" does not justify a 10 per cent CAI-to-capex ratio, as Ofgem has not substantiated this claim that some costs may not be incurred, either by stating what costs might "fall away", why they might do so, and to what extent; and

  – Ofgem's £25 million threshold creates a perverse incentive for TOs to de-prioritise small capex programmes costing below £25 million, because they will not obtain any funding for CAI. In addition, it could also incentivise TOs to develop "packaged" network upgrade projects to ensure they meet the threshold.

- For the BSC mid-period re-opener, Ofgem has proposed that the re-opener only triggers when both totex and BSC outturn costs of the TO are above 15 per cent of the baseline allowances. The double 15 per cent thresholds set a very high bar for the TOs to trigger, creating a risk of underfunding BSCs associated with UM-related capex projects, which is even more material than the ones identified for the CAI UIOLI allowance.

  – Ofgem provides no reason to justify its thresholds for the BSC re-opener, and why a threshold for both totex and BSC is indeed needed/justified;

  – The companies will not be able to access additional funding if either of their outturn BSC or outturn totex is below 15 per cent of their baseline allowances. We understand that SPT believes it is highly unlikely that the company will meet Ofgem's criteria to release this extra funding;

  – The BSC re-opener poses a higher risk of underfunding for TOs than CAI UIOLI. Since for CAI UIOLI the thresholds are applied at the project level, TOs could still obtain funding for those projects that are between £25 million and £150 million. On the other hand, since the thresholds for the BSC re-opener applies to total BSC and totex, failing to meet both

thresholds means that the TO will not have access to *any* additional funds to recover its BSCs associated with all UM capex projects, even if such costs are incurred efficiently; and

– Ofgem's BSC re-opener proposal also risks introducing perverse incentives for TOs to increase their costs to meet Ofgem's thresholds for the BSC re-opener.

Third, Ofgem suggests that the ex post efficiency assessment for both CAI UIOLI and BSC re-opener will apply without any guidance on the reporting requirements and how Ofgem proposes to assess TOs submissions. The lack of clarity regarding the reporting requirements reduces certainty for TOs and their investors, particularly if the reporting requirements imposed by Ofgem result in TOs' submitted funding requests being partially disallowed.

We recommend Ofgem accepts TOs' indirect cost forecasts, and sets ex ante allowances to cover TOs' total indirect costs, with looser conditions for indirect UMs

We recommend Ofgem accepts TOs' indirect cost proposals as submitted in their business plans, since, Ofgem's cost assessment provides no evidence to suggest the companies' indirect cost estimates are inefficient. In preparing its Final Determination, Ofgem may question whether this recommendation of accepting SPT's business plan proposal on indirect costs is efficient protects adequately the interests of consumers, as required by its statutory duties.

The consumer interest, and in particular the need to remunerate the TOs' costs as they ramp up activity to support net zero, would not be well-served by using unreliable statistical analysis to make arbitrary reductions in licensees' business plan cost proposals. Such an approach would represent bad regulatory practice, and undermine investment incentives. Hence, in the absence of any reliable evidence that SPT's costs proposals contain any elements of inefficiency, and the serious statistical flaws with its own modelling, we consider it would protect the consumer interest for Ofgem to conclude from its analysis that it has no basis to deem SPT's cost forecasts as inefficient, and to fund them in their entirety.

However, if Ofgem does wish to make use of the analysis performed to date, we would suggest Ofgem putting materially higher weight on the forward-looking, TO-specific analysis. This will mitigate the risk of underfunding SPT's indirect activities, as the outcomes produced by Ofgem's TO-specific analysis broadly aligns with SPT's Business Plan. It may be possible to improve the econometric modelling, but we do not consider any statistical analysis performed on such small sample will be reliable.

Given our concerns on the inconsistency between TOs' approaches to allocate baseline and UM-funded projects, considering also the wider problems we have identified, we recommend Ofgem should seek to set ex ante allowances for total indirects to avoid risks of underfunding companies due to cost allocation issues. The provision of such an ex ante allowance also ensures TOs are incentivised to maximise efficiency, and investors have certainty on their revenues.

Because Ofgem's proposals for indirect UMs create substantial risks of cost under-recovery for TOs' indirect activities to support UM capex projects, we propose that Ofgem:

• Removes the £25 million threshold on project size and sets the CAI UIOLI allowance at 14.1 per cent of the expected capex, based on the historical CAI regression at RIIO-ET3 DD estimated in levels in a way which is consistent with Ofgem's approach at RIIO-ED2 when it set the indirect scaler;

- Replaces the BSC re-opener with a more straightforward mechanism (e.g., automatic uplift based on TO's CAI UIOLI allowances, at a pre-defined rate); and

- Publishes the detailed reporting requirement and assessment criteria to provide the companies with necessary guidance to assure them of their ability to recover efficiently incurred costs, and avoid deterring investment.

Ofgem's assessment of Network Operating Costs (NOCs) makes no attempt to identify inefficiency, and instead relies on simplistic approaches

Ofgem's proposed approach to setting TOs' NOCs allowances involves setting an allowed unit cost, based on the minimum observed across the RIIO-ET2 and RIIO-ET3 periods in companies' submissions (the unit cost approach), unless certain materiality thresholds are met.[4] If these thresholds are met, Ofgem sets the annual unit cost at the annual average cost over the RIIO-ET2 and RIIO-ET3 periods (the annual average cost approach).

Ofgem's proposed approach to assessing companies' NOCs for RIIO-ET3 is similar to its cost assessment approach at RIIO-ET2, but introduces the "annual average cost approach", which allows for a more accurate assessment of TOs' efficiency costs (compared to the RIIO-ET2 approach[5]). However, Ofgem's RIIO-ET3 approach still suffers from several flaws:

1. The materiality thresholds for the annual average cost approach are set at arbitrary levels;

2. Whilst the annual average cost approach is an improvement on the RIIO-ET2 approach, it still sets RIIO-ET3 unit costs in part (50 per cent) based on RIIO-ET2 unit costs, even if these unit costs are incomparable, e.g., due to different types of workload or cost pressures that emerge over time;

3. Ofgem's annual average cost approach fails to account for the increase in total cost due to changes in workload between RIIO-ET2 and RIIO-ET3, resulting in an underestimate of SPT's efficient costs for cost areas where there is an increase in workload from RIIO-ET2 to RIIO-ET3; and

4. Despite the introduction of the annual average cost approach, Ofgem's approach to assessing NOCs makes no attempt to disentangle pressures on efficient costs from inefficiency. This approach risks systematically underfunding TOs' efficient NOCs.

To address issue 3 above, we propose that Ofgem improves its annual average cost approach to account for increases in workload between RIIO-ET2 and RIIO-ET3. This could be achieved by normalising the total cost incurred during ET2 for changes in the volume of work over time, before taking the average. This adjustment aims to eliminate the impact of changes between RIIO-ET2 and RIIO-ET3, ensuring that the only volume effect on the calculated annual average cost is from the forecast workload in RIIO-ET3.

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4   Submitted costs are either significantly greater than the modelled costs derived by the unit cost approach, by 25 per cent and £1m.

5   The unit cost approach used at RIIO-ET2, and proposed to be used for RIIO-ET3 if Ofgem's materiality thresholds are not met, assumes companies' efficient costs can only fall over time, and takes no account of the material variability over time in the type of workload TOs undertake, or underlying real cost inflation pressures, conflating these factors for inefficiency.

Moreover, to address issue 1 above, we show the impact of relaxing Ofgem's arbitrary materiality thresholds (individually, and together) on SPT's ET3 NOCs allowance under three alternative approaches:

- **Alternative 1** retain Ofgem's 25 per cent materiality threshold, but remove the £1m materiality threshold, and correcs the annual average cost approach to account for changes in workload;

- **Alternative 2** reduce Ofgem's 25 per cent materiality threshold to 10 per cent, remove the £1m materiality threshold, and correct the annual average cost approach to account for changes in workload; and

- **Alternative 3** remove both materiality thresholds, effectively setting all NOCs allowances through the annual average cost approach, rather than the unit cost assessment approach, and correct the annual average cost approach to account for changes in workload.

Table 1 summarises SPTs' NOCs allowances under the three alternatives, with the third (removal of both materiality thresholds) increasing SPTs' RIIO-ET3 NOCs allowance by £3.75m.

Table 1: Impact of Alternative Approaches to Setting Cost Targets on SPT's Allowances

	Submitted Cost	Draft Determination Allowance (exc. OE)	Correcting AACA to account for workload changes	Cross Check 1 Allowance (exc. OE)	Cross Check 2 Allowance (exc. OE)	Cross Check 3 Allowance (exc. OE)
SPT NOCs	351.97	275.18	276.09	277.44	278.83	278.93
Difference to Draft Determination Allowance	76.79	0.00	0.92	2.27	3.65	3.75

Source: NERA analysis of Ofgem's NOCs modelling file.

Given Ofgem's arbitrary selection of materiality thresholds and the failure to account for changes in workload between RIIO-ET2 and RIIO-ET3 in the annual average cost approach, we consider that a more robust approach to setting NOCs allowances for RIIO-ET3 would be to use the annual average cost approach in all circumstances (i.e. removal of materiality thresholds), as opposed to the unit cost approach (i.e. cross-check 3 above). This would have the advantage of ensuring that unit costs in both the RIIO-ET2 and RIIO-ET3 periods are accounted for in the assessment approach, as opposed to setting forecast unit costs based only on historical (RIIO-ET2) unit costs. At a minimum, Ofgem should remove the monetary (£1m) materiality threshold, since this imposes an arbitrary restriction on small unit cost areas, and Ofgem offered no justification for it in the Draft Determination.

Ofgem's R&C Proposal Underestimates SPT's R&C Costs and Risks Systematically Underfunding TOs' Projects

In its RIIO-ET3 business plan, SPT estimates its R&C costs using historical data on the ratio between the planned (i.e. "as bid") and actual project costs, for a sample of projects undertaken during RIIO-ET1 and RIIO-ET2. SPT proposes two R&C allowances equal to the unweighted

averages of this sample's *released* R&C costs – 12.9 per cent for load-related projects, and 9.2 per cent for non-load-related projects.

In its RIIO-ET3 DD, Ofgem proposes an R&C allowance equal to 5 per cent for any project whose R&C costs exceed £100,000, while allowing TOs to recover R&C costs in full for projects with R&C costs below this threshold, because it:

• Expects its proposals at RIIO-ET3, such as the Advanced Procurement Mechanism (APM), to lower the TOs' project risk and associated R&C costs;

• Expects the lower sharing factor included in the stepped Totex Incentive Mechanism (TIM) to shield TOs from extremely high-cost events outside the TOs' control;

• Expects to only grant ex ante allowances to projects which have little uncertainty, so are less prone to the risk of cost escalation triggering R&C costs, since TOs will apply for funding for projects characterised by higher uncertainty through the Uncertainty Mechanisms (UMs); and

• Excludes some risk sources (e.g. risks associated with "change in scope of assets or project design") from its definition of "project risks", thus lowering the overall value of the risks faced by TOs in their projects.

Ofgem, however, does not provide any supporting evidence or analysis for the chosen £100,000 threshold or the 5 per cent allowance:

• The 5 per cent allowance set by Ofgem lacks empirical justification. This value corresponds to the lower bound of the range of R&C historical costs estimated by Ofgem using outturn information from RIIO-ET1. However, Ofgem presents no evidence to suggest the range has remained the same during RIIO-ET2 or that it will remain the same during RIIO-ET3. Further, it is unclear why Ofgem considers the lower bound (5 per cent) instead of the average or median value (10 per cent);

• Ofgem's allowances at RIIO-ET2 understate the TOs' R&C costs incurred during RIIO-ET2. It is unclear why Ofgem anchors its RIIO-ET3 decision to its RIIO-ET2 decision, instead of empirical evidence, and to what extent its proposals in RIIO-ET3 (such as the APM and TIM) will reduce risk and, therefore, reduce the TOs' R&C costs from RIIO-ET2 to RIIO-ET3;

• Ofgem provides no evidence to support the differentiation between projects with R&C costs above and below £100,000. Our analysis suggests there is no basis for applying different treatment to the R&C costs for large and small projects; and

• Ofgem provides no rationale or evidence to justify why it excludes some risk categories from the definition of project risk. For example, it is likely that there will be frequent changes in the scope of assets that cannot be predicted prior to the development phase of work.

Setting an allowance for R&C costs below the actual R&C costs incurred by the TOs, which are systematically incurred across the majority of transmission projects, could disincentivise investment and harm customers. We therefore recommend that:

• Ofgem relies on average R&C costs experienced on TOs' historical projects over the RIIO-ET2 period to set its RIIO-ET3 R&C costs allowance, applying different R&C costs allowances for load-related and non-load-projects of 12.9 and 9.2 per cent, respectively;

- Ofgem removes the £100,000 threshold, because the evidence on how R&C costs vary with project size shows there is no justification for a differential treatment by project size; and

- Unless Ofgem can demonstrate that some categories of cost within reported, historical R&C costs are funded through other mechanisms, that all R&C cost categories be included in the calculation of the required, percentage R&C allowance.

1.   Introduction

On 1 July 2025, Ofgem published its Draft Determination (DD) for the RIIO-ET3 price controls for Electricity Transmission Operators (TOs). Ofgem's RIIO-ET3 price control sets revenues and allowances for the 5-year period from 1 April 2026 – 31 March 2031.

Scottish Power Transmission (SPT) has commissioned NERA to review Ofgem's approach to cost assessment in its DD, with particular focus on Ofgem's treatment of Network Operating Costs (NOCs), Closely Associated Indirects (CAI) and Business Support Costs (BSC), and risk and contingency allowances. This report reviews these elements of Ofgem's approach to conducting comparative benchmarking to assess the TO's relative efficiency and forecast costs for the RIIO-ET3 control period. We have reviewed Ofgem's published DD documents, as well as the set of Excel models which Ofgem used to carry out its analysis.

It summarises Ofgem's approach, presents our findings on the errors and limitations in Ofgem's DD, and sets out our recommended improvements to Ofgem's approach.

The remainer of this report is structure as follows:

- Section 2 summarises Ofgem's approach to cost assessment;

- Section 3 explains the flaws in Ofgem's assessment of CAI and BSC;

- Section 4 explains the flaws in Ofgem's assessment of NOCs;

- Section 5 explains the flaws in Ofgem's assessment of risk and contingency allowances; and

- Section 6 concludes.

2. Ofgem's Cost Assessment Approaches at RIIO-ET3

Below, we describe Ofgem's methodology for setting the efficient levels of baseline allowances for operating expenditure, including CAI, BSCs and NOCs, and determining the R&C allowances which form part of load and non-load capex.

2.1. Ofgem's Assessment of Indirect Costs (CAI and BSC)

In Ofgem's DD for RIIO-ET3, indirect costs are grouped into Closely Associated Indirects (CAI) and Business Support Costs (BSC). For both CAI and BSC, Ofgem employs a blended benchmarking methodology, applying equal weights (50/50) to two components in the cost assessment to determine the ex ante, baseline allowances:[6]

- **Econometric regression analysis**: As at RIIO-ET2, Ofgem continues to use econometric benchmarking analysis to estimate the levels of CAI and BSC, given TOs' submitted data on costs and drivers. It constructs the CAI and BSC cost models using Pooled Ordinary Least Squares (POLS) regressions based on historical data. We describe below Ofgem's approach to econometric benchmarking of CAI and BSC.

- **Company-specific forward-looking analysis:** Ofgem also uses a forward-looking analysis (not previously applied at RIIO-ET2) to capture TO's specific need for growth *"to deliver an unprecedented programme of work"*. For both CAI and BSCs, Ofgem conducts a company-specific assessment with either ratio (for CAI) or trend analysis (for BSC) based on forecast data for RIIO-ET3, aiming to reflect each TO's anticipated step change in workload over the RIIO-ET3 control period.

Ofgem justifies this blended approach with both historical regressions and forward-looking analyses on the basis that it *"strikes an appropriate balance between protecting consumers and meeting the scale and complexity of TOs' significant challenges associated with the forecast step change in costs linked to the delivery of CP2030"*.[7]

In addition to the ex ante baseline allowances, Ofgem sets out in-period regulatory mechanisms for funding the indirects associated with more uncertain work during RIIO-ET3, as we discuss in Section 2.1.3 below.

2.1.1. Closely Associated Indirects (CAI)

2.1.1.1. Blended approach for setting ex ante baseline allowance

For RIIO-ET3, Ofgem has determined the baseline allowances for TOs' CAI by applying equal weights on the results of the two benchmarking assessments:[8]

- **Historical regression**: Ofgem employs a POLS multivariate regression based on historical data from 2014 to 2024, with capex and Modern Equivalent Asset Value (MEAV) as drivers to control for workload and scale effects, as well as a linear time trend to capture unobserved time effects

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[6] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.97 – 5.100.

[7] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.103.

[8] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.99.

(see modelling specification below). Ofgem has retained its RIIO-ET2 assumption of a Cobb Douglass cost function for CAIs, and used the following model specification:

$$\ln(CAI) = \beta_0 + \beta_1 * \ln(Capex) + \beta_2 * \ln(MEAV) + \beta_3 * Time\ trend$$

– Ofgem highlights two major amendments in its methodological choices compared to RIIO-ET2. The first one is the use of a standardised unit cost for each asset included in MEAV, which Ofgem deems "*to be a reasonable amendment to also help mitigate potential cost volatility causing over-inflation of CAI modelled cost*".[9] However, this method of calculating MEAV excludes several assets. Ofgem plans to further consult with stakeholders to determine whether these additional assets should be included to improve MEAV as a more appropriate scale driver.[10]

– The second change from its RIIO-ET2 benchmarking is that Ofgem has excluded GT from the regression for RIIO-ET3, given the difference in capex profiles and in needs for investment between electricity transmission (ET) and gas transmission (GT), and that it considers the inclusion of GT in the data did not improve the model performance (Ofgem assessed ETs' and GT's CAI jointly at RIIO-2).[11]

• **TO-specific ratio analysis**: Acknowledging TOs require different levels of network growth for RIIO-ET3 and are at differing stages of preparedness to meet CP2030 targets, Ofgem supplements its historical regression with a forward-looking, TO-specific ratio analysis based on RIIO-ET3 data. For each TO, Ofgem calculates the median of the annual ratios of CAI costs to both capex and MEAV, and applies equal weightings to derive its estimate of efficient CAI costs.[12]

2.1.1.2. Use-It-Or-Lose-It (UIOLI) allowance to supplement ex ante baseline CAI funding

Ofgem proposes to provide a CAL UIOLI allowance, in addition to the baseline CAI allowances. Ofgem explains this additional funding is needed for TOs to prepare in advance for the increase activity during RIIO-ET3 for the delivery of CP2030, which may prompt them to proactively expand their capabilities to accommodate a higher volume of customers and network reinforcement.[13] According to Ofgem, the UIOLI allowance provides TOs with significant flexibility to access funds upfront, whenever they anticipate an increase in CAI activities. Any unspent allowances will be clawed back.[14] The CAI UIOLI allowance is not subject to the Totex Incentive Mechanism (TIM), though Ofgem explains it has defined its size and scope to maintain an incentive for cost minimisation:[15]

• The scope of the CAI UIOLI allowance covers load projects, including connection projects, below £150 million, with a value up to 10 per cent of the expected capex on eligible projects, in

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9   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.111.

10 Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. A2.11.

11 Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.110-5.113.

12 Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.115.

13 Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.123.

14 Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.126.

15 Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.127.

addition to any Pre-Construction Funding (PCF).[16] Ofgem states that the threshold covers most forecast projects, and the UIOLI arrangement mitigates against large swings in CAI requirements. The CAI UIOLI does not cover load projects below £25 million, for which a separate load UIOLI mechanism applies;[17]

- Ofgem proposes to require TOs to provide detailed reporting on the allocation of the CAI UIOLI allowance, to ensure the mechanism achieves its intended objective to fund TOs' growth at low risk for consumers.[18]

The CAI UIOLI allowance for RIIO-ET3 will replace the opex escalator used in RIIO-ET2. Ofgem considers the uniform CAI uplift across diverse project types under the opex escalator to be no longer appropriate, given the growing scale and complexity of RIIO-ET3 projects.[19] Ofgem also points out that the removal of the NOCs uplift is unlikely to cause material underfunding as most network expansion occurs at the end of RIIO-ET3, and the uplift for load UMs would only be provided after asset energisation anyway. TOs are expected to include these assets in their NOCs baseline allowances for RIIO-ET4.

Based on the scope above and the allocation of schemes, Ofgem reports in its RIIO-ET3 DD that the size of the CAI UIOLI is £78m for SPT.[20]

2.1.2. Business Support Costs (BSC)

2.1.2.1. Blended approach for setting ex ante baseline allowance

For RIIO-ET3, Ofgem has determined the baseline allowances for TOs' BSCs by applying equal weight to the results of the two benchmarking assessments:[21]

- **Historical regression**: Ofgem maintains its RIIO-ET2 regression approach, using a POLS estimator and historical data from 2014 to 2024. It has used a composite scale variable (CSV), with the same formula as at ET2, constructing the CSV by weighting together totex, FTEs, and MEAV.[22] It uses the following model specification assuming Cobb-Douglass cost function:

$$\ln(BSC) = \beta_0 + \beta_1 * \ln(CSV) + \beta_2 * GT\ Dummy$$

  Ofgem has also maintained its cross-sector approach for BSC where both ET and GT companies are included in the econometric model. Ofgem argues that costs and drivers remain similar between the GT and ET, and assesses that the statistical advantages from using more data points outweigh the qualitative difference between sectors.

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[16] PCF aims to provide TOs with funding at early stages of project development to continue to design and seek consent for large ET investments. It will cover activities required to enable the TOs to obtain all material planning consents and prepare for construction to begin for load schemes that are expected to cost more than £25 million.

Source: Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, p. 77.

[17] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.128.

[18] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.130.

[19] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.131.

[20] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.132.

[21] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.99.

[22] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.135-5.136.

- **TO-specific trend analysis:** Similar to CAI, to account for the expected step change in growth and the potentially different time and scale of such changes for the TOs, Ofgem has combined the regression analysis with a TO-specific trend analysis.[23] For the trend analysis, Ofgem calculates TOs' trend in FTE growth from the end of RIIO-ET2 (2026), and applies this trend in FTE growth to BSC, i.e., the year-on-year forecast increase (or decrease) in FTE is applied to forecast BSC in 2026 to set base allowances for BSC.[24]

2.1.2.2.   Mid-period BSC re-opener to address potential growth

Ofgem proposes to introduce a mid-period re-opener, with expenditure-based trigger for BSC, to ensure timely funding, and to address TOs' different needs for indirect expenditure.[25] The re-opener aims to provide funding to address potential growth beyond the TOs' ex ante allowances. The re-opener will be triggered mid-period, if both outturn totex and BSC are above 15 per cent of allowances.[26] This is the same as the TIM threshold, after which any overspend is passed on to consumers in full, where Ofgem considers "*it is particularly important to undertake an efficiency assessment after the 15% threshold is passed as part of the re-opener process*".[27]

2.1.3. Exclusion of indirects related to Uncertainty Mechanisms (UMs) and pipeline projects

Ofgem notes that the two Scottish TOs have forecast indirect costs for RIIO-ET3 which are more than twice their reported costs for RIIO-ET2. In contrast, NGET has forecast indirect costs approximately 5 per cent lower than its reported costs for RIIO-ET2. Ofgem found that this large discrepancy was partly due to inconsistencies in the extent to which TOs had included the indirect costs related to pipeline schemes in their Business Plans.[28] For the assessment of CAI and BSC at RIIO-ET3, Ofgem has decided not to provide full upfront funding for indirects related to schemes the TOs requested be subject to UMs, or are in the delivery pipeline.[29]

Ofgem notes there is the risk that these projects are not delivered or are delivered late. It states that protecting consumers against the risk of under- or overfunding of these associated indirects would require the introduction of multiple adjustments and clawback mechanisms, which can be disproportionately complex.[30]

In addition, Ofgem comments that the UMs and pipeline projects in TOs' initial submissions include schemes for which an allowance for indirects would be determined via funding routes like ASTI or RIIO-ET2 close out. Hence, it considers providing full upfront funding for indirects would risk double funding.[31]

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[23]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.140.

[24]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.139.

[25]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.101.

[26]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.142.

[27]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.143.

[28]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.90.

[29]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.92.

[30]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.93.

[31]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.94.

As a result, we see a larger difference between the submitted costs and modelled allowances for TOs who included more pipeline schemes in their business plan submissions.

2.2.   Ofgem's Assessment of Network Operating Costs

The TOs' NOCs comprise expenditure on faults, inspections, maintenance, repairs, service agreements, vegetation management, NOCs other, flood mitigation, operational technology and visual amenity.[32] In its DD for RIIO-ET3, Ofgem carries out a mixture of quantitative and qualitative assessments on the TOs' expenditure proposals in these NOCs categories and sub-categories at the disaggregated level. In the modelling file for NOCs, the quantitative assessment is referred to as the "unit costs" approach while the qualitative assessment based on engineering review is referred to as the "separate" approach.[33]

Ofgem notes that for faults, inspections, repairs, vegetation management and some NOCs other costs (site security, asbestos management, safety climbing fixtures, fire protection, earthing upgrade, substation electricity), it largely retains its RIIO-ET2 approach to quantitatively assess the efficient level of expenditure. This involves comparing individual TO's RIIO-ET2 and RIIO-ET3 costs, except for the implementation of the "annual average cost approach".[34]

At RIIO-ET2, Ofgem relied primarily on a unit cost approach, when both historical and forecast volumes were available for the RIIO-ET1 and RIIO-ET2 control periods. Under this approach, for each sub-category of costs, Ofgem set the proposed allowance by taking the lower of the RIIO-ET1 unit cost and RIIO-ET2 unit cost, multiplying the selected unit cost by the proposed RIIO-ET2 volumes for that sub-category.[35]

At RIIO-ET3, Ofgem has retained the same unit cost approach, but has also implemented the **annual average cost approach** for all TOs for assets where RIIO-ET3 submitted costs are significantly greater (i.e. beyond defined thresholds) than RIIO-ET2 costs for any of the TOs.[36] Under the *annual average* approach, Ofgem divides the total cost over both RIIO-ET2 and RIIO-ET3 by 10, the number of years in both periods) and sets an allowance equal to this annual average cost for each year of RIIO-ET3.[37]

When identifying the cost categories to which this new *annual average* approach applies, Ofgem uses a combination of percentage and monetary thresholds (25 per cent and £1m) for the switch from the unit cost to the annual average cost approach.[38] If moving to the annual average cost approach results in a positive adjustment, Ofgem allows full, submitted cost for that sub-

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[32]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.62.

[33]   NERA review of "NOCs_SPT TO _NDA_Share.xlsx" (Excel), sheet "Local".

[34]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.63.

Ofgem (9 July 2020), RIIO-2 Draft Determinations - Electricity Transmission Annex, para.3.42.

[35]   Where either historical or forecast volumes are unavailable for sub-categories within the scope of this quantitative assessment, Ofgem used the average annual cost approach. Under this approach, Ofgem sets the proposed allowance for each cost sub-category by taking the lower of the "average annual cost" over RIIO-ET1 and ET2, and setting this average annual cost for each year of RIIO-ET2. The "average annual cost" is obtained by dividing total cost by the number of years over the relevant period (5 years for RIIO-ET1 and RIIO-ET2 respectively).

[36]   Note, the annual average approach is different from the average annual approach used at RIIO-ET2.

[37]   NERA review of "NOCs_SPT TO _NDA_Share.xlsx" (Excel), sheets under "Modelled costs".

[38]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.74.

category.[39] Ofgem suggests that this amendment to its RIIO-2 approach is to account for assets where RIIO-2 and RIIO-3 costs are not comparable, and is more robust and less sensitive to data availability.[40]

For other NOC sub-categories, including NOCs other (vegetation management, ongoing environmental costs, small tools, equipment, plants & machinery, and company bespoke NOCs, other costs) and flood mitigation, Ofgem implements a qualitative assessment framework where it considers the simple quantitative assessment (i.e. the unit cost or annual average approaches) cannot be done effectively. Ofgem considers a quantitative assessment might not be appropriate, either because of insufficient volume data or because RIIO-ET3 work is not comparable to work during RIIO-ET2. Ofgem conducts a separate qualitative assessment for each sub-category.[41] Ofgem concludes that all submitted costs that Ofgem subjects to qualitative assessment are justified, and allows them in full.[42]

For other NOCs costs outside the scope of either the quantitative or the qualitative assessment frameworks, Ofgem conducts expert review of the companies' submitted Engineering Justification Papers (EJPs) for operational technology (as part of the IT&T costs in non-operational capex assessment), to assess what percentage of expenditure to allow. It then applies this same percentage of allowed expenditure to the projects without EJPs that it subjects to expert review for a given TO. For costs covered by service agreements, Ofgem has noted that SPT's submissions and responses are comprehensive, hence has allowed costs in full. Ofgem does not allow any baseline allowances for visual amenity works.[43]

2.3.   Ofgem's Assessment of Risk and Contingency Allowances

TOs include additional costs for Risk and Contingency (R&C) in their projection of load and non-load capex. Ofgem provides R&C allowances for TOs to cover the costs associated with events beyond their own control, that cause project costs to rise above the costs included in the capex allowances. R&C allowances are needed, because the TOs' capex forecasts from which Ofgem determines allowances are based on the "as bid" pricing from contractors, and if certain uncertainties materialise, contractual payments on top of these "as bid" costs may be incurred.

At RIIO-ET2, Ofgem accepted the TOs' requested allowances in full for non-asset elements of their R&C costs, with a cap set at the average level of their requested R&C allowance. For asset-related R&C, Ofgem conducted bespoke assessment for each TO.[44] Ofgem stated in its assessment of SPT's RIIO-ET2 re-opener projects that it applied a R&C allowance of 7.5 per cent of direct project costs on all RIIO-ET2 load and non-load projects approved in FD, with a cap on individual projects.[45]

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[39]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.68.

[40]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.73.

[41]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.75.

[42]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.75 and para. 5.80.

[43]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.81.

[44]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.13.

[45]   Ofgem (24 February 2024), Decision on the assessment of three 2023 SPT's MSIP full applications, para. 2.10.

Ofgem's DD for RIIO-ET3 suggests that the RIIO-ET2 for R&C allowances does not account for recent developments in the RIIO-ET3 regime. Ofgem notes that changes to the TIM and the introduction of new mechanisms for individual projects are already designed to mitigate the risk of the overall project portfolio. Therefore, Ofgem claims, applying the same RIIO-ET2 approach to R&C allowances would partly duplicate these existing policy measures.[46]

In developing its approach to setting R&C allowances for RIIO-ET3, Ofgem has surveyed similar regimes across the UK and in Europe and Australia, noting that there is no common position for the handling of risks under the R&C definition at RIIO-ET2.[47]

Acknowledging that TOs will still face some degree of project risk under the RIIO-ET3 regime, Ofgem's proposal to determine TOs' ex ante allowances for R&C costs at DD is set out below:[48]

- If the associated R&C costs of a scheme are higher than £100,000, Ofgem sets the allowance at 5 per cent of the scheme's direct costs; and

- For R&C costs below £100,000, Ofgem allows TOs' requested amount.

Ofgem notes that setting the threshold at £100,000 means 69 per cent of TOs' total R&C requests, or 7 per cent of the total R&C requested value will be allowed in full, subject to the scheme being approved by the engineering assessment.[49]

Ofgem does not provide any further evidence or analysis to support its decision on the TOs' R&C allowances, beyond the above comments on the threshold.

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[46]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.38.

[47]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.34-5.35.

[48]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.39.

[49]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.40.

3. Assessment of Ofgem's Approach to Setting CAI and BSC Allowances

3.1. Ofgem Disallows a Substantial Portion of SPT's RIIO-ET3 Indirects

As outlined in Section 2.1, Ofgem's approach to benchmarking both CAIs and BSCs relies on historical regression models, combined with a company-specific assessment based on forecast data. By applying these methods, Ofgem allows SPT £249 million of its £385 million submitted RIIO-ET3 BSC costs (65 per cent) and £416 million of its £580 million submitted RIIO-ET3 CAI costs (72 per cent), excluding the ongoing efficiency (OE).[50]

As compared to Ofgem's RIIO-ET2 approach of relying solely on a comparative benchmarking model, Ofgem claims that the inclusion of TO-specific assessment for both BSCs and CAI based on forecast data allows it to better capture differences between the TOs that are not controlled for by the regression model, and to capture the upward cost pressures TOs face due to their significant investment programmes.

However, as we explain further below in Section 3.2, Ofgem's continued use of comparative regression models to set allowances – even if with lower weight than at RIIO-ET2 – means its RIIO allowances represent an extremely imprecise estimate of the efficient costs the TOs need to incur. Also, as we explain in Section 3.3, while Ofgem's introduction of TO-specific, forward-looking assessment may result in a more realistic assessment of SPT's expenditure requirements, it also suffers from significant limitations.

Finally, we also assess below in Section 3.4 whether the proposed UMs for both CAI and BSC (described in Section 2.1) that will adjust baseline allowances for indirect costs remunerate adequately changes in the TOs' costs as their capex programmes expand over RIIO-ET3.

3.2. Ofgem's Regressions Provide an Unreliable Basis for Estimating TOs' Efficient Indirect Costs

3.2.1. Ofgem has set allowances for CAI and BSC (in part) using comparative regression models

As described above, Ofgem has set allowances for indirect costs using regressions, estimated using historical data, combined with company-specific assessments based on forecast data. In contrast to its RIIO-ET2 approach, Ofgem excluded National Gas from the RIIO-ET3 CAI regression, which it explains is due to differences in capex profiles and requirements between ET and GT. It also suggested the inclusion of GT in the data did not improve the model's performance.[51]

$$\ln(CAI) = \beta_0 + \beta_1 * \ln(Capex) + \beta_2 * \ln(MEAV) + \beta_3 * Time\ trend$$

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50 NERA Analysis of Ofgem's modelling file, tab "Calc_All_SPT" of file "Allowance_File_SPT.xlsx".

51 Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.110-5.113.

To estimate BSCs, Ofgem maintains its RIIO-ET2 regression approach, estimated using historical data (2014-24), using a CSV (with the same formula weighting for the CSV between totex, FTE and MEAV as at RIIO-ET2) as a driver.[52]

$$\ln(BSC) = \beta_0 + \beta_1 * \ln(CSV) + \beta_2 * GT\ Dummy$$

For the BSC regression, Ofgem has used data from both ET and GT, commenting that "*Both the type of costs and the drivers of these costs remain similar between sectors. This can be seen in the model, where gains from increased data points for the estimation significantly outweigh any issues of having a qualitatively different network company in the sample*".[53]

Having estimated the historical regressions, Ofgem then uses the estimated coefficients and the TOs' forecast drivers to calculate modelled costs over RIIO-ET3. However, Ofgem does not provide the TOs' with ex ante allowances for the indirect costs associated with UM projects and projects in the delivery pipeline (see Section 3.1 above). To separate allowances for the indirect costs relating to these projects, Ofgem has estimated the value that its explanatory variables would take, if the TOs were not undertaking them, and were instead only undertaking "baseline" levels of activity. Ofgem's construction and forecasts of these "*baseline drivers*" involve removing data associated with UM projects or projects in the delivery pipeline from the capex, totex, FTEs and MEAV variables to calculate TOs' modelled costs over RIIO-ET3.

Below we examine the reliability of Ofgem's regression modelling as a basis for setting ETO's allowances.

3.2.2. Ofgem's regression models rely on very small samples, making its models prone to imprecision

Ofgem estimates the CAI and BSC models using a limited number of observations (33 for the CAI model, and 44 for the BSC model). The regressions are based solely on historical data from 2014 to 2024, and include only three companies for the CAI model and four companies for the BSC model.

The extremely small sample size will tend to limit the robustness of the regression estimates, for example, as compared to the models Ofgem uses to benchmark electricity and gas distribution companies or that Ofwat uses in the water sector, making these models less reliable in assessing the efficient costs of the TOs.

In addition, there is also limited comparability across the small number of companies within the sample. There are significant differences between the companies in terms of the sizes and nature of their businesses. The two Scottish TOs are markedly smaller than NGET, and NGGT transports gas, so operates a fundamentally different business.

Ofgem itself recognises the difficulty in conducting comparative benchmarking for transmission, given the limited comparable data. For example, it states in the RIIO-ET2 DD:[54]

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[52] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.135-5.136.

[53] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.137.

[54] Ofgem (9 July 2020), RIIO-2 Draft Determinations - Electricity Transmission Annex, para.3.11.

"*The difficulties with transmission cost assessment are well documented: there are only a few companies to compare, and they vary significantly in size and scale. Forward-looking Business Plans are specific to each region, though there is a degree of interdependence through boundary transfer flows between adjacent regions. Lack of cost comparability with other national and international regulatory regimes means that the availability of useful datasets is limited*".

While Ofgem combines these regression models with company-specific analysis based on forecast data, its RIIO-ET3 Draft Determination still assigns a 50 per cent weights to the historical regression models. Therefore, any estimation errors in these regression models would impact materially on the TOs' indirect cost allowances.

3.2.3. The statistical performance of Ofgem's regression models suggest they do not robustly identify TOs' efficient indirect costs

Given the small sample sizes, the statistically significant coefficients and high adjusted R squared of Ofgem's models cannot reasonably be interpreted as showing that the regression equation estimates companies' efficient indirect costs reliably. In fact, they provide a highly inaccurate basis for estimating the level of efficient costs any one TO will incur over the ET3 control period.

Table 3.1 below shows the regression results of Ofgem's CAI and BSC models. A superficial interpretation of the regression diagnostics could be read as suggesting the models have good statistical performance, but this assessment does not stand up to closer scrutiny:

- **CAI model**:

  - Both the constant term and the coefficients on MEAV are statistically significant, though the coefficient on the Capex variable is only statistically significant at the 10 per cent significance level, and the time trend is not statistically significant.

  - The model passes the RESET test, indicating there is no direct evidence of model mis-specification of the functional form. However, the RESET test has a low statistical "power" in small samples, which means that there is a high chance of the test failing to detect model mis-specification when it exists (Type II error) resulting in a false pass of the RESET test.[55]

  - The model also passes the tests for heteroskedasticity and normality of errors, which means there is no reason to expect the standard errors and tests for statistical significance to generate misleading results.

  - The adjusted R squared of the model is 0.92, suggesting that 92 per cent of the variation in TOs' historical CAI costs are explained by the model. We discuss the implications and interpretation of this very high model fit of both models below in Section 3.2.4;

- **BSC model**:

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[55] The statistical "power" (in this case, the ability to detect mis-specification) of the RESET test declines rapidly when sample size is small, especially when the degree of non-linearity is "mild". Source: Christodoulou-Volos, C., Tserkezos, D. (2023). Sensitivity of the Ramsey's Regression Specification Error Term Test on the Degree of Nonlinearity of the Functional Form, *Journal of Applied Economic Sciences*.

- All the independent variables are statistically significant.

- However, the model fails the RESET test at 10 per cent significance level, suggesting that the BSC model has a mis-specified functional form.

- The model also fails the heteroskedasticity test at 5 per cent significance level, but Ofgem has performed the regression using robust standard errors to account for heteroskedasticity in the data.

- The adjusted R squared of the model is 0.87. As for the CAI model, we discuss this very high model fit below in Section 3.2.4.

Table 3.1: Regression Results of Ofgem's CAI and BSC Models

	CAI	BSC
Coefficients		
Constant	-5.69***	3.51***
CSV		0.84***
Capex	0.15*	
MEAV	1.01***	
Time trend	-0.04	
GT dummy		-0.77***
Statistical tests		
RESET	0.491	0.075*
Heteroskedasticity	0.421	0.010**
Normality	0.508	0.201
Adjusted R squared	0.92	0.87
Number of observations	33	44

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.
Source: NERA Reproduction of Ofgem Models.

Even these basic regression diagnostics highlight a serious problem with Ofgem's modelling. Notably, the BSC model shows evidence of mis-specification, as demonstrated by the results of the RESET test. Mis-specification of the model implies the modelled coefficients are biased, and so the predictions generated by the model are likely to be inaccurate.

Further testing also shows that Ofgem's modelling is unreliable, and, due to the small sample size, is highly sensitive to the presence of outliers in the data.

Figure 3.1 below shows a scatter plot comparing the outturn CAI and capex data of the TOs between 2014 and 2024. While in general, the data shows an upward trend between TOs' CAI and capex, the capex data of SHET in 2021 is a clear outlier: SHET's capex in 2021 is 1,732 per cent higher than the TO's average capex for the remaining years in the sample (i.e. 2014-2020 and 2022-2024). Similarly, as shown in Figure 3.2, SHET's totex in 2021 is 1,032 per cent higher than the company's average totex in the remaining years, thus suggesting the TO is an outlier.

Ofgem also notes itself that SHET's data in 2021 is an outlier. Ofgem has relied on an econometric model that regresses TOs' total FTE on total capex, to construct baseline FTEs for the TOs.[56] In its SQ response to SPT, Ofgem notes that it has removed SHET's data in 2021 in its analysis, on the basis this data point is an outlier.[57]

However, whilst Ofgem removed SHET's capex data in 2021 in its FTE regressions, it has not performed the same adjustment to its CAI and BSC regressions.

Figure 3.1: TOs' CAI and Capex data over 2014-2024
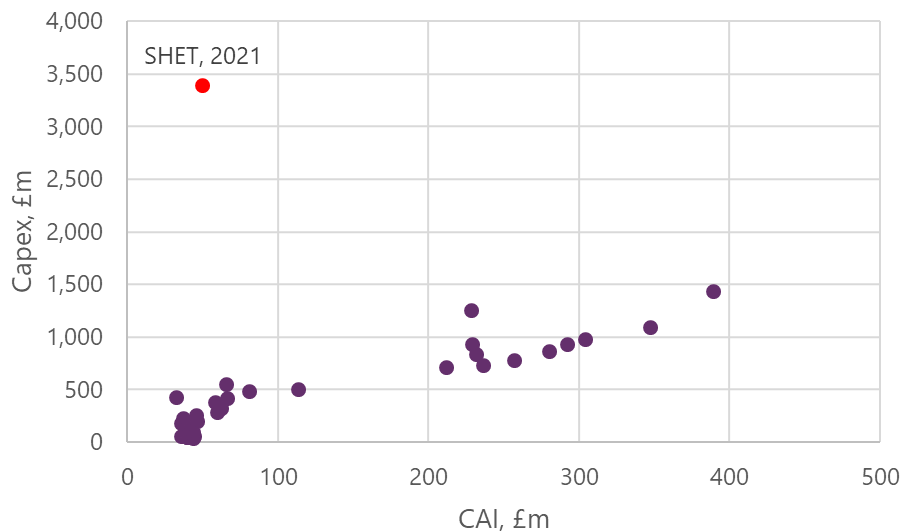
Source: NERA Analysis of Ofgem Benchmarking Files.

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[56]   As discussed in Section 3.2.1 above, Ofgem constructs "*baseline drivers*" to derive the TOs' baseline indirect allowances. Based on information provided by SPT, we understand that Ofgem has relied on an econometric model that regresses TOs' total FTE on total capex, in log forms, to construct baseline FTEs for the TOs. The estimated coefficient for capex indicates the percentage change in FTEs that is associated with 1 per cent change in capex. For each TO, Ofgem uses the estimated coefficient for capex, multiplies the percentage difference between the TO's total capex and baseline capex. From this, Ofgem estimates the associated percentage change in TOs' FTEs. Ofgem then estimates the baseline FTE, by applying the percentage reduction in FTE it derives on the TO's total FTE.

[57]   Ofgem response to SPT's SQ request on "Baseline FTE Driver".

Figure 3.2: TOs' BSC and Totex data over 2014-2024
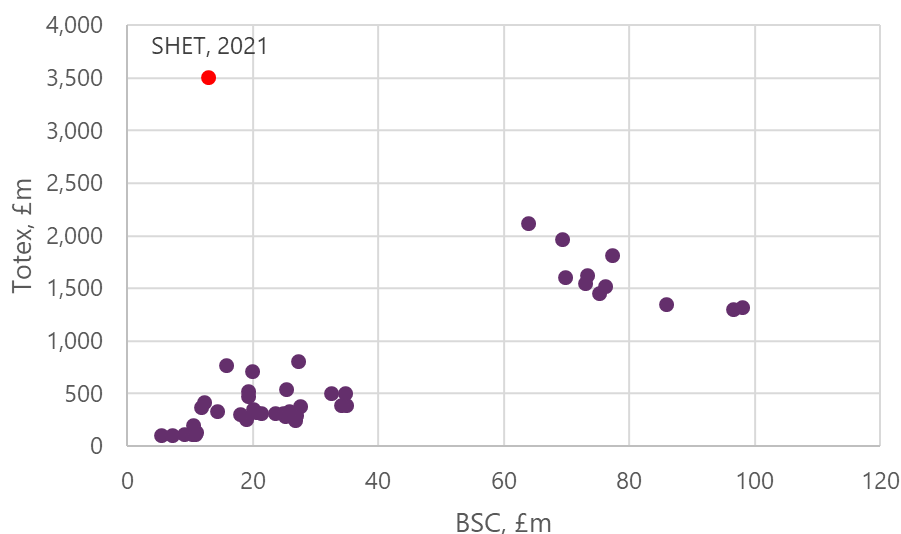
Source: NERA Analysis of Ofgem Benchmarking Files.

We have re-run Ofgem's CAI and BSC regression by removing SHET's data in 2021. The regression results in Table 3.2 show that removing this one data point from the sample has a considerable impact on the regression results:

- The estimated coefficient of capex has increased from 0.15 to 0.23, around a 50 per cent increase, suggesting that a 1 per cent increase in capex is associated with a 0.08 per cent *greater* percentage increase in company's CAI costs compared to Ofgem's model.

- The removal of SHET's data in 2021 has minimal impact on the regression results for BSC, which likely due to the calibration of the driver, where totex only receives 9 per cent weight in the CSV.[58]

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[58] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, footnote 82.

Table 3.2: Regression Results of Ofgem's CAI and BSC Models, after Removing SHET's 2021 data

	CAI, excl. SHET data in 2021	BSC, excl. SHET data in 2021
Coefficients		
Constant	-5.11***	3.52***
CSV		0.83***
Capex	0.23***	
MEAV	0.91***	
Time trend	-0.04	
GT dummy		-0.78***
Statistical tests		
RESET	0.457	0.026**
Heteroskedasticity	0.385	0.009***
Normality	0.50	0.27
Adjusted R squared	0.93	0.87
Number of observations	32	43

*Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*
Source: NERA Reproduction of Ofgem Models.

Consequently, the high model fit and the fact that Ofgem's models "pass" some statistical tests shown in Table 3.1 cannot be taken as evidence of either model performing well in its intended application, as explained further below.

3.2.4. The models do not forecast TOs' future costs accurately

Despite the relatively high fit of the model historically, as indicated by the high adjusted R squared parameters, Ofgem's models do not predict the TOs' future CAI and BSCs with a high degree of precision.

Figure 3.3 below shows the percentage difference between Ofgem's modelled CAI costs and companies' submitted CAI costs (i.e., the annual efficiency gaps of each company, as estimated by Ofgem's model). It shows there are significant differences in companies' efficiency gaps between the historical period that informs the regression (2014-2024) and the forecast period (2025-2031):

- On average over the historical period, the average efficiency gaps for the three companies are 0 per cent for NGET, 8 per cent for SHET and -5 per cent for SPT. These relatively small gaps reflect the high model fit of the model;

- However, the efficiency gap becomes materially wider in the forecast period, up to 225 per cent for SPT in 2031, meaning the company's submitted cost is 3.25 times higher than the modelled cost. By contrast, the forecast modelling suggests NGET's efficiency gap is negative, at -49 per cent *on average* over this period, suggesting its costs are half the "efficient" level predicted by the regression.

- The considerable differences between companies' submitted and modelled CAI costs start to emerge even in the historical period (with the maximum efficiency gap being 98 per cent for SHET in 2024, meaning Ofgem's model suggests the company's submitted cost is almost 2 times its efficient, modelled cost).

Figure 3.3: Difference between Modelled CAI Costs and Submitted CAI Costs as a Percentage of Submitted CAI Costs
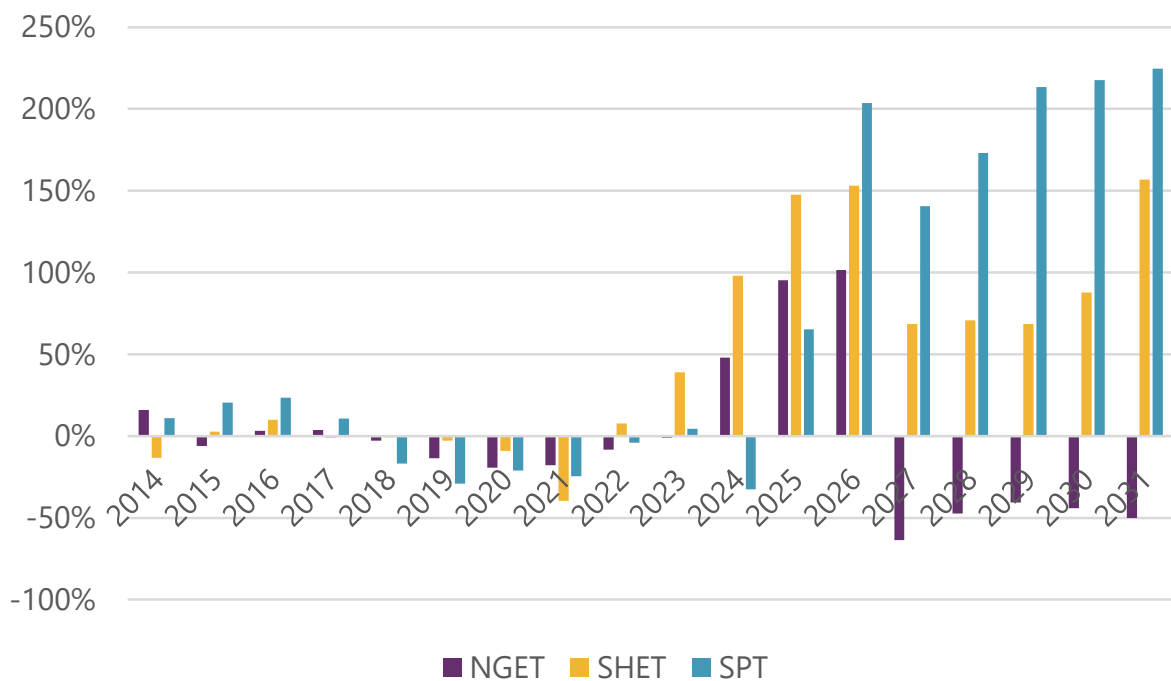
Source: NERA Analysis of Ofgem Benchmarking Files.

The large differences in efficiency scores shown in Figure 3.3, both across time and companies, predicted by Ofgem's CAI model cannot credibly be ascribed to genuine differences in the efficiency of the TOs' operations. It is far more likely that the model is in fact performing poorly in its ability to control for the wide differences between the scale of TOs' operations (see Section 3.2.5) and changes in the cost pressures they face over time (see Section 3.2.6).

For the BSC model, the failure of the RESET test means that the specification of the BSC model is probably incorrect, as noted above in Section 3.2.3. As a result, the modelled cost estimates and the statistical inference drawn from the model are unreliable. Moreover, as Figure 3.4 shows, we see similarly wide variation in the efficiency gaps implied by Ofgem's regression modelling. Over the forecast period, the model suggests SPT's efficiency gap in BSCs could be up to 88 per cent (i.e., the company's submitted cost is 1.88 times of its modelled cost), whereas NGET's submitted costs are on average 19 per cent below the modelled, efficient level.

Rather than genuine differences in efficiency, the BSC efficiency gaps implied by Figure 3.4 are, as for CAI, are far more likely to be driven by model mis-specification and their inability to control for the wide differences between the scale of TOs' operations (see Section 3.2.5) and the cost pressures TOs face over time (see Section 3.2.6).

Figure 3.4: Difference between Modelled BSC Costs and Submitted BSC Costs as a Percentage of Submitted BSC Costs
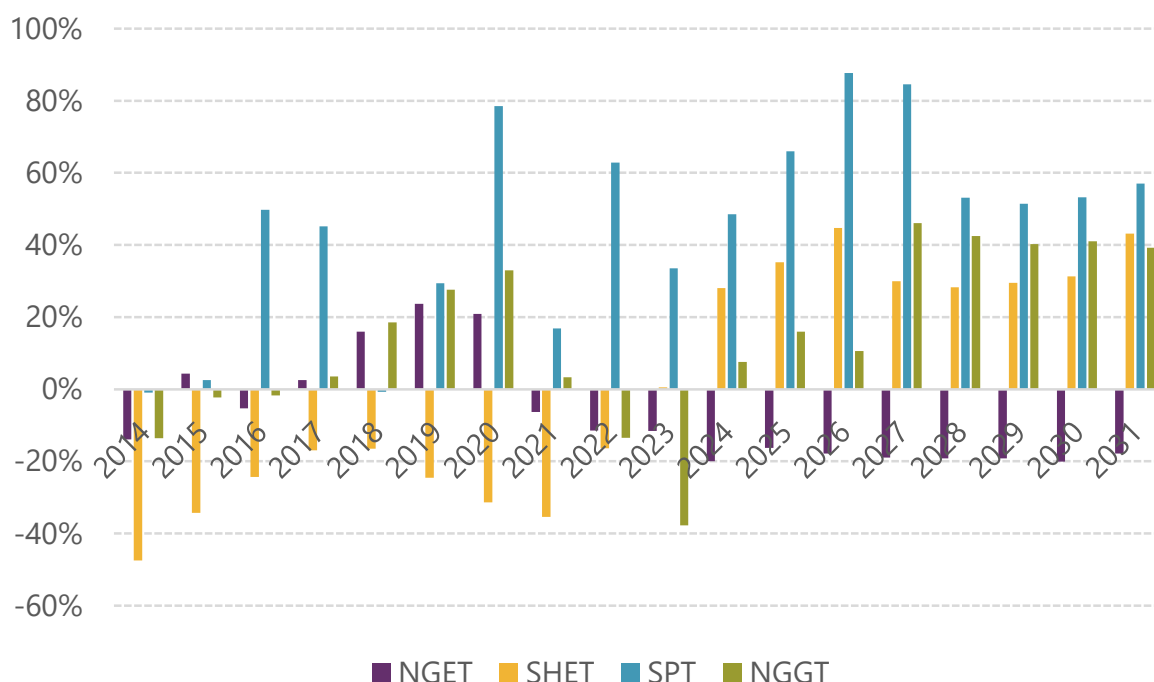
Source: NERA Analysis of Ofgem Benchmarking Files.

3.2.5.   The high statistical fit of Ofgem's models is driven by data for NGET and NGGT, suggesting they are "over-fitted"

The high statistical fit of Ofgem's regression models, as indicated by its statistically significant coefficients on the MEAV variable and the high adjusted R-squared, result from the dataset including observations for very large companies (NGET, and in the BSC regression NGGT too) and two small ones (SHET and SPT).[59] The statistical performance of Ofgem's models changes substantially when these large companies are removed from the dataset.

Table 3.3 below shows the regression results of Ofgem's CAI and BSC models estimated using only data from SPT and SHET. The models' performance deteriorates considerably with the removal of NGET and/or NGGT from the sample:

- **CAI model**: When NGET is removed from the regression model, none of the explanatory variables are statistically significant. The model fails all the three statistical tests (RESET, heteroskedasticity and normality) that Ofgem uses at 10 per cent significance level. The

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[59]   In addition, Cramer (1987) shows that the mean of the R-squared is seriously biased upward in small samples, and for sample sizes of up to 40 or 50 observations both R-squared and adjusted R-squared are very unreliable statistics. "*These measures of goodness of fit have a fatal attraction. Although it is generally conceded among insiders that they do not mean a thing, high values are still a source of pride and satisfaction to their authors, however hard they may try to conceal these feelings*". See J.S. Cramer (1987), Mean and variance of R2 in small and moderate samples, Journal of Econometrics, Volume 35, Issues 2–3, p. 253-266.

adjusted R squared of this model drops to 0.14, suggesting the model can only explain 14 per cent of variation in the two smaller TOs' historical CAI costs; and

- **BSC model**: When NGET and NGGT (as well as the GT dummy) are removed from the regression model, both the constant and the CSV are still statistically significant and the model passes the heteroskedasticity and normality tests. However, it still fails the RESET test at 5 per cent significance level, suggesting the model has used an incorrect function form. Also, its adjusted R squared falls materially to 0.4, which also suggests that the model's ability to explain variation in the two small TO's historical BSC is far more limited than Ofgem's results in Table 3.1 suggest.

Conversely, as shown in our sensitivity analysis in Appendix A, removing either SPT or SHET from the sample has a significantly smaller impact on the models' performance, supporting this assessment that the models results are influenced by the large companies in the sample.

The deterioration of the model performance after the exclusion of large companies suggests that the statistical performance of Ofgem's models is driven by the models capturing cost variation between one/two very large companies and two very small companies. Consequently, while the models appear to perform well according to Ofgem's statistical tests, Ofgem's interpretation of these tests is deeply misleading. In fact, the estimated relationships are spurious and lead to implausible efficiency results, as shown above in Figure 3.3 and Figure 3.4.

Table 3.3: Regression Results of Ofgem's CAI and BSC Models on SPT and SHET Only

	CAI	BSC
Coefficients		
Constant	-2.26	3.89**
CSV		1.22**
Capex	0.14	
MEAV	0.63	
Time trend	-0.03	
GT dummy		
Statistical tests		
RESET	0.060*	0.001***
Heteroskedasticity	0.008***	0.817
Normality	0.014**	0.461
Adjusted R squared	0.14	0.4
Number of observations	22	22

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Source: NERA Reproduction of Ofgem Models.

The statistical problem identified above, whereby the coefficients estimated in a regression model are materially influenced by the data for one particular company, is known as "over-fitting", which Ofgem itself considers as part of its model selection process in the Draft Determinations for GD3.[60]

For instance, the modelled relationship between CAI costs and MEAV (to control for scale differences) is materially affected by the inclusion of just one company (NGET). We see this from value of the coefficient on MEAV changing materially from 1.01 in Ofgem's model (see Table 3.1) to 0.63 in this re-estimated version in Table 3.3, and from the coefficient also becoming statistically insignificant.

Put differently, the inclusion of such a large company in the dataset alongside two much smaller companies means that – in effect – the regression line must be calibrated to pass through the data points for NGET, i.e. the slope of the line is determined by the relative costs of SPT and SHET vs. NGET.

As an illustration, we have run a sensitivity on Ofgem's indirect models in which we added (purely for illustrative purposes) £20 million to NGET's CAIs for each year between 2014 to 2024 (representing a 7.3 per cent increase in NGET's total CAI over the 11 years) as well as NGET and NGGT's BSCs (representing a 26.6 per cent increase in NGET's total BSC and 71.7 per cent in NGGT's total BSC over the 11 years).

The increase in NGET's and NGGT's CAI and BSC has increased the slope of the regression line. As shown in Table 3.4:

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[60] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Gas Distribution, para. 5.50.

- In the CAI model, the coefficient for MEAV increases by 0.06 in our sensitivity, as compared to Ofgem's result (see Table 3.1). This means that, according to the model estimated for our sensitivity, a 1 per cent increase in MEAV is associated with a 0.06 per cent *greater* percentage increase in company's CAI costs compared to Ofgem's model, solely because NGET's costs have increased; and

- In the BSC model, the coefficient of CSV increases by 0.11 and that of the GT dummy increases by 0.37. Therefore, the model in our sensitivity analysis predicts that, a 1 per cent increase in the CSV is associated with 0.11 per cent *greater* increase in company's BSC compared to Ofgem's model, and the differences between NGGT and the TOs' BSCs is 37 per cent *higher* than estimated in Ofgem's model.

Consequently, the models in our sensitivity test predict higher costs for the two larger companies. Specifically, NGET's CAI rise by an average of £12.01 million over the RIIO-ET3 period in the sensitivity test, over half of the assumed, illustrative increase in its submitted costs. For BSCs, the rise is roughly 1:1 with the £20m increase in both NGET's and NGGT's submitted costs.

Table 3.4: Change in Modelled Regression Coefficients When £20m Is Added to NGET's Submitted CAIs, NGET and NGGT's Submitted BSCs Between 2014 and 2024

	CAI	BSC
Change in Coefficients (Sensitivity – Ofgem's Model)		
Constant	-0.45	0.11
CSV		0.11
Capex	0	
MEAV	0.06	
Time trend	0	
GT dummy		0.37

Source: NERA analysis.

Our analysis therefore suggests that Ofgem's modelled costs are largely driven by differences in the scale of the large company relative to the smaller ones, instead of capturing the true relationship between indirect costs and cost drivers. In statistical terms, the results of Ofgem's modelling are highly misleading, as they are seriously "overfitted".

Relying on these spurious econometric models to set allowances for indirect costs for TOs in RIIO-ET3, even if only ascribed a 50 per cent weight, would therefore lead to substantial inaccuracy in Ofgem's cost assessment.

3.2.6. Ofgem's approach does not control for the upward pressure on CAI and BSC over time

As we discuss above, Ofgem only uses outturn data between 2014 and 2024 to estimate its regressions. The use of historical data has several limitations that tend to understate companies' efficient CAI and BSC entering RIIO-ET3.

The TOs expect to incur markedly higher indirect costs during the RIIO-ET3 period, linked to the scale of their capex programmes. However, as demonstrated in Section 3.2.5, the historically observed relationship between capex and indirect costs has not been estimated accurately in the historical period, and is distorted by the large differences in scale between the TOs included in the sample. Accordingly, the predicted values from applying Ofgem's estimated regression equation (see Figure 3.3 and Figure 3.4) suggest markedly lower CAI costs than the business plan cost forecasts for both the Scottish TOs.

By applying the relationship estimated historically to determine TOs' CAI and BSC allowances, Ofgem's approach assumes that the observed relationship remains constant over time. However, this assumption is unlikely to be correct in a sector facing such drastic change. For example, SPT has noted a number of factors driving the increase in its indirect costs in RIIO-ET3, for instance:[61]

- Increasing workload and complexity of the network that drives multiple areas of the indirect costs;

- New regulatory or legislative requirements driving increases in Engineering Design and Standards costs and costs associated with delivering technology;

- Changes to the System Operator Transmission Codes and Evolution of the Transmission Network to meet Clean Power 2030 that drives costs associated with control rooms; and

- Cybersecurity requirements that drive engineering costs.

In the water sector, Ofwat applies the same approach that rolls forward historically estimated relationship to determine companies' allowances, which has been cited as a contributing factor to the financial and service level difficulties facing some water companies.[62] Specifically, Ofwat's approach is inherently incapable of funding the requirement for rising expenditure that the industry requires and has likely contributed to the majority of companies in the industry overspending their cost allowances. Adopting Ofwat's approach would therefore put the financeability of energy networks and the credibility of the RIIO regulatory framework at risk, in the same way as the water sector has faced financial difficulties in recent years.

Moreover, Ofwat's modelling suite is far more sophisticated than that of Ofgem's CAI and BSC models for the TOs, as it is underpinned by richer data and a wider set of models. Ofwat's water benchmarking models have data from 17 companies over 13 years (resulting in 221 observations), compared to the three to four comparators in Ofgem's RIIO-ET3 modelling. Therefore, adopting a historical approach to calculate the efficiency frontier for the TOs is likely to be even more unreliable than doing so in the water and wastewater sectors.

Finally, ignoring the forecast data in the regression analysis fails to consider all the data available to Ofgem for comparative assessment. This reduces the sample size and may impact the robustness of the models, especially given the small sample size in the transmission sector. This is also inconsistent with Ofgem's position for benchmarking in the GD sector, where it states

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[61]   SP Energy Networks (11 December 2024), Cost Assessment and Benchmarking Approach (including RPEs & OE) RIIO-T3 Business Plan, Table 6.3: Further details on key drivers for areas of CAI Costs, and Table 6.8: Further details on drivers for Business Support costs (£m, 2023/24 price basis).

[62]   See for example, (1) Water UK (April 2025), Issues with Ofwat's Approach to Base Costs Assessment, A report for Southern Water, pp. 53-54; (2) Economic Insight (26 August 2024), Issues with Ofwat's Approach to Base Cost Assessment, A Report for Southern Water, p. 2.

"*benchmark models are considered more statistically robust the greater the number of observations included within the model*".[63]

3.2.7. Chow tests show evidence of structural change, further demonstrating model mis-specification

The reliability of standard Ordinary Least Squares (OLS) regression estimation relies on various assumptions, including that the model specification is correct, and the relationship between the explanatory and dependent variables is the same across the sample. To test whether this assumption holds in this case, we have conducted a Chow test – a statistical test for "structural breaks" in the modelled relationships – to investigate whether there is any evidence of a structural change between the RIIO-ET3 period (2027 to 2031) and the period prior to RIIO-ET3 (2014 to 2026). Any such changes would undermine the use of a single model estimated based on historical data to predict future costs, due to statistical evidence of a change in the relationship between costs and drivers across the two periods.

We conduct the analysis by incorporating an RIIO-ET3 dummy variable and the interaction terms between the RIIO-ET3 dummy and the cost drivers into Ofgem's original models for CAI and BSC, and re-estimating these models using data covering the full period from 2014 to 2031 (Model B and D shown in Table 3.5). We have then performed two tests for the presence of a structural break in the modelled relationship.

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[63]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Gas Distribution Annex, paras. 5.281-5.282.

Table 3.5: Regression Results of CAI and BSC Models With RIIO-ET3 Dummy Using Data from 2014 to 2031

	CAI Model		BSC Model	
	Ofgem's Model (A)	Adding ET3 Dummy + Interaction Terms (B)	Ofgem's Model (C)	Adding ET3 Dummy + Interaction Terms (D)
Coefficients				
Constant	-2.77*	-5.62***	3.57***	3.54***
CSV			0.76***	0.82***
Capex	0.21	0.18		
MEAV	0.65**	0.97***		
Time trend	0.00	0.01		
GT dummy	-2.77*		-0.66***	-0.76***
ET3 dummy		11.33***		0.17
ET3 dummy*MEAV		-1.10***		
ET3 dummy*Capex		-0.18		
ET3 dummy*CSV				-0.35*
ET3 dummy*GT dummy				0.49***
Statistical Tests				
RESET	0.343	0.169	0.001***	0.020**
Heteroskedasticity	0.047**	0.725	0.001***	0.000***
Normality	0.343	0.169	0.184	0.255
Chow test – joint significance of ET3 dummy and interaction terms		0.000***		0.000***
Chow test – joint significance of ET3 interaction terms only		0.000***		0.009***
Adjusted R squared	0.623	0.845	0.820	0.865
Number of observations	54	54	72	72

*Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*
Source: NERA Reproduction of Ofgem Models.

First, we test for the joint significance of the RIIO-ET3 dummy and interaction terms. The null hypothesis is that there is no structural break, which we would reject if the RIIO-ET3 dummy and interaction terms were jointly, statistically different from zero. Table 3.5 shows that both Model B and D fail this Chow test, indicating the presence of a structural change entering RIIO-ET3. The p-value for the Chow test of 0 means we can reject a null hypothesis that the relationship between costs and drivers is the same in the historical and forecast period, even at the 1 per cent significance level.

We consider also a Chow test for the joint significance of RIIO-ET3 interaction terms only (excluding the RIIO-ET3 dummy). This test examines specifically whether there is a statistically different relationship between cost and drivers entering RIIO-ET3. Both Model B and D fail this alternative version of the Chow test, again indicating a structural break in the relationship between companies' costs and selected drivers.

Therefore, the Chow tests suggest that there are structural changes in how Ofgem's selected cost drivers influence CAI and BSCs, indicating that using the historical models to predict future costs is not appropriate, as the relationship between costs and drivers changes in the future period.

3.2.8. Ofgem's approach double-counts the adjustment for ongoing efficiency

Ofgem's use of historical costs in the regressions also double counts Ofgem's adjustments for Ongoing Efficiency (OE) improvement.

The historical data used in Ofgem's regression reflects the efficiency gains the TOs have achieved within past price controls (i.e., RIIO-ET1 and RIIO-ET2). Estimating the regressions with only the historical data means the regression coefficients (notably on the time trend) will tend to be lower, as they capture companies' historical productivity gains. The lower coefficients – especially the negative coefficient of the time trend (see Table 3.1) – will in turn reduce the predicted values estimated for RIIO-ET3.

While Ofgem combines the historical regression outputs with its forward-looking, company-specific analyses to set companies' CAI and BSC allowances, these historical regressions still receive 50 per cent weight in Ofgem's analysis. Therefore, by applying these historical regression models to predict companies' CAI and BSC cost allowances, Ofgem effectively extrapolates the historical productivity improvement trends observed historically into the forecast allowances for RIIO-ET3.

However, despite this, Ofgem further stretches the overall efficiency target by applying the OE target to estimated CAI and BSC allowances later in the process. The application of the OE target to the CAI and BSC allowances implicitly assumes that the TOs can achieve further productivity improvements beyond what is embedded within the regression models. Ofgem's CAI and BSC allowances – after the application of the OE target – therefore double count OE improvement, leading to a lower level of allowances for TOs' efficient CAI costs and BSCs.

We understand that the companies are submitting a separate response regarding their concerns with Ofgem's proposed 1 per cent OE target, which we do not cover in this report.

3.2.9. The cost drivers Ofgem uses in the CAI and BSC models may undermine the robustness of the models

As we discuss below, we have identified two concerns with the cost drivers Ofgem uses, which may further undermine its models ability to identify TOs' efficient indirect costs.

3.2.9.1. Ofgem uses drivers under management control, thus distorting companies' incentives, and further preventing the model from identifying "inefficiency"

In both its CAI and BSC models, Ofgem has used cost drivers that are under management control. Specifically, for CAI, Ofgem uses capex as a cost driver; and for BSC, Ofgem includes both the number of FTE employees and totex in the CSV. These variables are all within the companies' control, in the sense that the TOs can choose to spend more capex/totex or employ more staff.

Ofgem's regression approach therefore creates the potential incentive for companies to increase their capex/totex by hiring additional staff to increase their indirect allowances, even when such additional spending or staff are not in consumers' interests. The use of drivers within companies' control therefore undermines the ability of Ofgem's models to reliably estimate the degree to which the TOs' indirect costs are inefficient.

While Ofgem has used drivers that are within companies' control in other cost modelling exercises, they do not create similar concerns as above. For example,

- At RIIO-ET2 and ED2, Ofgem calibrated its "opex escalator" and "indirect scaler" UMs by regressing CAI on companies' capex.[64] The opex escalator/indirect scalers determined the level of indirect funding released to the companies to support the capex programmes they deliver under the UMs. Therefore, this modelling was not used to form a view on companies' relative efficiency, and was used in a different context; and

- At ED1, Ofgem used asset additions as a control for workload to assess the efficiency of DNOs' CAI.[65] While capex additions are also within companies' control and used for efficiency assessment at ED1, Ofgem applied additional scrutiny by using expert review unit costs instead of companies' own submissions to obtain the capex additions variable.[66]

3.2.9.2. Ofgem uses endogenous cost drivers that lead to biased cost estimates

The econometric problem of "endogeneity" arises when cost drivers are determined simultaneously with the dependent variable (i.e., indirect costs in this case). The presence of endogenous variables in regression models will lead to biased regression results, and violates one of the basic assumptions underpinning OLS regression.

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[64]   (1) Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (REVISED), para. 4.43; (2) Ofgem (30 November 2022), RIIO-ED2 Final Determinations Core Methodology Document, paras. 7.552-7.525.

[65]   Ofgem (28 November 2014), RIIO-ED1: Final determinations for the slowtrack electricity distribution companies, Business plan expenditure assessment, para. 10.6.

[66]   Ofgem (28 November 2014), RIIO-ED1: Final determinations for the slowtrack electricity distribution companies, Business plan expenditure assessment, footnote 37.

It is especially likely that Ofgem's BSC model suffers from endogeneity. The BSC model only uses the CSV as the cost driver for TOs' costs, which Ofgem constructed using the number of FTEs, MEAV and totex.[67] It is likely that both FTEs and totex are endogenous cost drivers:

•   It is likely that the number of FTEs and companies' BSCs are both simultaneously determined by the levels of output achieved by companies and their levels of efficiency; and

•   Companies' BSCs and totex are determined simultaneously, as BSC is a component of companies' totex. In addition, all variables that cause changes in indirect costs are likely to cause changes in companies' totex.

Consequently, the inclusion of endogenous cost drivers in Ofgem's BSC model likely compounds the conclusions we draw above, that its regression suffers from serious mis-specification and bias, undermining Ofgem's ability to use it to accurately forecast TOs' future, efficient indirect costs.

3.2.10. Overall, Ofgem's regression modelling materially understates the efficient indirect costs TOs will likely incur over RIIO-ET3

In summary, Ofgem's use of historical data for regression analysis risks underfunding TOs' efficient indirect costs, due to the significant limitations of its statistical models.

As Table 3.6 shows, SPT's modelled costs using the historical regression models are materially lower than its modelled costs using the forward-looking, company-specific analysis. The ratio analysis estimates modelled CAI costs for SPT of £540.6 million over RIIO-ET3, £360 million, 199 per cent higher than that produced by the regression model (£92.9 million). For BSC, the trend analysis estimates modelled costs of £246.8 million for SPT over RIIO-ET3, £153.9 million or 166 per cent higher than that produced by the regression model (£180.6 million).

Despite the significant difference between the results under Ofgem's historical regression models and the company-specific analyses, we have seen no evidence showing Ofgem has attempted to assess the relative reliability of these alternative estimates, before triangulating them simplistically using a 50:50 average.

In fact, our analysis outlined above shows that the predicted values from Ofgem's regression modelling are unreliable, and likely to be deeply misleading.

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[67]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.135-5.136.

Table 3.6: Modelled CAI and BSC Costs for SPT under Ofgem's Historical Regression Models and Company Specific Analysis, 2023/24 prices

		Weight	2027	2028	2029	2030	2031	RIIO-ET3
CAI								
Ratio analysis	£m	50%	131.2	116.3	109.5	100.4	83.1	540.6
Regression model	£m	50%	41.5	38.5	36.3	33.9	30.4	180.6
Difference between two modelled costs	£m (%)		89.7 (216%)	77.8 (202%)	73.2 (202%)	66.5 (196%)	52.7 (173%)	360.0 (199%)
BSC								
Trend analysis	£m	50%	47.7	49.8	50.0	49.7	49.6	246.8
Regression model	£m	50%	18.7	18.6	18.6	18.5	18.4	92.9
Difference between two modelled costs	£m (%)		29.0 (155%)	31.1 (167%)	31.3 (168%)	31.2 (169%)	31.2 (169%)	153.9 (166%)

Source: NERA Analysis of Ofgem DD Benchmarking Files.

3.3. Ofgem's Forward-Looking, Company-Specific Analysis

3.3.1. Ofgem performs TO-specific ratio analysis, which it gives equal weight to the regression analysis

As discussed above, in addition to the historical regression analysis, Ofgem also conducts a forward-looking, TO-specific analysis based on the companies' submitted data for RIIO-ET3. According to Ofgem, the company-specific analysis aims to reflect that "*TOs require varying levels of network growth for RIIO-ET3 and are at differing stages of preparedness to meet CP2030 targets*".[68]

Ofgem employs two TO-specific ratio analyses for CAI, whereby for each TO:[69]

* For each year of the RIIO-ET3 period, Ofgem calculates the ratio of each ETO's CAI to its MEAV.

* It takes the median value of these annual ratios, across the 5 years of the RIIO-ET3 control period;

* It multiplies these median ratios by the ETO's "baseline MEAV" (see Section 3.2.1 above) for each year to derive the modelled cost from the ratio analysis for each year of the control period.

* It then performs the same calculation using the CAI-to-capex ratio instead of the CAI-to-MEAV ratio, and takes the average of the two calculations to derive its overall estimate of modelled CAI from the ratio analysis for the ETO in question.

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[68]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.114.

[69]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.115-.

Ofgem performs a separate forward-looking, TO-specific approach for BSC:[70]

- It calculates the yearly growth in each TO's FTEs from their business plan forecasts;

- It then assumes that the company's BSC will grow at the same percentage rate as its forecast FTEs from 2026 onwards, i.e. taking each TO's forecast BSC from its business plan in 2026 as a starting point for extrapolation.

- The result defines Ofgem's overall estimate of modelled BSC from the ratio analysis for the TO in question.

Ofgem gives the CAI and BSC modelled costs for each TO an equal weight to the regression analysis when determining its overall allowances for CAI and BSC over the RIIO-ET3 control period, as outlined in Section 3.1.

3.3.2. Ofgem's CAI ratio analysis arbitrarily disallows costs depending on whether each ETO's mean costs exceed its median costs

Ofgem's ratio analysis assumes each TO's median, annual CAI-to-capex ratio and CAI-to-MEAV ratios define the efficient level of their annual CAI cost. It then multiplies these figures by forecasts of MEAV and capex to derive allowances. This method does not represent any kind of statistical estimation process, seeking to identify companies' efficient levels of cost. Rather, it is simply a mechanistic exercise that adopts an arbitrary efficiency standard.

This efficiency standard has perverse implications for how TOs' allowances will be set into the next control period. TOs with a symmetrical distribution of CAI-to-MEAV and CAI-to-capex ratios across years – such that the median and mean of these ratios are identical – will receive allowances based on their business plans. By contrast, companies with a positive skew in the distribution of these ratios across years (median<mean) will see a disallowance. And companies with a negative skew in these ratios across years (mean>median) will receive more than their allowances.

Whether companies' business plans exhibit a positive, negative or no skew in these ratios across years is dependent on the profiling of cash flows over time, as forecast in companies' business plans. We use a simplified example in Table 3.7 below to demonstrate this.

- Assume there are two companies, Company A and Company B. Both companies have requested a total of £500 million for their CAI costs for RIIO-ET3, and the value of their drivers stays at £50 million for each year of RIIO-ET3 (i.e., this mimics that the companies' MEAV – one of the drivers the Ofgem uses in its ratio analysis – is likely to remain relatively stable over time);

- However, whilst both companies have submitted the same total CAI estimates for RIIO-ET3, the distribution of their annual CAI profile is different. Specifically,

  – Company A forecasts its CAI expenditure is evenly distributed across the five years of RIIO-ET3 (i.e., £100 million per year); but

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[70] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.139.

- – Company B forecasts variation in its annual CAI expenditure (between £70 million per year and £130 million per year);

- The different annual CAI forecasts lead to different CAI-to-MEAV ratios for the two companies, and hence different median ratios. The assumed variation in Company B's annual CAI costs means it has a lower median ratio (1.8) than Company A (2.0).

- Consequently, applying Ofgem's approach that uses the median ratio as the efficiency benchmark, the modelled cost for Company B is £450 million over RIIO-ET3, £50 million lower than the modelled cost for Company A (£500 million), despite them proposing the same level of overall CAI and having the same value of the driver.

Therefore, Ofgem's approach has identified that £50 million of costs in Company B's submissions are inefficient and all of Company A's submitted costs are efficient. This is despite the fact both companies have the same total CAI forecasts and the same values of drivers for RIIO-ET3.

As Table 3.7 shows, Ofgem's ratio analysis does not identify whether a company's CAI proposal is efficient, but would simply identify costs as inefficient if they have a certain profile over time. The time profile of CAI is substantially beyond the TOs' control. The characteristics of the capex programmes the company carries out in a particular year may affect the profile of a company's annual CAI-to-capex ratio considerably, and the timing of projects depends on customer and industry needs, and is not substantially within the TOs' control.

Moreover, Ofgem's approach provides companies with incentives to submit flat cost projections (per unit of the driver), as Ofgem's approach will give the company its submitted costs in full, if its forecasts are evenly distributed/symmetrically distributed around the median ratio.

Ofgem's calculations may also be distorted by differences between the time when the company incurs CAI costs, and when (i) the company carries out the relevant capex projects and spends the capex, and (ii) the relevant assets are reflected in the company's MEAV. Companies normally incur network and engineering design costs before they decide to carry out capex work, and certainly before the value of any constructed assets enter MEAV.

Overall, it is clear that Ofgem's ratio analysis assumes the median CAI-to-capex and median CAI-to-MEAV ratios indicate the efficient level of the TO's CAI proposal. As we show above, this assumption leads to misleading results.

Table 3.7: Illustrative Example on the Impact of Distribution on Company's Modelled Costs under Ofgem's Ratio Analysis

		2027	2028	2029	2030	2031	RIIO-ET3
Company A							
Submitted CAI	£m	100	100	100	100	100	**500**
Driver	£m	50	50	50	50	50	**250**
Submitted CAI / Driver Ratio		2	2	2	2	2	
Median ratio		**2**					
Modelled CAI	£m	100	100	100	100	100	**500**
Efficiency scores (Submitted CAI / Modelled CAI)	%	100%	100%	100%	100%	100%	**100%**
Company B							
Submitted CAI	£m	80	130	70	90	130	**500**
Driver	£m	50	50	50	50	50	**250**
Submitted CAI / Driver Ratio		1.6	2.6	1.4	1.8	2.6	
Median ratio		**1.8**					
Modelled CAI	£m	90	90	90	90	90	**450**
Efficiency scores (Submitted CAI / Modelled CAI)	%	89%	144%	78%	100%	144%	**111%**

Source: NERA Analysis.

3.3.3. Ofgem's BSC trend analysis is highly sensitive to the choice of reference year

Ofgem considers that "*FTE as a measurement of personnel to be a robust driver of BSC costs that has been affirmed through our regression work and has regulatory precedent, as well as being a more consistent basis of reporting than MEAV between the TOs*".[71]

When applying the FTE trend to forecast TOs' BSCs, Ofgem has used the companies' BSC in the last year of RIIO-ET2 (i.e., 2026) "*to account for the position the TOs consider they will be in at the end of RIIO-ET2 for the step change into the next period*".[72]

Ofgem then projects the company's BSC from 2026 onward, assuming the company's efficient BSCs change proportionally to the changes in the company's FTE forecasts.

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[71]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.139.

[72]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.139.

Therefore, Ofgem's approach effectively assumes that the company's BSC to FTE ratio over RIIO-ET3 stays as the same as forecasted in 2026. This assumption is flawed for reasons set out below.

While the number of FTEs may be an important driver of companies' BSCs, it is not the only driver. For instance, the number of contractors also affects the TOs' BSCs. The yearly composition of a company's staff (i.e., share of FTEs and share of contractors) may lead to variation in the TO's BSC to FTE ratio. BSCs may also change from year-to-year, depending on the timing of particular projects. Ofgem's simplistic approach does not capture these factors.

As a result of the overly simplistic assumption, Ofgem's approach is highly sensitive to the year to which it starts applying the FTE trend. Table 3.8 below shows the modelled BSCs for SPT using Ofgem's trend analysis, which (i) applies the FTE trend to SPT's BSC from 2024 onwards (i.e., relying on the latest available outturn data); and (ii) applies the FTE trend on SPT's BSC from 2026 onwards (Ofgem's approach at DD).

As the table shows, the selection of the first year from which the FTE trend applies to SPT's BSC has a material impact on the modelled costs for the company. Applying the FTE trend from 2024 instead of 2026 increases SPT's modelled costs by £66.5 million (or 27 per cent) over RIIO-ET3.

Table 3.8: Modelled BSC for SPT Using Ofgem's Trend Analysis, Based on Different Starting Year

Starting Year	Unit	2027	2028	2029	2030	2031	ET
2024	£m	60.6	63.2	63.4	63.1	63.0	313.3
2026 (Ofgem's DD position)	£m	47.7	49.8	50.0	49.7	49.6	246.8
Difference (compared to Ofgem's DD position)	£m (%)	12.9 (27%)	13.4 (27%)	13.5 (27%)	13.4 (27%)	13.4 (27%)	66.5 (27%)

Source: NERA Analysis of Ofgem Benchmarking Files.

The significant differences in the modelled BSC when using different reference years are primarily due to the volatility in TO's BSC to FTE ratio. Figure 3.5 below shows SPT's yearly BSC to FTE ratio between 2014 and 2026. According to the data, SPT's maximum ratio of 0.043 in 2020 is nearly twice the minimum ratio of 0.022 observed in 2026.

Ofgem's selection of 2026 as the reference year has therefore set SPT's BSC to FTE ratio over RIIO-ET3 at the minimum level observed in the historical data. This approach therefore ignores the variations in TOs' annual BSC to FTE ratio for reasons beyond efficiency (e.g., the share of contractors as discussed above).

Figure 3.5: Yearly BSC to FTE Ratio of SPT, 2014 to 2026
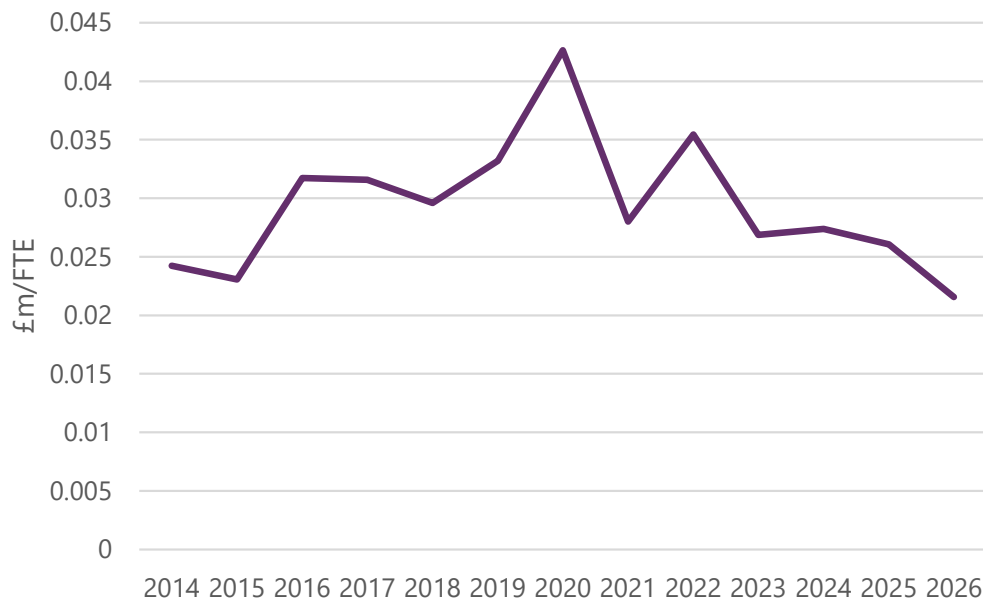
Source: NERA Analysis of Ofgem Benchmarking Files.

In addition, Ofgem's trend analysis extrapolates from a forecast BSC to FTEs ratio in a future year (2026), so it likely to be highly sensitive to the accuracy of the TO's annual forecasts. Given the considerable uncertainty facing TOs, it is unlikely that they can predict with precision how FTEs and BSCs will change from year-to-year, as costs may be incurred slightly earlier or later than expected. Therefore, Ofgem's approach is likely to generate misleading predictions.

3.3.4. Ofgem's TO-specific analysis does not lead to the same underfunding risks as its historical regression approach

While there are a number of limitations to Ofgem's forward-looking, TO-specific analysis, this approach leads to modelled indirect costs for SPT that align with the company's own view. Specifically, the modelled CAI costs obtained using the ratio analysis is £540.6 million over RIIO-ET3, compared to SPT's submitted CAI costs of £525.1 million. Similarly, modelled BSC using FTE trend analysis results in £246.8 million over RIIO-ET3, compared to SPT's submitted BSC of £257.6 million. Therefore, the forward-looking, TO-specific analysis does not pose material risks of underfunding SPT's indirect activities.

In contrast, due to significant statistical deficiencies, Ofgem's historical regression modelling risks underfunding TOs' efficient indirect costs substantially (see Section 3.2), and in fact predict modelled costs that are materially lower than its modelled costs using the forward-looking, company-specific analysis (see Table 3.6 above).

Ofgem's decision to apply equal weights to the results obtained using both historical and forecast models creates a material risk of underfunding SPT's indirect activities caused by the historical regression models.

3.4. CAI Use-It-Or-Lose-It (UIOLI) Allowances and BSC Re-Openers

3.4.1. Ofgem proposes UMs to fund TOs' indirect costs beyond the ex ante baseline allowances

Because Ofgem's ex ante indirect allowances only cover TOs' baseline indirect costs, Ofgem has introduced two UMs to fund TOs' indirect costs associated with UM projects and projects in the delivery pipeline (UM-funded indirects).

For CAI, Ofgem has proposed to replace the opex escalator (which releases indirects funding automatically to support the capex projects the TOs deliver under the UM (see Section 3.4.5 below) with a Use-It-Or-Lose-It (UIOLI) allowance, stating that "*given the growing scale and complexity of RIIO-ET3 projects, we do not consider a uniform CAI uplift appropriate across diverse project types*".[73]

Ofgem has proposed setting the CAI UIOLI allowance to cover load projects between £25 million and £150 million, for which CAI allowances will be set to 10 per cent of the expected capex. It requires the TOs to provide detailed reporting on the allocation of the CAI UIOLI allowance, to ensure "*the mechanism achieves its intended objective to fund TOs' growth at low risk for consumers*".[74]

For BSC, Ofgem also proposes to introduce a mid-period re-opener.[75] The mid-period re-opener triggers when both the TO's totex and BSC outturn costs are above 15 per cent of allowances.[76] This is the same as the totex incentive mechanism (TIM) threshold, after which any overspend is passed on to consumers in full. Ofgem comments that "*it is particularly important to undertake an efficiency assessment after the 15% threshold is passed as part of the re-opener process*".[77]

In addition to the CAI UIOLI and BSC re-opener, Ofgem proposes to implement a mechanism for a pre-construction funding (PCF) price control deliverable (PCD), which aims to provide TOs with funding at early stages of project development to continue to design and seek consent for large transmission investments. The PCF PCD will cover activities required to enable the TOs to obtain material planning consents and prepare for construction to begin for load schemes that are expected to cost more than £25 million.[78]

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[73]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.131

[74]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.130.

[75]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.101.

[76]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.142.

[77]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.143.

[78]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.131.

3.4.2. The RIIO-ET2 opex escalator resulted in different CAI-to-capex ratios for the TOs

At RIIO-ET2, Ofgem implemented an opex escalator for all TOs. At the time, Ofgem explained that this mechanism "*ensures any appropriate capex incurred through [capex] UM is afforded a CAI allowance in line with that set for the baseline expenditure*".[79]

Ofgem calculated the value of the opex escalator based on the estimated coefficient on the capex in Ofgem's RIIO-ET2 CAI model. As all variables in the regression are specified in log terms, so the estimated coefficient on capex (equal to 0.73) describes the expected percentage change in the ETO's CAI costs associated with a 1 per cent change in capex.[80] Hence, Ofgem estimated that a 1 per cent increase in an ETO's capex would increase CAI by 0.73 per cent.

While the coefficient on capex from the regression was estimated for all TOs, the implied opex escalator is different for each company. This is because the regression coefficient determines how much an ETO's indirect costs should rise *relative to its baseline CAI allowance* for a given percentage change in its capex *relative to its baseline capex allowance*.

As such, the final opex escalator coefficient depended on both the regression coefficient and on each ETO's own baseline allowances. Specifically, Ofgem set the opex escalator coefficient for each ETO as (i) the coefficient on capex from its regression equation, multiplied by (ii) the ratio of the company's baseline CAI allowance to its baseline capex allowance, which differs for each company, using the formula below:[81]

$$Opex\ Escalator\ Coefficient\ = \frac{Baseline\ CAI\ Allowance}{Baseline\ Capex\ Allowance} \times \beta_2$$

The opex escalator coefficient for each ETO is specified in Special Condition 3.36 of their respective licences.[82] For example, the opex escalator coefficient for SPT is 13.4 per cent, meaning that for each £10 increase in SPT's capex allowance through an applicable UM, the opex escalator would increase its CAI allowance by £1.34. The equivalent figures for NGET and SHET are 16.9 per cent and 10.8 per cent, respectively.[83]

Ofgem's RIIO-ET3 proposal to transition to a CAI UIOLI allowance that applies a uniform CAI-to-capex ratio avoids applying differing adjustment to different TOs, which may have complicated implementation of the ET2 opex escalator mechanism. This is also consistent with the indirect scaler introduced at RIIO-ED2, as we discuss in Section 3.4.6.

However, while there may be advantages to the transition to a CAI UIOLI allowance, we outline in sections below some concerns we have identified in Ofgem's indirect UM proposals.

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[79] Ofgem (3 February 2021) RIIO-2 Final Determinations – Electricity Transmission, para. 3.52.

[80] Ofgem (9 July 2020), RIIO-2 Draft Determinations – Electricity Transmission Annex, p.61.

[81] Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (REVISED), pp.76-77.

[82] See for example, SP Transmission Plc Electricity Transmission Licence Special Conditions 3.36.

[83] Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (REVISED), p.77.

3.4.3. The TOs and Ofgem point to potential inconsistencies in TOs' approaches to allocating baseline and UM-funded project data

Funding TOs' indirect costs via different mechanisms requires a clear delineation of TOs' baseline indirect costs and UM-related indirect costs.

However, we understand that the TOs have expressed concerns regarding the inconsistency in TOs' allocation of baseline data and UM-related data. For example, in the companies' response to Ofgem's SQ regarding the baseline CAI and BSC allocation:

- NGET provides a high-level explanation of its approach to allocate baseline indirect costs, but flags that "*due to differences in how the plans have been constructed, we understand that the other TOs may have taken a different approach*";[84]

- SHET notes that "*we have been required to make several assumptions regarding the allocation of nsCAI and BSC to the cost categories suggested by Ofgem. BSC and nsCAI costs are not closely associated with individual projects, and therefore any split between baseline, uncertainty mechanisms and the pipeline log will be arbitrary*";[85]

- SPT highlights that "*There will be inevitable be [sic] inconsistences between TOs' working assumptions and methodologies. As Ofgem did not provide specific guidance for this re-allocation of indirect costs the outcome will likely contain inconsistencies, which will in turn hamper the validity and robustness of any subsequent comparisons, regression analysis and conclusions*".[86]

Ofgem also mentions the data inconsistency in its RIIO-ET3 DD, noting that "*we found inconsistencies in how TOs have reported indirect costs related to UMs and pipeline projects in their Business Plans. To set initial baseline allowances for CAI and BSC, we had to make assumptions to make the data more consistent. We recognise that further work is needed to fully align this data and intend to work closely with TOs ahead of Final Determinations to address this*".[87]

In addition to inconsistencies in cost allocation, we understand from SPT that the TOs follow different approaches and use different definitions to allocate the baseline drivers that Ofgem uses in its comparative benchmarking for indirects. For example, TOs have taken different approaches to the scope of capex that should be included in the baseline.

3.4.4. Ofgem's separation of baseline and UM funded indirect costs risks underfunding companies, given data inconsistencies

The data inconsistencies in TOs' allocation of baseline and UM-related data means that, the baseline and UM indirect allowances Ofgem provides the TOs with potentially cover different scopes of the TOs' indirect activities.

Ofgem's historical regression approach relies directly on TOs' baseline cost drivers to calculate their modelled baseline indirect costs. As we discussed in Section 3.2.1 above, Ofgem applies the

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84   NGET Baseline CAI and BSC Narrative, p. 3.

85   SSE Baseline CAI and BSC narrative, p. 3.

86   SSE Baseline CAI and BSC narrative, p. 5.

87   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.96.

estimated relationship from historical regression models on the TOs' forecast drivers to calculate their modelled costs. While the data inconsistency does not affect the estimated coefficients from the models (as the coefficients are estimated using TOs' total historical costs and drivers), it affects the level of TOs' baseline drivers in the forecast period, and thus the modelled cost Ofgem has calculated using these drivers. Ofgem's TO-specific, forward-looking analysis also uses the baseline driver data to model TOs' indirect costs, as explained in Section 3.3.

Therefore, Ofgem's approach to setting baseline indirect costs is materially affected by the companies' allocation between data for baseline and UM-funded projects. This further compounds the difficulty Ofgem faces when assessing whether any baseline funding gaps are due to inefficient business plans, or due to inconsistent allocations of baseline and UM-related data. Ofgem's approach therefore disadvantages the TO that removes a relatively high proportion of their forecast data from the baseline than others.

3.4.5. Ofgem's proposal for CAI UIOLI lack justification, exposing TOs to high risks of underfunding

Ofgem's CAI UIOLI proposal at RIIO-ET3 DD includes specific thresholds that limit the TOs' ability to access funding through these mechanisms. As we explain below, Ofgem's decision to set these thresholds are poorly justified, and create risks of funding gaps for the TOs' indirect activities needed to support the UM capex projects.

Ofgem has proposed that the CAI UIOLI allowance will only cover load projects between £25 million and £150 million, and the allowance for the associated CAI will be set at 10 per cent of the expected capex. However, neither the £25 million threshold nor the 10 per cent allowance is adequately justified by Ofgem, as we discuss below.

Ofgem excludes load projects under £25 million from receiving the CAI UIOLI allowances, on the basis that these low materiality projects will have access to a separate load UIOLI for their capex, and it considers "*these low materiality projects can be managed by TOs within existing resources*".[88] But despite asserting that TOs' existing resources are enough to manage the CAI costs associated with small projects below £25 million, Ofgem has provided no substantiation evidence.

It seems manifestly unlikely that (for example) four projects of £24 million, which would not be funded under Ofgem's proposals, would impose a materially lower CAI cost on TOs than one project with a cost of £96 million that would be funded. Indeed, to the extent that any project entails fixed development costs, the costs of multiple, smaller projects may impose higher CAI costs than one large one.

In fact, the £25 million threshold means SPT will need to fund the CAI costs associated with a significant number of its UM capex projects within its baseline indirect allowances. We understand from SPT that the company has over 88 schemes out of 141 schemes (63 per cent) under £25 million.

This further compounds the problems we have identified above with the substantial funding gaps in the TOs' baseline CAI activities – in particular due to Ofgem's historical regression modelling – as we discussed in Section 3.2. Consequently, not only do the TOs lack adequate baseline

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88   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.128.

allowances for their baseline CAI activities, but they also need to manage a substantial number of additional CAI activities for UM capex projects below £25 million within their baseline allowances that are not funded at all.

Finally, Ofgem's £25 million threshold could introduce perverse incentives as the TOs would be incentivised to not prioritise those small capex projects with a cost below the £25 million threshold because they will not obtain any funding for CAI. In addition, Ofgem's proposed approach could incentivise TOs to design network upgrades as part of larger projects to meet the threshold.

3.4.6. Our analysis suggests Ofgem's 10 per cent CAI-to-capex ratio for setting the CAI UIOLI is too low

Ofgem's proposed 10 per cent CAI-to-capex ratio further amplifies the risk of underfunding. According to Ofgem, the 10 per cent CAI-to-capex ratio is "*a conservative position within the range observed through benchmarking analysis and is broadly consistent with the 10.8% indirect scaler applied in RIIO-ED2. The conservative rate is also to reflect that some of the load investments within the scope of the CAI UIOLI might fall away*".[89]

It is unclear what benchmarking analysis Ofgem refers to. Ofgem's historical CAI regression model indicates a capex coefficient of 0.15 (see Table 3.1), meaning that a 1 per cent increase in capex is associated with a 0.15 per cent rise in CAI costs. Because Ofgem's historical CAI regression model uses a log-log specification, the capex coefficient represents an elasticity, and cannot be interpreted directly as a CAI-to-capex ratio. In addition, the average CAI-to-capex ratio of SPT's submitted baseline costs in RIIO-ET3 is 95 per cent. Neither of these results correspond to Ofgem's 10 per cent CAI-to-capex ratio.

In addition, we do not consider that the value of the RIIO-ED2 indirect scaler constitutes a reasonable reference for setting the value of TOs' CAI UIOLI allowance, as electricity transmission and distribution are very different industries.

As for the RIIO-ET2 opex escalator, the RIIO-ED2 indirect scaler automatically adjusts the CAI allowance of Distribution Network Operators (DNOs) to support their load related UM projects. The functional form of the regression, developed jointly by UK Power Networks and NERA, is in levels, so the coefficient on capex captures the change in CAI (in monetary terms) resulting from a change in capex: the coefficient for capex represents the increase in indirect expenditure (i.e. in pounds) associated with a unit (i.e. £1) increase in capex, holding MEAV fixed. Hence, the coefficient of 0.108 implies that a £1 increase in capex would increase a DNO's CAI by £0.108. Thus, this number corresponds to the average increase in CAI associated per one unit of increase in capex, based on DNOs' historical data.[90]

The transmission network includes high-voltage lines that cover more extensive geographic areas, whereas the distribution network operates at lower-voltages and involves a much larger number of smaller assets, used serves regional areas. Hence, the nature of the capex programme differs substantially between the TOs and the DNOs. Consequently, the associated need for CAI is likely to be very different between DNOs and TOs, e.g. distribution and transmission schemes will involve

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[89] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.129.

[90] Ofgem (30 November 2022), RIIO-ED2 Final Determinations Overview document, paras. 6.77-6.84.

markedly different design and consenting work, with substantially more customization required for each transmission upgrade. Ofgem's reference to the RIIO-ED2 indirect scaler therefore does not justify setting the 10 per cent CAI-to-capex ratio for TOs.

In fact, the data suggests that the CAI-to-capex ratio is higher for the TOs than for the DNOs. To estimate the CAI-to-capex ratio of the TOs on a comparable basis to the ED2 indirect scaler, we estimate Ofgem's historical CAI regression model used at RIIO-ET3 but, instead of using a log-log functional form, we specify both the dependent variable and the independent variables in levels. We also remove SHET's observation in 2021 from our sample, since SHET's capex in that year is a clear outlier as it is 1,732 per cent higher than the TO's average capex for the remaining years in the sample (i.e. 2014-2020 and 2022-2024), thus having a large impact on the regression results given the small sample size (see Section 3.2.3).

As shown in Table 3.9 below, the coefficient on capex is 0.141 in the level model. This suggests that a £1 increase in capex would increase a TO's CAI by £0.141, or a CAI-to-capex ratio of 14.1 per cent. Therefore, our analysis suggests that the CAI-to-capex ratio is higher than the 10.8 per cent in electricity distribution that Ofgem refers to, and larger than the 10 per cent CAI-to-capex ratio proposed for the CAI UIOLI allowance.

Table 3.9: CAI Regression Results in Levels, Based on Outturn Data between 2014-2024

	CAI
Coefficients	
Constant	9.45
CSV	
Capex	0.141**
MEAV	1.01***
Time trend	-4.63
GT dummy	
Statistical tests	
RESET	0.068*
Heteroskedasticity	0***
Normality	0.933
Adjusted R squared	0.94
Number of observations	32

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.
Source: NERA Analysis of Ofgem data.

As a cross-check, we also perform the same calculation used to derive the T2 opex escalator described in Section 3.4.2 using the results of Ofgem's T3 CAI regression, but excluding SHET's observation in 2021 because its capex is an outlier. Table 3.2 above shows that the coefficient for capex is 0.23, suggesting that a 1 per cent increase in capex is associated with a 0.23 per cent increase in CAI. Using Ofgem's proposed baseline allowances in the DD for CAI and capex (excluding ongoing efficiency), we find that the opex escalator for SPT is equal to 15.60 per cent,

using the formula below. Therefore, using this approach, for each £1 increase in SPT's capex
allowance through an applicable UM, the OE would increase its CAI allowance by £0.156. [91]

$$OE\ Coefficient\ = \frac{Baseline\ CAI\ Allowance\ T3}{Baseline\ Capex\ Allowance\ T3} \times \beta_2 = \frac{415.86}{613.02} \times 0.23 = 15.60\%$$

Because the coefficient depends on TOs' baseline allowances, updating the opex escalator
calculation would necessarily lead to different CAI-to-capex ratios for each TO, whereas Ofgem
intends to use the same CAI-to-capex ratio for all TOs as it did at RIIO-ED2. The CAI-to-capex ratio
calculated with a regression in levels, which results in a CAI-to-capex of 14.1 per cent, addresses
this limitation of the opex escalator as it applies to all TOs. In addition, it is consistent with
Ofgem's approach used to calculate the indirect scaler at RIIO-ED2. Finally, a CAI-to-capex ratio of
14.1 per cent represents a conservative estimate for SPT, as updating the opex escalator would
result instead in a CAI-to-capex ratio of 15.6 per cent.

In addition, Ofgem's expectation that "*some of the load investments within the scope of the CAI
UIOLI might fall away*" is also not relevant. Ofgem shows no evidence to suggest that the UM
capex projects with a CAI-to-capex ratio above 10 per cent are more likely to fall away than others.
It is unclear why Ofgem considers that these projects may fall away as a justification for its 10 per
cent CAI-to-capex ratio, and further concludes that this threshold is "*conservative*".

The arbitrary and unjustified threshold on project size (see Section 3.4.5) and the low CAI-to-capex
ratio for setting CAI UIOLI allowance hence create substantial risk of systematic underfunding TOs'
indirect activities. We understand from SPT that the company will face a £33 million cut in CAI
costs because of the £25 million threshold. In addition, the 10 per cent CAI-to-capex ratio leads to
further risk of underfunding based on our analysis above that shows TOs' CAI-to-capex ratio
should be higher (i.e., at least 14.1 per cent).

This disallowance means Ofgem is failing to rise to the challenge it cites when it explains that "*the
scale of investments required to deliver CP2030 could be significant, and that the timing of the
additional funding required to ensure TOs' preparedness to scale up is an important factor*".[92]

3.4.7. Ofgem sets a high bar for triggering the BSC re-opener, creating risks of under-recovery for TOs' UM-related BSCs

For BSC, Ofgem proposes that the mid-period re-opener only triggers when both totex and BSC
outturn costs of the TO are above 15 per cent of the baseline allowances. As explained below,
Ofgem's BSC proposal creates a risk of underfunding costs associated with UM related capex
projects, which is even more material than the ones identified for the CAI UIOLI allowance
described above.

Ofgem comments that "*We consider 15% is an appropriate threshold. This is the TIM threshold after
which any overspend is passed on to consumers in full, therefore, in order to benefit them we think it
is particularly important to undertake an efficiency assessment after the 15% threshold is passed as*

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[91] Note, this result depends on baseline allowances for CAI and capex. Therefore, it may change if Ofgem's cost
assessment at Final Determination produces different allowances than the ones at Draft Determination.

[92] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.124.

part of the re-opener process".[93]   However, while Ofgem expresses its desire to conduct efficiency assessment for BSC overspends vs. baseline allowances before passing those costs onto customers, it provides no reason why the threshold on the BSC re-opener is appropriate, and why a threshold for both totex and BSC is needed/justified.

In fact, the double 15 per cent thresholds set a very high bar for the TOs to trigger the re-opener. For example, there is risk of under-recovery if the TOs' BSCs to support UM projects are between 0 per cent and 15 per cent above the baseline allowance, but not enough to trigger the adjustment. Even when a TO's BSC exceeds 15 per cent of its baseline allowance, it may not be able to trigger the re-opener if its totex does not pass the threshold. We understand from SPT that the company believes it is highly unlikely it will meet Ofgem's criteria for the BSC re-opener during RIIO-ET3.

Since the CAI UIOLI thresholds are applied at the project level, TOs could still obtain some funding for those projects that are between £25 million and £150 million. On the other hand, since the thresholds for the BSC re-opener applies to total BSC and totex, failing to meet both thresholds means that the TO will not have access to *any* additional funds to recover its BSCs associated with UM capex projects, even if such costs are incurred efficiently. Therefore, the BSC re-opener poses a higher risk of underfunding for TOs than CAI UIOLI.

Further, due to the substantially understated baseline BSC allowance (see Section 3.2), the low likelihood of TOs triggering a BSC mid-period re-opener creates significant risks of underfunding.

Therefore, the RIIO-ET3 BSC re-opener proposal contradicts Ofgem's intention to use the TIM to incentivise companies "*to seek out efficiencies to lower cost and retain a share of this benefit and avoid cost increases*", as well as to provide "*protection to investors from the risk of significant cost over-runs which helps to lower the cost of financing the companies*".[94]

3.4.8. Ofgem's reporting requirements associated with indirect UMs are unclear, creating further uncertainties for TOs

The RIIO framework was introduced to create an incentive-based, efficient regulatory model, which ensures long-term revenue certainty. Ofgem itself states that the RIIO model is intended to "*provide network companies and investors with more certainty about how plans and delivery decisions will be treated over time*".[95]

A key difference between the opex escalator and the CAI UIOLI proposal is that the opex escalator is an *automatic* volume driver, providing funding when additional investment is incurred during a price control. Conversely, the CAI UIOLI will require TOs to provide "*detailed reporting on the allocation of this funding*"[96] for the allowance to be granted.

Ofgem justifies this approach based on its observation that the CAI UIOLI will not be subject to TIM.[97] However, the requirement for TOs to provide detailed reporting on the allocation of funding creates uncertainty for TOs over whether they will be able to have certain CAI spend

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93   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.143.

94   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Overview Document, para. 3.20.

95   Ofgem (October 2010), Handbook for implementing the RIIO model, pg. 27

96   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.130.

97   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.128.

funded through the UIOLI, as the approach Ofgem will follow to assess whether it is sufficiently justified is not laid out.

For BSC, Ofgem also suggests that ex post efficiency assessment for BSC re-openers will apply, noting that "*it is particularly important to undertake an efficiency assessment after the 15% threshold is passed as part of the re-opener process*".[98]

Ofgem has not published details of the reporting requirements of TOs for the CAI UIOLI and BSC re-opener, or how the information reported to Ofgem will be assessed. The nature of this process will determine the degree to which TOs face the risk of not recovering their CAI and BSC spending.

Therefore, Ofgem's RIIO-ET3 CAI UIOLI and BSC re-opener proposal reduces this certainty for TOs and their investors, particularly if the reporting requirements imposed by Ofgem result in TOs' submitted funding requests being partially disallowed.

3.5. Our Recommended Approaches

3.5.1. We propose that Ofgem accepts TOs' indirect cost proposals as submitted

As we discuss in the sections above, we have identified several, serious problems with Ofgem's approach to benchmarking TOs' indirect costs using comparative assessment:

- Ofgem's historical regression modelling is unable to explain TOs' costs robustly and risks underfunding TOs' efficient indirect costs, due to the small sample sizes, serious statistical problems with the models, inconsistency in data, as well as exclusive reliance on historical data; and

- Ofgem's forward-looking, company-specific analysis relies on arbitrary benchmarks and tends to produce misleading results, using simplistic assumptions that have no relevance to assessing efficiency.

Therefore, the modelled costs obtained from either of Ofgem's approaches can reliably estimate the TOs' efficient indirect costs reliably. Relying on these flawed models to set TOs' indirect allowances risk introducing substantial errors in Ofgem's cost assessment.

While a more reasonable approach is to conduct line-by-line expert review of TOs' indirect proposals, time and resource constraints at the current stage of the process are likely to limit Ofgem's ability to do so. Because Ofgem's cost assessment has provided no evidence to suggest its indirect cost estimates are inefficient, given the serious flaws in its statistical analysis outlined above, we therefore propose that Ofgem accepts TOs' indirect cost proposals, as submitted in their business plans.

In preparing its Final Determination, Ofgem may question whether this recommendation of accepting SPT's business plan proposal on indirect costs is efficient protects adequately the interests of consumers, as required by its statutory duties.

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[98]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.143.

The consumer interest, and in particular the need to remunerate the TOs' costs as they ramp up activity to support net zero, would not be well-served by using unreliable statistical analysis to make arbitrary reductions in licensees' business plan cost proposals. Such an approach would represent bad regulatory practice, and undermine investment incentives. Hence, in the absence of any reliable evidence that SPT's costs proposals contain any elements of inefficiency, and the serious statistical flaws with its own modelling, we consider it would protect the consumer interest for Ofgem to conclude from its analysis that it has no basis to deem SPT's cost forecasts are inefficient, and to fund them in their entirety.

If Ofgem does wish to make use of the analysis performed to date, we would suggest Ofgem putting materially higher weight on the forward-looking, TO-specific analysis. This will mitigate the risk of underfunding SPT's indirect activities, as the outcomes produced by Ofgem's TO-specific analysis broadly aligns with SPT's Business Plan. It may be possible still to improve the econometric modelling, but we do not consider any statistical analysis performed on such small sample will be highly reliable.

3.5.2. We propose Ofgem provides ex ante allowances for TOs' total indirects, and relaxes the criteria for triggering the indirect UMs

To mitigate concerns on the inconsistency between TOs' approaches to allocating baseline and UM-funded projects, we recommend that Ofgem seeks in its Final Determination, insofar as possible, to set ex ante allowances to avoid risks of underfunding companies due to cost allocation issues. The provision of ex ante allowance also ensures TOs are incentivised to maximise efficiency, and investors have certainty on revenues.

We also propose that Ofgem relaxes the criteria for TOs to trigger the indirect UMs, to address the significant risks of underfunding companies' costs and to allow the companies to recover their efficient indirect costs beyond their ex ante indirect allowances.

For CAI, we propose that Ofgem removes the £25 million threshold on project size, as (i) the threshold is poorly justified, and (ii) TOs' baseline CAI allowances largely understate their baseline efficient CAI costs, leaving the companies with very limited resources manage the UM-related CAI activities.

In addition, Ofgem's decision to set the CAI UIOLI allowance at 10 per cent of the expected capex is unsubstantiated. While Ofgem's historical CAI regressions are unsuitable as a basis for efficiency assessment, as explained above, in the absence of any further evidence, a regression-based approach similar to the one used at RIIO-ED2 could be used to estimate the CAI to capex ratio used to provide funding for CAI growth through ET3 UMs. We therefore recommend Ofgem sets the CAI-to-capex ratio for the CAI UIOLI allowance at 14.1 per cent, based on a CAI regression model estimated in levels and with outturn data specific to the electricity transmission sector.

For BSC, we propose that Ofgem replaces the BSC re-opener with a more straight-forward funding mechanism. Ofgem's BSC re-opener proposal requires both totex and BSC outturn costs of the TO above 15 per cent of the baseline allowances, which is highly unlikely for the TOs to trigger. Therefore, we propose Ofgem redesigns its BSC UM mechanism, to account for the additional BSCs the TOs need to incur to support their UM-related capex projects.

One possible approach to do so would require applying an automatic uplift based on TO's CAI UIOLI allowances. For example, using outturn data for the three TOs over the period 2014-2024, we calculate the average BSC to CAI ratio, which is equal to 0.32. This means that, on average, for every pound spent on CAI, TOs spend £0.32 on BSC. Using this ratio, Ofgem could adjust TOs' BSC allowances in line with the CAI UIOLI allowances. Hence, for each pound of CAI UIOLI allowance granted, the mechanism would allow the TOs an upward adjustment of £0.32 to their BSC allowances.

In addition, Ofgem's proposed ex post efficiency assessment of TOs' indirect costs represents a serious risk for TOs and their investors, as Ofgem has not published any detailed reporting requirements.   The TOs face risks of cost under-recovery if the reporting requirements imposed by Ofgem result in TOs' submitted funding requests being partially disallowed. This increased uncertainty increases the effective cost of capital for the TOs, which ultimately increases costs to consumers. We suggest Ofgem publishes the detailed reporting requirement and assessment criteria to provide the companies with necessary guidance, ideally before finalising its price control determination.

4. Assessment of Ofgem's Approach to Setting Allowed NOCs

In this chapter we review Ofgem's approach to setting TOs' NOCs allowances for RIIO-GD3. As we describe in Section 2.2, Ofgem's approach to setting allowances for NOCs involves setting an allowed unit cost, based on the minimum observed across the RIIO-ET2 and RIIO-ET3 periods in companies' submissions, unless certain materiality thresholds are met. If these thresholds are met, Ofgem sets the annual unit cost at the annual average cost over the RIIO-ET2 and RIIO-ET3 periods.

Ofgem's introduction of the annual average cost approach at RIIO-ET3 allows for a more accurate assessment of TOs' efficient costs compared to the RIIO-ET2 approach, which relied only on the unit cost approach. The unit cost approach assumed companies' efficient costs could only fall over time, and took no account of the material variability over time in the type of workload TOs undertake, or underlying real cost inflation pressures, conflating these factors for inefficiency.

However, despite these developments to the methodology, Ofgem's RIIO-ET3 approach suffers from several flaws, discussed in the remainder of this chapter:

1. The materiality thresholds for the annual average cost approach to be used (i.e. rather than the unit cost approach) are set at arbitrary levels;

2. Whilst the annual average cost approach is an improvement on the RIIO-ET2 approach, which relied on the unit cost approach only, it still sets RIIO-ET3 unit costs in part (with 50 per cent weight) based on RIIO-ET2 unit costs, even if these unit costs are incomparable, e.g., due to different types of workload, or cost pressures that emerge over time;

3. Ofgem's annual average cost approach fails to account for the increase in total cost, due to changes in workload between RIIO-ET2 and RIIO-ET3, resulting in an underestimate of SPT's efficient costs for cost areas where there is an increase in workload from RIIO-ET2 to RIIO-ET3; and

4. Despite the introduction of the annual average cost approach, Ofgem's approach to assessing NOCs still makes no attempt to disentangle pressures on efficient costs from inefficiency. This approach risks systematically underfunding TOs' efficient NOCs.

4.1. Ofgem Allows SPT 75 per cent of Its Submitted RIIO-ET3 NOCs

SPT's business plan submitted a request for funding of £353m for NOCs for the RIIO-ET3 period, of which Ofgem allowed £263m (75 per cent). Figure 4.1 below shows the breakdown of SPT's disallowed NOCs. The largest disallowance is through the engineering review / separate assessment of £60m, made entirely to operational technology costs. Whilst we do not comment in detail on Ofgem's engineering review / separate assessment in this report, it is important that when Ofgem undertakes this review, it comprehensively considers the evidence presented to it by SPT within its Business Plan submission.

Ofgem also disallowed £16m of SPT's proposed NOCs based on its quantitative assessment, which comprises of efficiency cuts to maintenance (£5.28m), faults (£1.39m), inspections (£1.03m), repairs

(£2.27m), vegetation management (£2.52m), and "NOCs other" costs (£3.02m). Ofgem also makes
an Ongoing Efficiency (OE) adjustment – not discussed in this report – of £13.42m to obtain a final
NOCs allowance of £263m.

The efficiency adjustments made by Ofgem through quantitative analysis result from application of
either Ofgem's unit cost approach or its annual average cost approach, allowing SPT a lower unit
cost per unit of activity than SPT forecast in its business plan. The remainder of this section
explains the flaws in Ofgem's NOCs assessment approach which affect the efficiency cut applied
through its quantitative assessment.

**Figure 4.1: Bridge from SPT's RIIO-ET3 Business Plan NOCs Proposals to Ofgem's Draft
Determination Allowance**
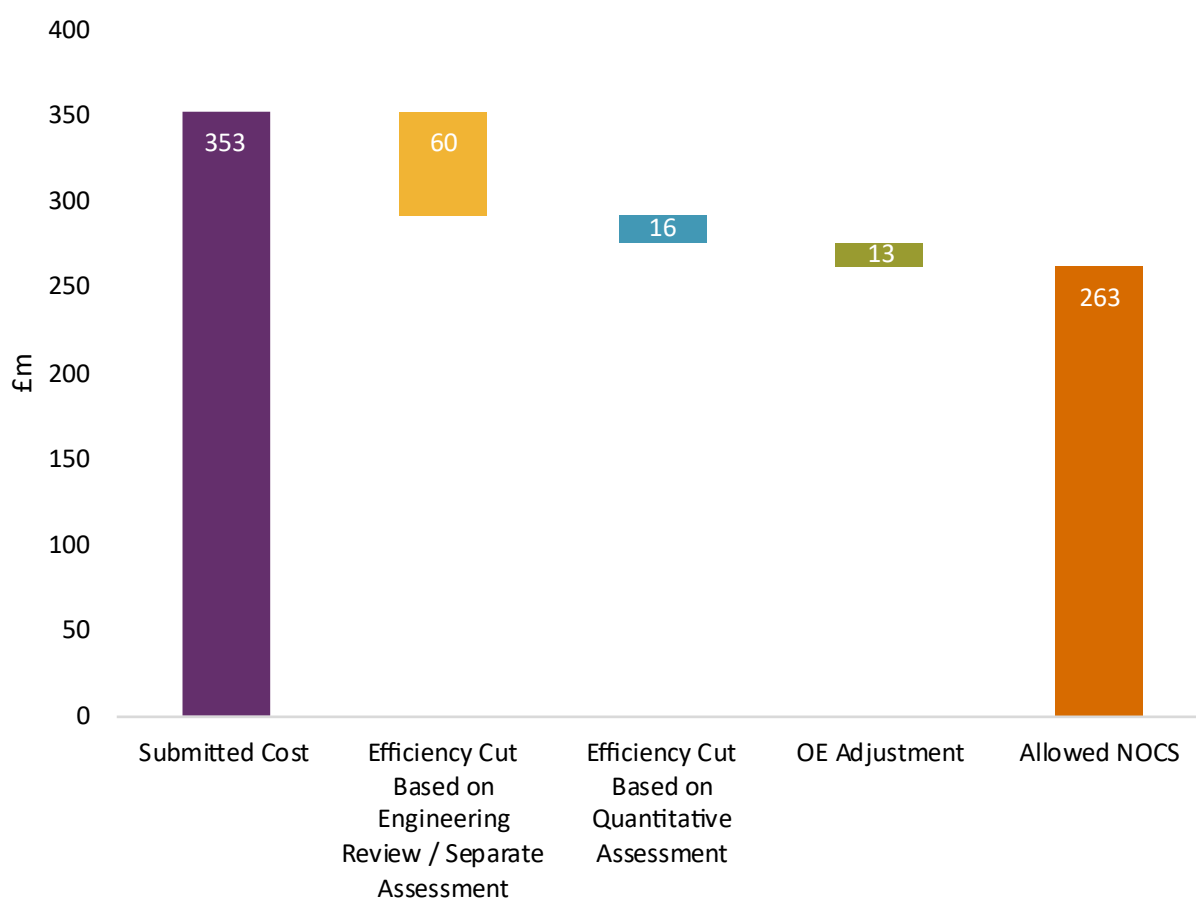
Source: NERA analysis

4.2.   Ofgem Does Not Apply the Approach Described in its DD

As described in Section 2.2 above, Ofgem states it has set RIIO-ET3 NOCs allowances for each NOC
sub-category using either a quantitative assessment ("unit costs" option in the modelling file)
based on historical and forecast cost and volume data, or a qualitative assessment ("separate"
option in the modelling file) of companies' submitted engineering evidence.

However, a detailed review of Ofgem's supporting modelling file for SPT suggests that it has not
consistently applied the approach stated in its RIIO-ET3 DD for each NOC sub-category:

- Ofgem states that it has applied the *average annual* cost approach (note, this is different from its *annual average* cost approach) for sub-categories within the scope of quantitative assessment where no volumes were submitted.[99] However, the setup of the NOCs model fails to differentiate between the unit costs approach and the average annual cost approach.

- Instead, it sets all allowed unit costs to zero in cases where historical or forecast volumes are not available (reported as 0), even when the total cost of that category is positive.[100] This inconsistency with the approach stated in Ofgem's DD represents a technical error that has understated SPT's costs for those sub-categories, where volume data was not available.

- For example, for 132kV overhead line faults, the total submitted cost for 2024 is £49.9k, but there is no volume data for this cost area in the modelling file for the same year (reported as zero). As a result, the calculated unit cost is zero under this Ofgem's approach, which understates the actual cost incurred by SPT in 2024.[101]

This inconsistency between the modelling file and Ofgem's RIIO-ET3 DD suggests it has not described its approach accurately in the DD document. More seriously, Ofgem's approach appears to represent an error, which increases its disallowance of SPT's submitted costs, because it is plainly wrong to assume a unit cost of fault resolution of £0 per fault.

In addition, Ofgem states that it has allowed submitted costs in full when applying the annual average cost approach would have resulted in a positive adjustment.[102] However, the results from Ofgem's NOCs model indicate that the cap was not applied correctly in certain cost areas for some years: the modelled allowance for "NOCs Other" exceed SPT's submitted cost for years 2027 to 2029.[103] This highlights another inconsistency between the approach described in Ofgem's DD and the actual methodology used in its model.

4.3.   Ofgem's Approach Understates SPT's Efficient NOCs

4.3.1. There are multiple sources of underfunding in Ofgem's approach, causing up to 89 per cent disallowances for individual cost areas

Ofgem's quantitative assessment disallowed £12.49m in SPT's five core NOCs sub-categories: Faults, Inspections, Maintenance, Repairs, and Vegetation Management. In Table 4.1 below, we identify each individual cost area within these NOCs sub-categories where Ofgem's modelled cost in the Draft Determination is lower than SPT's submitted cost.

Across these cost areas, there are multiple sources of efficiency cuts based on Ofgem's approach that can lead to underfunding for each cost area:

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[99]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.69.

[100] NERA review of "NOCs_SPT TO _NDA_Share.xlsx" (Excel), sheets under "Unit costs". The formula for calculating unit cost for each sub-category uses the IFERROR function to set all the result to 0 when the submitted volume is 0 while the total cost is positive.

[101] NERA review of "NOCs_SPT TO _NDA_Share.xlsx" (Excel), sheet "Cal_Faults_Unit Costs", Cell AD81.

[102] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.68.

[103] NERA review of "NOCs_SPT TO _NDA_Share.xlsx" (Excel), sheet "Out_SPT_NOC".

- Ofgem's unit cost approach estimates the efficient cost based on the lower of the RIIO-ET2 and RIIO-ET3 unit cost. This approach systematically disallows expenditure whenever the T3 unit cost exceeds the T2 unit cost and the materiality thresholds for switching to the annual average approach are not met. We explain this source of underfunding in Section 4.3.2 and Section 4.3.3.

- To the extent that Ofgem has used the annual average cost approach, it can only partially offset the large increases in unit costs observed for some categories of work. The modelled cost using the annual average cost approach would still be below the T3 submitted cost (after correcting for differences in workload) given a much lower T2 unit cost. Additionally, Ofgem's selection of materiality thresholds appears arbitrary, lacking any robust economic justification, which results in the exclusion of SPT's cost areas where unit costs exhibit volatility over time. We present examples of such cases in Section 4.3.4.

- Ofgem's method for calculating the annual average cost for a cost area fails to account for the difference in workload between T2 and T3, resulting in an even larger efficiency cut compared to the unit cost approach for some cost areas where T3 workload is higher than T2 workload. We discuss this flaw in detail, and suggest a potential remedy, in Section 4.3.5.

Table 4.1: SPT's Cost Areas Where Ofgem Made an Efficiency Cut (In NOCs Categories of Faults, Inspections, Maintenance, Vegetation Management)

Cost Area	Approach Used by Ofgem	Amount Disallowed (£m)	% Difference to Submitted Cost
Faults			
Substations Wound Plant	Unit cost	0.13	-2%
Substations Protection and Control	Unit cost	0.08	-41%
OHL 275	Unit cost	0.13	-13%
OHL 400	Unit cost	0.51	-89%
Cables 275	Annual average cost	0.54	-47%
Inspections			
Sites 132kV	Unit cost	0.06	-5%
Overhead Line Overhead Lines	Annual average cost	0.97	-17%
Maintenance			
Substations Wound Plant	Unit cost	1.63	-23%
Substations GIS	Unit cost	0.03	-10%
Substations Protection and Control	Annual average cost	0.16	-29%
Substations Civils	Annual average cost	3.29	-34%
OHL 132	Annual average cost	0.16	-18%
Repairs			
Substations Wound Plant	Unit cost	0.03	-1%
Substations FACTS	Unit cost	0.13	-66%
Substations AIS	Unit cost	0.15	-7%
Substations Protection and Control	Annual average cost	0.09	-17%
Substations Auxiliary Systems	Annual average cost	0.16	-23%
Substations Civils	Unit cost	0.71	-20%
OHL 132	Unit cost	0.05	-4%
OHL 275	Unit cost	0.11	-20%
OHL 400	Unit cost	0.17	-13%
Cables 132	Unit cost	0.59	-27%
Cables 275	Unit cost	0.08	-24%
Vegetation Management			
Kilometers Cut 132kV	Unit cost	0.94	-66%
Kilometers Inspected 132kV	Unit cost	0.13	-19%
Kilometers Cut 275kV	Unit cost	0.74	-72%
Kilometers Inspected 275kV	Unit cost	0.19	-37%
Kilometers Cut 400kV	Annual average cost	0.32	-37%
Kilometers Inspected 400kV	Unit cost	0.20	-46%
Total		**12.49**	

Source: NERA analysis

4.3.2.   Asymmetry in Ofgem's approach will tend to set NOCs allowances below the TOs' efficient costs

As described above, Ofgem has relied on a unit cost assessment of each TOs' costs in an attempt to estimate the efficient level of expenditure over the RIIO-ET3 control period, unless its materiality thresholds are met for the annual average cost approach to be used.

Under the unit cost assessment approach, for areas of activity where companies forecast their unit costs will fall, Ofgem's approach will set lower allowed unit costs than achieved during RIIO-ET2, reflecting TOs' expected reduction in unit costs in the RIIO-ET3 period. However, where the TOs have forecast rising unit costs, the unit costs allowed by Ofgem will be capped by the unit costs achieved during RIIO-ET2, unless the unit cost increase surpasses Ofgem's materiality threshold for the annual average approach. This approach does not recognise that unit costs may still materially increase from RIIO-ET2 to RIIO-ET3 without meeting Ofgem's thresholds.

By relying on the unit cost approach to set NOCs allowances (unless variations meet Ofgem's materiality thresholds), Ofgem is therefore making two assumptions: (1) that TOs' efficient unit costs strictly decrease over time, so any increase should be deemed "inefficient", and (2) that historical and forecast costs are comparable and that past trends are a reliable indicator of future unit cost trends.

These are strong assumptions that are unlikely to hold in reality. In fact, some unit costs will rise over time and others will fall, even if there were a tendency for unit costs to fall over time (in real terms, at least) due to the effects of technological progress and improvements in working practices. Such variation in unit costs may result from changes in the nature or location of the work being conducted, for example.

If unit costs do vary over time – both upwards and downwards – for reasons beyond TOs' control and unrelated to efficiency, Ofgem's approach will systematically disallow upward changes in efficient costs, while setting allowances that reflect reductions in unit costs. The mechanism Ofgem used to do this, i.e. crudely taking the minimum of the unit cost achieved in RIIO-ET2 and forecast for RIIO-ET3, is entirely mechanistic and fails to analyse the reasons for changes in unit costs over time.

Ofgem's failure to capture variation in TOs' efficient unit costs over time is not just a theoretical concern. A closer assessment of SPT's unit costs over time (described below) suggests Ofgem's approach is likely to understate their efficient NOCs over the RIIO-ET3 control period.

4.3.3.   SPT's unit costs are volatile, even if Ofgem's materiality thresholds are not met

Of the NOCs cost areas which Ofgem assesses via the unit cost approach, there is material variation in unit costs between RIIO-ET2 and RIIO-ET3, even in cost categories where the materiality thresholds set by Ofgem are not met for annual average cost approach to be used. As a result, as discussed above, Ofgem assumes that costs can only fall over time in these cost areas, and thus fails to disentangle genuine changes in efficient cost from inefficiency.

Figure 4.2 below shows four examples of NOCs cost areas for which Ofgem uses the unit cost assessment approach to set allowances, but for which SPTs' unit costs are volatile across RIIO-ET2 and RIIO-ET3.

Figure 4.2: SPT Unit Costs for Cost Areas Assessed via Unit Cost Assessment
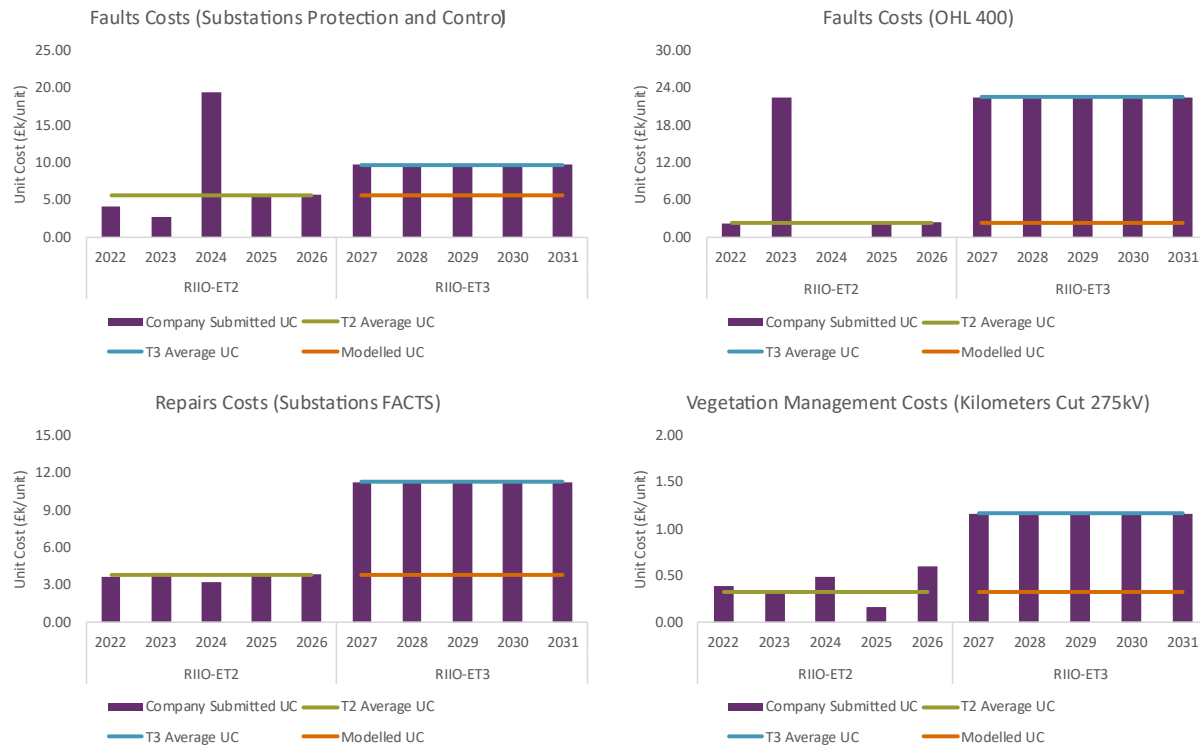
Source: NERA analysis

Figure 4.2 shows that in some cost categories SPT's unit costs are rising very materially between the RIIO-ET2 and RIIO-ET3 control periods, and Ofgem's cost assessment approach makes no attempt to assess whether such changes are reasonable, and instead systematically disallows them. Ofgem's approach adopts this simplistic approach because its materiality thresholds are not met for these cost categories. As a result, Ofgem sets the unit cost for RIIO-ET3 based on the unit cost across the RIIO-ET2 period, relying on the assumption that unit costs can only fall over time (as discussed in Section 4.3.2 above.

In part, this is driven by the arbitrary selection of thresholds, and the way in which Ofgem applies them. In Section 4.3.4 we discuss the materiality thresholds, and in Section 4.3.6 we show the impact on SPTs' allowances of relaxing these thresholds.

4.3.4. Ofgem's annual average cost approach adjusts for large increases in unit costs, but only partially, and relies on arbitrary materiality thresholds

In its Draft Determination, Ofgem states that "*for assets where the RIIO-ET3 submitted costs are significantly greater than modelled costs derived by the RIIO-ET2 approach (25% and £1m), we*

employ an annual average cost approach."[104] In practice, Ofgem uses the annual average cost approach where both of these materiality thresholds are met (the increase must be greater than 25 per cent and greater than £1m), even if not by the same TO (i.e. if one TO meets the 25 per cent threshold, and another TO meets the £1m threshold, Ofgem uses the annual average cost approach).

Further, if any of the TOs, or a subset of the TOs meet the materiality thresholds, then all TOs have their costs assessed via the annual average approach. Ofgem explains that "*for assets where RIIO-ET2 and RIIO-ET3 costs are not comparable for one or two but not all TOs, we considered moving to an annual average cost approach for only the TOs where this was the case. However, we considered that this risked disadvantaging the TO(s) with comparable historical and forecast unit costs, so we applied the same approach for all three TOs*".[105]

Ofgem's selection of the materiality thresholds is, however, arbitrary. Ofgem states that "*we carried out sensitivity analysis on the data and concluded that the most impactful thresholds that we tested ranged from 15 to 30 percent and from £0.5m to £2m. We tested the impact on modelled costs using each combination of percentage and monetary thresholds and found that using thresholds of 25% and £1m was the most appropriate approach. We looked at the range of modelled costs when using each combination of thresholds and 25% and £1m resulted in modelled costs roughly in the middle of this range for all TOs.".*[106] Hence, Ofgem's stated justification is simply a comment on how impactful different thresholds might be in affecting the outcome of the cost assessment, without any consideration of whether this threshold is appropriate.

To the extent that Ofgem has used its unit cost approach, it will inevitably disallow expenditure, as allowed unit costs cannot – for any one category of cost – be set above submitted unit cost, but may be set below them. Further, the degree to which Ofgem disallows costs across the industry reflects an arbitrary judgment on materiality thresholds, with no evidence whatsoever that the resulting disallowances correspond to the degree of inefficiency included in the TOs' business plans. Rather, Ofgem has applied a simple, mechanical procedure, which relies on arbitrary parameters, that disallows costs without demonstration of efficiency.

Given that one of Ofgem's materiality thresholds is expressed in monetary terms (£1m difference between RIIO-ET3 submitted costs and modelled costs derived by the RIIO-ET2 approach), cost areas with lower costs are less likely to be able to reach the materiality thresholds. Despite having smaller costs, in aggregate these cost areas may still form a significant portion of the TOs' cost base, because Ofgem's cost assessment disaggregates costs into many, low unit cost areas.

Ofgem's only justification for employing a monetary threshold in addition to the percentage threshold is that "*employing a percentage threshold would mean at least 50% of assets moving to an average costs approach*".[107] This justification appears to be based on Ofgem's desire for only a certain share of costs – for reasons not articulated in the Draft Determination – to be subject to the more accurate annual average cost approach, which necessarily leaves some cost categories

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[104] Ofgem (1 July 2025), ET Annex, pg. 138

[105] Ofgem (1 July 2025), ET Annex, pg. 140

[106] Ofgem (1 July 2025), ET Annex, pg. 140

[107] Ofgem (1 July 2025), ET Annex, para. 5.74

assessed using a method that bakes in the implausible assumption that unit costs only ever increase due to reductions in efficiency.

In contrast to the unit cost approach, the annual average assessment approach allows Ofgem's modelling to acknowledge that costs can increase over time for reasons other than inefficiency (unlike its unit cost assessment approach). Under this approach, Ofgem divides the total cost for both RIIO-ET2 and RIIO-ET3 by the number of years over the two control periods (10 years) and sets this annual average cost for each year of RIIO-ET3. Therefore, the allowed unit cost for RIIO-ET3 will be informed by both the RIIO-ET2 unit costs and RIIO-ET3 unit costs, irrespective of whether they are higher or lower than during ET2.

The annual average assessment approach is an improvement on Ofgem's RIIO-ET2 approach, because it removes the bias implied by the simplistic assumption that efficient unit costs can fall but never rise.

However, this approach still uses the RIIO-ET2 unit costs to inform the RIIO-ET3 allowed unit cost, making no attempt to consider whether changes in unit costs are occurring due to exogenous factors. Hence, it may still generate misleading results. For example, Figure 4.3 shows the same four NOCs cost areas as in Figure 4.2. Even if Ofgem switched to the annual average cost approach, while allowances would increase compared to the unit cost approach used by Ofgem, the allowance would still be below SPT's submitted costs for 3 out of the 4 cost areas.

Figure 4.3: Comparison of Unit Cost Approach and Annual Average Cost Approach
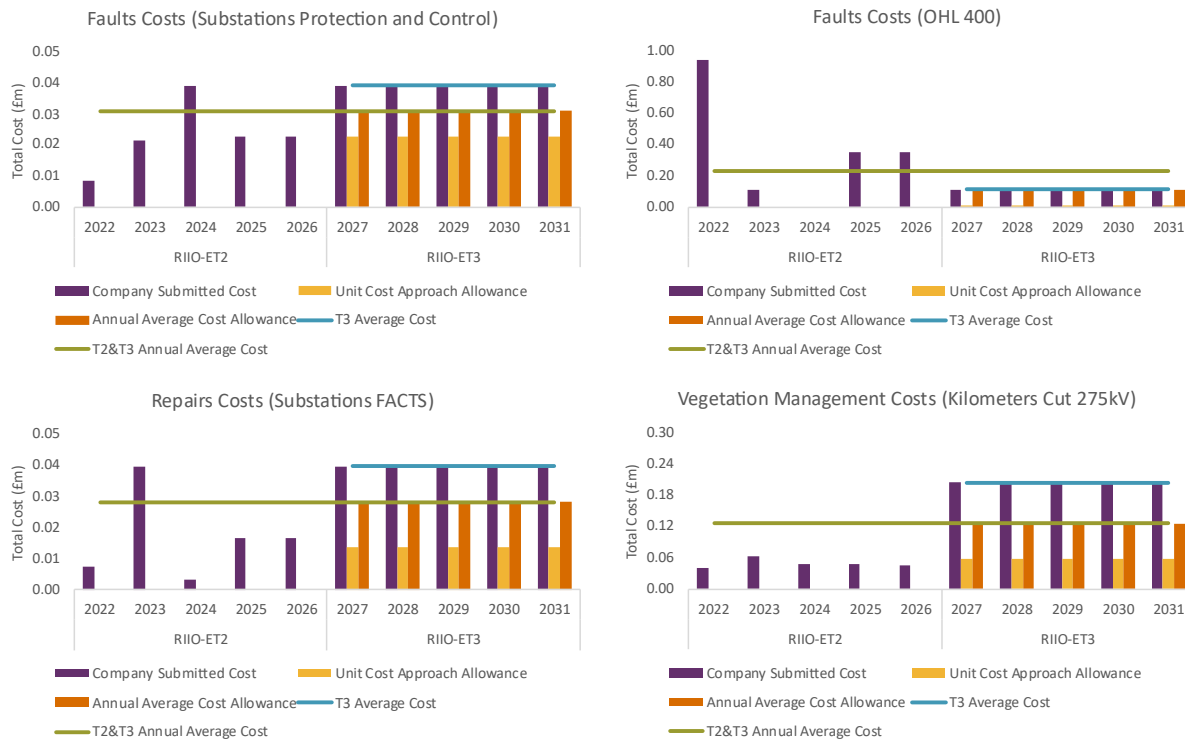
Source: NERA Analysis.

4.3.5. Ofgem's annual average cost approach fails to account for increases in workload between RIIO-ET2 and RIIO-ET3

As described in Section 2.2, Ofgem calculates the annual average cost by dividing TOs' total cost in a cost area across both RIIO-ET2 and RIIO-ET3 by 10, and sets this annual average cost for each year of RIIO-ET3, with the intention to address cost increases from RIIO-ET2 to RIIO-ET3. Calculating the annual average cost in this way fails to account for changes in workload from RIIO-ET2 to RIIO-ET3.

The threshold for switching from the unit cost approach to the annual average cost approach is based on the difference between the modelled and submitted total costs. Therefore, while averaging the total costs over 10 years can partly mitigate the problem of a large increase in unit cost, it does not account for any rise in total costs resulting from increased workload.

The equation below illustrates how Ofgem calculates allowances using the annual average cost approach, and shows that RIIO-ET2 workload influences the allowances for the RIIO-ET3 period. This differs from the unit cost approach, in which changes in workload between RIIO-ET2 and RIIO-ET3 are accounted for.

$$
\begin{aligned}
Annual\ Average\ Cost &= \frac{T2\ Total\ Cost + T3\ Total\ Cost}{10} \\
&= \frac{(T2\ Unit\ Cost \times T2\ Workload) + (T3\ Unit\ Cost \times T3\ Workload)}{10}
\end{aligned}
$$

Unlike the unit cost approach, where Ofgem calculates total costs for each year in T3 by multiplying the modelled unit cost by the T3 workload, the annual average cost approach also incorporates the T2 workload that determines T2 total cost. As a result, when the T2 workload is smaller than that of T3, the modelled annual average cost is lower than it would be if only the T3 workload were used, offsetting the effort to align T2 and T3 unit costs when Ofgem considers they are significantly different.

In fact, adopting the annual average cost approach can reduce TOs' allowances in instances where RIIO-ET3 workload exceeds RIIO-ET2 workload, because the lower RIIO-ET2 workload reduces the annual average cost. This undermines the purpose of using the annual average cost approach to address what Ofgem considers incomparable costs between RIIO-ET2 and RIIO-ET3.

An example of how Ofgem's method for calculating annual average costs leads to higher disallowances can be seen in the maintenance costs for OHL 132kV category, where workload increases from 72 in T2 to 110 in T3. Failing to account for this increase in workload results in the T3 modelled maintenance cost for OHL 132kV, calculated using the annual average cost approach (£0.768m), being lower than the cost calculated using the unit cost approach (£0.924m).

A possible remedy to the flaw in Ofgem's annual average cost calculation is to normalise the total cost of RIIO-ET2 by applying a scalar equal to the ratio of RIIO-ET3 workload to RIIO-ET2 workload before taking the average (see the equation below). This adjustment aims to eliminate the impact of changes between RIIO-ET2 and RIIO-ET3, ensuring that the only volume effect on the calculated annual average cost is from the forecast workload in RIIO-ET3.

$$
\begin{aligned}
Proposed\ Annual\ Average\ Cost &= \frac{T2\ Total\ Cost \times \frac{T3\ Workload}{T2\ Workload} + T3\ Total\ Cost}{10} \\
&= \frac{(T2\ Unit\ Cost\ \times T3\ Workload) + (T3\ Unit\ Cost\ \times T3\ Workload)}{10}
\end{aligned}
$$

When we apply this remedy to the maintenance cost for OHL 132kV, the modelled cost for T3 increases to £0.928m, which reduces the disallowance in this cost area by £0.004m compared to the unit cost approach. This aligns with Ofgem's original intention to adopt the annual average cost approach to improve its RIIO-ET2 approach.

Assuming no change to Ofgem's current materiality thresholds of 25 per cent and £1m, applying this correction to the annual average cost approach would increase SPTs' RIIO-ET3 NOCs allowance by £1.50m. For some cost areas, this correction results in allowances greater than SPT's RIIO-ET3 submitted NOCs. Aligned with Ofgem's RIIO-ET3 approach, in performing this calculation we have therefore capped allowances for each cost area such that SPT cannot obtain an allowance greater than it's submitted cost. This results in an increase in RIIO-ET3 NOCs allowances of £0.92m for SPT.

4.3.6. Relaxing the materiality thresholds and accounting for changes in workload increase SPTs allowed costs by £0.92m - £3.75m

As explained above in Section 4.3.3, there are cost areas within NOCs for which the unit costs vary between RIIO-ET2 and RIIO-ET3, but not enough for Ofgem's materiality thresholds (discussed in Section 4.3.4) to be met. Moreover, the annual average cost approach fails to capture increases in workload between RIIO-ET2 and RIIO-ET3. In this section we test three potential alternatives to setting the materiality thresholds, in combination with correcting the annual average cost approach to account for changes in workload (see Section 4.3.5).

We show the impact on SPT's RIIO-ET3 NOCs allowance, applying the cap to each cost area for each year when the modelled allowance exceeds SPT's submitted cost. These alternative approaches are:

*   **Alternative 1** retain Ofgem's 25 per cent materiality threshold, but remove the £1m materiality threshold, and correct the annual average cost approach to account for changes in workload;

*   **Alternative 2** reduce Ofgem's 25 per cent materiality threshold to 10 per cent, remove the £1m materiality threshold, and correct the annual average cost approach to account for changes in workload; and

*   **Alternative 3** remove both materiality thresholds, effectively setting all NOCs allowances through the annual average cost approach, rather than the unit cost assessment approach, and correct the annual average cost approach to account for changes in workload.

Table 4.2 summarises SPTs' NOCs allowances under the three alternatives, with the third (removal of both materiality thresholds) increasing SPTs' RIIO-ET3 NOCs allowance by £3.75m.

Table 4.2: Impact of Alternative Approaches to Setting Cost Targets on SPT's Allowances

	Submitted Cost	Draft Determination Allowance (exc. OE)	Correcting AACA to account for workload changes	Cross Check 1 Allowance (exc. OE)	Cross Check 2 Allowance (exc. OE)	Cross Check 3 Allowance (exc. OE)
SPT NOCs	351.97	275.18	276.09	277.44	278.83	278.93
Difference to Draft Determination Allowance	76.79	0.00	0.92	2.27	3.65	3.75

Source: NERA analysis of Ofgem's NOCs modelling file.

Given the arbitrary selection of the materiality thresholds applied by Ofgem and its failure to account for changes in workload between RIIO-ET2 and RIIO-ET3 in the annual average cost approach, we consider that a more robust approach to setting NOCs allowances for RIIO-ET3 would be to use the annual average cost approach in all circumstances (i.e. removal of materiality thresholds), as opposed to the unit cost approach (i.e. Alternative 3 above). This would have the advantage of ensuring that unit costs in both the RIIO-ET2 and RIIO-ET3 periods are accounted for in the assessment approach, as opposed to setting forecast unit costs based only on historical

(RIIO-ET2) unit costs. At a minimum, we recommend Ofgem removes the monetary (£1m) materiality threshold, since this imposes an arbitrary restriction on small unit cost areas, and no justification was provided by Ofgem in the Draft Determination for its relevance.

5. Assessment of Ofgem's Approach to Setting Risk & Contingency Allowances

Risk and contingency (R&C) costs represent the additional costs TOs expect to incur due to unforeseen events that are "*outside of their direct control, e.g. significantly adverse weather, failure of suppliers to meet their contractual commitments, or late delivery of key components*".[108] TOs include R&C costs when estimating their load and non-load capital expenditures (capex) at the beginning of the price control, expressed as a percentage of total direct costs forecast to be incurred in developing and delivering their projects.

In this section, we review Ofgem's DD to analyse the regulator's approach to setting R&C allowances for ET3.

5.1. SPT's Approach to Forecasting R&C Costs for RIIO-ET3 Reflects its Average R&C Costs in RIIO-ET1 and RIIO-ET2

SPT's business plan submissions include substantial costs associated with payments to contractors to deliver major capital schemes. SPT – following Ofgem's business planning guidance – has forecast cost based on the "as bid" tender prices charged to it by contractors. These prices represent a baseline that SPT expects to incur if the project is delivered in line with certain assumptions made in the tendering process regarding the scope and progression of the project, and other uncertainties that influence contractors' costs.

However, because the costs contractors face are uncertain due to factors beyond their and the TOs' control, it is commonplace for contracts to contain trigger mechanisms that provide TOs' contractors with additional payments in defined circumstances. These costs represent additional "Risk and Contingency" costs. By way of example, SPT's business plan identifies factors that create a significant amount of risk and uncertainty post-tender, especially for load-related projects, including risks relating to ground conditions, civils weather delays, changes in scope, cost certainty of contract prices, outage delays, and delays in consents.

SPT's submission distinguishes between load- and non-load-related projects, proposing allowances of 12.9 per cent and 9.2 per cent respectively, i.e. applied as a mark-up on the cost forecasts at the "as bid" tender prices.

SPT's proposed percentage R&C allowances come from an analysis it performed using historical planned (i.e. "as bid") and actual R&C costs, as a percentage of total costs, for a sample of projects undertaken during RIIO-ET1 and RIIO-ET2.[109] This sample includes a total of 39 load-related projects and 31 non-load-related projects. We understand that the list of projects considered in the sample is based on completed projects, thus reflecting "actualised" risk, including the changes from original estimates at financial approval. To obtain its proposed allowances, SPT then excludes six load outliers, two of which had very high R&C percentages (47 per cent and 56 per cent), two with very low R&C percentages (i.e. approximately 0 per cent), and another one which had actual

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[108] Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (Revised), para. 3.21.

[109] SPEN (11 December 2024), Cost Assessment and Benchmarking Approach (including RPEs & OE) RIIO, -ET3 Business Plan, p. 34 and p. 38.

R&C of approximately 4 per cent, but planned R&C costs of 0 per cent.[110] Similarly, SPT excludes one non-load outlier because it had a negative R&C cost. This resulted in a final sample of 33 load-related projects, and 30 non-load-related projects.

From the final sample, for load related projects, SPT's business plan proposed an R&C allowance of 12.9 per cent of direct costs. This figure is the unweighted average of *released* R&C costs, calculated to be 12.9 per cent of expenditure on sampled, load-related projects.[111] SPT concludes that this is a conservative measure as, once considering the six outliers, the load-related average would be 14.0 per cent. For non-load related projects, SPT's business plan proposed instead an R&C allowance of 9.2 per cent of direct costs. This figure is the unweighted average of *released* R&C costs, calculated to be 9.2 per cent of expenditure on sampled, non-load-related projects. The non-load-related average including the outliers would be 8.5 per cent, which reflects the presence of a negative R&C allowance.[112]

5.2. Ofgem's Draft Determination on R&C Allowances at RIIO-ET3

5.2.1. Ofgem provided R&C allowances below those requested by the TOs

Ofgem acknowledges that project risks exist that cannot be avoided, but points to variation in the TOs' approaches to forecasting R&C costs, as well as in the TOs' interpretation and inclusion of different risk sources.[113] Ofgem states that the use of different approaches to quantify R&C allowances reduces the comparability across TOs' R&C costs.[114]

Ofgem also criticises the evidence provided by the TOs to justify their R&C costs, suggesting they provided: [115]

• "*very limited justification within EJPs for particularly large risk costs, with minimal justification for the quantum of these costs*"; and

• "*inadequate detail on how TOs sought to take a proactive stance on risk identification, mitigation and management*".

In its DD, Ofgem proposes to determine TOs' ex ante allowances for R&C costs as follows:[116]

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[110] SPT also excluded another project with planned and actual R&C costs that were respectively equal to 10 per cent and 11.7 per cent. Including this outlier in the main sample marginally lowers the final R&C allowance over the sample, from 12.9 per cent to 12.8 per cent.

[111] The *unweighted means* refers to the fact that SPT did not assign a higher weight to more expensive projects when calculating the average percentage of R&C costs incurred in every project.

[112] When considering the *weighted average* (i.e. assigning a higher weight to more expensive projects proportional to the project's costs share of the total costs), the average for load-related projects is 15.6 per cent, and for non-related projects is 8.0 per cent.

[113] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.39.

[114] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, paras. 5.32-5.33.

[115] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.32.

[116] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.39.

- For schemes with R&C costs exceeding £100,000, the allowance would be capped at 5 per cent of the scheme's direct costs. Ofgem suggests that this percentage reflects risks that cannot be reasonably minimised, mitigated, or insured in a timely manner.[117]

- For schemes with R&C costs below £100,000, Ofgem would permit the TOs' requested amounts.

Despite criticising the TOs for failing to justify their proposals as discussed further below, Ofgem does not provide any supporting evidence or analysis for the chosen £100,000 threshold or the 5 per cent allowance. Moreover, it does not respond to any of the detailed evidence on historical R&C costs put forward by SPT in its business plan.

However, Ofgem does explain why it deems it reasonable to set a lower R&C allowance, as compared to RIIO-ET2, for R&C requests above £100,000:

- Ofgem's proposals at RIIO-ET3, such as the Advanced Procurement Mechanism (APM, which provides TOs with an allowance to spend on securing supply chain capacity/commitments up to a pre-agreed cap to procure additional capacity on a short notice), and the mechanisms for early and pre-construction funding "*de-risk multiple elements of the procurement and construction process*".[118] Given the lower level of risk, Ofgem then expects the TOs to incur lower R&C costs.[119]

- The changes to the Totex Incentive Mechanism (TIM) "*aim at reducing the risk of the overall project portfolio. Therefore, [Ofgem does] not deem it necessary to provide an R&C allowance based on the TOs' costing approaches.*"[120] Ofgem expects the stepped TIM to shield TOs from extremely high-cost events outside the TOs' control by allowing cost pass-through, balancing regulatory certainty with a lower R&C allowance.[121] Further, Ofgem expects TOs to manage project risks associated with project delivery using the TIM.[122]

- The R&C allowances only apply to "*those [projects] for which the TOs have requested ex ante allowances (i.e. schemes which the TOs consider to be characterised by high certainty).*"[123] Ofgem notes that this is a relatively small share of schemes since "*the TOs have requested most, if not all, of the load-related capex funding [required over ET3] through Uncertainty Mechanisms (UMs) on the account of cost uncertainty*".[124] We understand this to mean that Ofgem expects only to grant ex ante allowances to projects which have little uncertainty, and are thus less prone to the risk of cost escalation triggering R&C costs.

Ofgem requested that the TOs provide samples on the outturn costs of historical projects, including details on the breakdown of their total and R&C costs in the "R&C Sampling Request"

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[117] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.39.

[118] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 4.12.

[119] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.41.

[120] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.37.

[121] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.37.

[122] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 4.86.

[123] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.37.

[124] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.37.

sent to the TOs. Ofgem asked TOs to include the following R&C payments to contractors within their "Project Risk" cost estimates:[125]

*   Ground conditions;

*   Weather related delays / impacts;

*   Outage delays;

*   Consenting delays;

*   Additional land purchase costs; and

*   Labour shortages.

Ofgem indicates that its definition of Project Risks excludes costs associated with the following risks:

*   Change in scope of assets or project design;

*   Impacts on civils/structure as a result of changes in scope of assets or project design; and

*   Supply chain impacts not attributable to the causes listed above.

5.2.2. Ofgem's decision on R&C's allowances at RIIO-ET2

At RIIO-ET2, Ofgem set R&C allowances equal to 7.5 per cent for the TOs' RIIO-ET2 load and non-load portfolio.[126] At RIIO-ET2, Ofgem adopted different approaches to set allowances for TOs' asset and non-asset R&C costs.

*   For asset-related R&C costs, Ofgem took a bespoke approach, "*based on the specific evidence provided by each TO*", as the TOs' forecasted their R&C costs using different approaches; some forecasts were based on evidence from the tendering and contract award process, whilst others were based on historical cost trends.[127]

*   For R&C costs associated with non-asset elements (civils, other and pre-construction), Ofgem accepted the TOs' requested allowances in full, with a cap at the historical average level of the TOs' requested R&C allowances. Ofgem acknowledged that risks may materialise at any stage throughout the project lifecycle and that these risks are not exclusive to any particular type of project.[128]

While it is unclear from the published documents what approach Ofgem has used to set R&C allowances for NGET's projects, Ofgem's approach for SPT and SHET's allowances focused on forecasting the asset element of project costs (e.g. not relating to civils and pre-construction). Where Ofgem relied on RIIO-ET1 historical cost data to set TOs' asset cost allowances, it removed the asset-related R&C allowances, assuming that actual costs already included some provision for R&C costs. However, Ofgem provided asset-related R&C allowances when the asset costs were

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125   SPEN, Risk and Contingency Sampling Request, p. 1.

126   Ofgem (1 July 2025), RIIO-3 Draft Determinations - Electricity Transmission, para. 5.15.

127   Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (Revised), para. 3.30.

128   Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (Revised), para. 3.29.

mainly based on the TOs' tendering framework, as it considered tender-based estimates not to inherently include risk or contingency factors.[129]

5.3. Ofgem Does Not Provide Any Evidence to Support its R&C Allowance

Ofgem's rationale for setting the R&C costs allowance appears unsubstantiated; it does not explain its choice to select a £100,000 threshold, and the 5 per cent allowance. As we explain below, Ofgem's approach underestimates the R&C costs faced by SPT. SPT's estimates are conservative, and exceed Ofgem's proposed allowances.

5.3.1. Ofgem's proposed R&C allowances understate SPT's observed R&C costs, without justification

The 5 per cent allowance set by Ofgem lacks any empirical justification. Ofgem provides minimal reasoning for the 5 per cent allowance, or for reducing the allowance from RIIO-ET2's 7.5 per cent. In the RIIO-ET2 Final Determination, Ofgem estimated that the historical R&C costs (calculated using outturn information from RIIO-ET1) of the TOs ranged from 5 per cent to 25 per cent of the final cost of a project, with a median close to 10 per cent of the final cost.[130] Therefore, we assume that the choice of a 5 per cent allowance at RIIO-3 is based on the lower bound of the range of R&C obtained from RIIO-ET1 actual R&C costs.

Ofgem presents no evidence to suggest the range has remained the same during RIIO-ET2 or that it will remain the same during RIIO-ET3. Instead, factors like tight labour markets for specialist labour may actually have increased R&C costs since RIIO-ET1.

More importantly, it is unclear why Ofgem would base its allowance on a lower bound, rather than the average or median values calculated from its sample; this approach is inconsistent with the long-term consumer interest in remunerating TOs' costs.

Setting an allowance for R&C costs, which are systematically incurred across the majority of transmission projects, equal to the minimum observed across all projects will self-evidently understate the overall R&C costs TOs incur. Hence, on average, TOs will receive compensation for project costs below the actual costs of delivering them. Ofgem disallowing a portion of the costs typically incurred to deliver transmission investments will disincentivise TOs from making the required investments.

Ofgem suggests that some of its proposals at RIIO-ET3 reduce the risk exposure for TOs compared to RIIO-ET2. Ofgem argues that this would justify lowering the allowance threshold from RIIO-ET2 to RIIO-ET3. Even if the ET3 framework exposed TOs to lower R&C costs, this observation misses the more important fact that the allowance made at RIIO-ET2 (7.5 per cent) was far below outturn R&C costs (12.9 per cent for load, and 9.2 per cent for non-load using SPT's analysis on a sample

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[129] (1) Ofgem (3 February 2021), RIIO-2 Final Determinations – SPT Annex (Revised), para. 3.18; (2) Ofgem (3 February 2021), RIIO-2 Final Determinations – SHET Annex (Revised), para. 3.23.

[130] Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (Revised), para. 3.21.

of projects), so the RIIO-ET2 allowance is the wrong starting point for considering how the allowance should be set during RIIO-ET3.

5.3.2. It is unclear why Ofgem considers its RIIO-ET3 proposals will lead to lower R&C costs

As noted above Ofgem considers its RIIO-ET3 proposals will lead to lower R&C costs, as compared to RIIO-ET2. While its allowances at RIIO-ET2 already understate the costs incurred during RIIO-ET2, it is also unclear why and to what extent its proposals in RIIO-ET3 will reduce risk and, therefore, reduce the TOs' R&C costs.

In its preliminary decision, Ofgem does not consider some factors that can increase risk. For example, Ofgem acknowledges the TOs are delivering larger and more complex investment programmes than in the past.[131] Further, we understand from SPT that the application of the output delivery incentives impose very challenging targets. We also understand from SPT that, while the APM should help securing supply chain capacity for specified assets early, it does not automatically reduce project risk. The factors causing SPT to incur R&C costs mainly arise from the delivery, installation, and commissioning phases of work, which are not affected by the APM.

5.3.3. It is unclear why Ofgem adopts different approaches in RIIO-ET2 and RIIO-ET3

At RIIO-ET2, Ofgem accepted the TOs' requested allowances in full for non-asset elements. This was because Ofgem acknowledged that "*risks may materialise at any stage throughout the project lifecycle and these risks are not exclusive to any particular type of project*". [132] By not allowing the TOs' requested allowances in RIIO-ET3, Ofgem's decision appears inconsistent with its decision at RIIO-ET2. It is unclear why Ofgem would consider that non-asset related risks may materialise in RIIO-ET2, but will cease to exist in RIIO-ET3.

In the DD, Ofgem appears not to have set R&C costs allowances based on the TOs' outturn data. Ofgem justifies its RIIO-ET3 approach due to the significant variation in the TOs' approaches to costing R&C as well as in the TOs' interpretation and inclusion of different risk sources.[133] Also at RIIO-T2 Ofgem claimed that TOs relied on different methodological choices to calculate R&C, but, unlike at RIIO-ET3, suggested R&C allowances be based on TO's submissions. Indeed, at RIIO-ET2, Ofgem adopted bespoke approaches for asset-related R&C costs, where TOs' costing approaches were not uniform - Ofgem considered each TO's submitted costing and, on this basis, established the R&C allowance.

5.3.4. The £100,000 threshold is unjustified

Ofgem provides no evidence to suggest there are systematic differences between projects with R&C costs above and below £100,000.

[131]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.191.

[132]   Ofgem (3 February 2021), RIIO-2 Final Determinations Electricity Transmission System Annex (Revised), para. 3.29.

[133]   Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.39.

Our analysis, as shown in Figure 5.1, confirms that there is a very weak correlation between the percentage of the R&C costs and project size in SPT's sample, when excluding the outliers (18.7 per cent for load, negative 29.1 per cent for non-load, and 4.4 per cent overall). This analysis shows that there is no basis for applying different treatment to the R&C costs for large and small projects, and introducing an arbitrary threshold seems unsupported.

The effect of this threshold is to disallow a material portion of the TOs' R&C costs. Ofgem acknowledges that setting the threshold at £100,000 would mean that only 7 per cent of projects (by value) would receive the total R&C costs requested in full (subject to the scheme being approved by the engineering assessment).[134]

Figure 5.1: The Correlation Between a Project's Direct Costs and its Share of R&C Costs Is Only 7 Per Cent
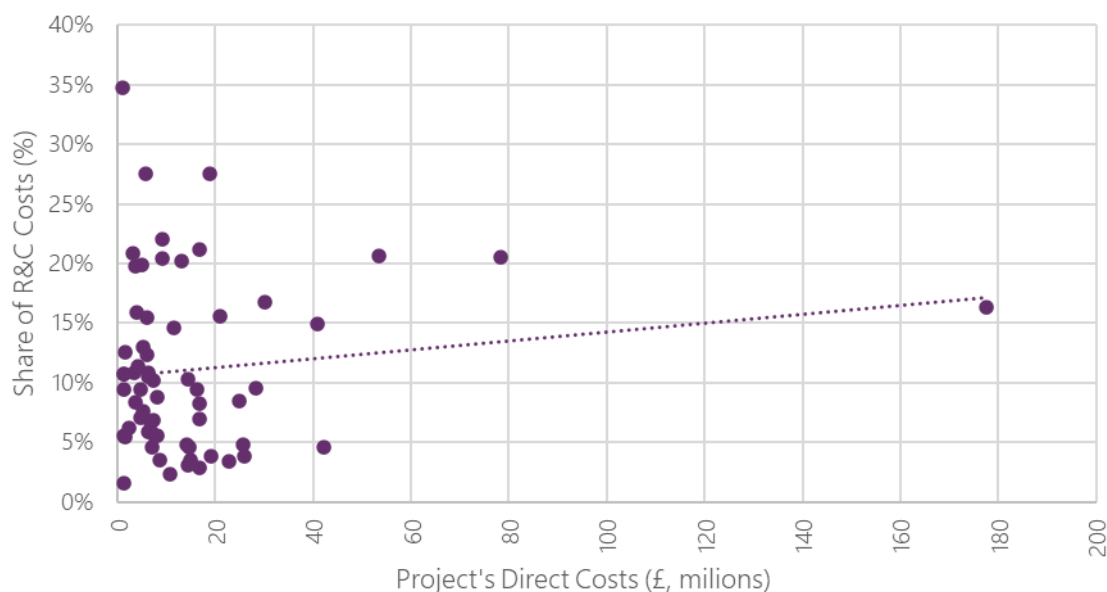
Source: NERA Analysis of SPT's data.

5.4. Ofgem's Reform of the TIM Does Not Obviate the Need for R&C Allowances that Remunerate Expected Costs

The TIM is a mechanism through which any over or underspend incurred against baseline allowances is shared between the company and consumers. The TIM aims to incentivise companies to minimise costs.[135] In the RIIO-ET3 DD, Ofgem has introduced a new stepped TIM approach, summarised in Figure 5.2, as follows:[136]

• Band 1: For the first 5 per cent of any overspend or underspend, TOs would pay or receive 25 per cent of any overspend or underspend.

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[134] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.40.

[135] Ofgem (1 July 2025), RIIO-3 Draft Determinations Overview Document, para. 3.20.

[136] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.199.

- Band 2: For spending between 5 and 15 per cent above or below the baseline allowances, companies pay of receive 5 per cent of any overspend or underspend, in addition to Band 1's terms applying to the first 5 per cent.

- Band 3: Beyond 15 per cent, no sharing factor applies. Consumers cover all additional overspend over 15 per cent, and companies hand back all additional underspend beyond 15 per cent to consumers, with Bands 1 and 2 applying to the first 15 per cent.

Figure 5.2: The Revised TIM Sharing Framework Reduces TO's Risk Exposure
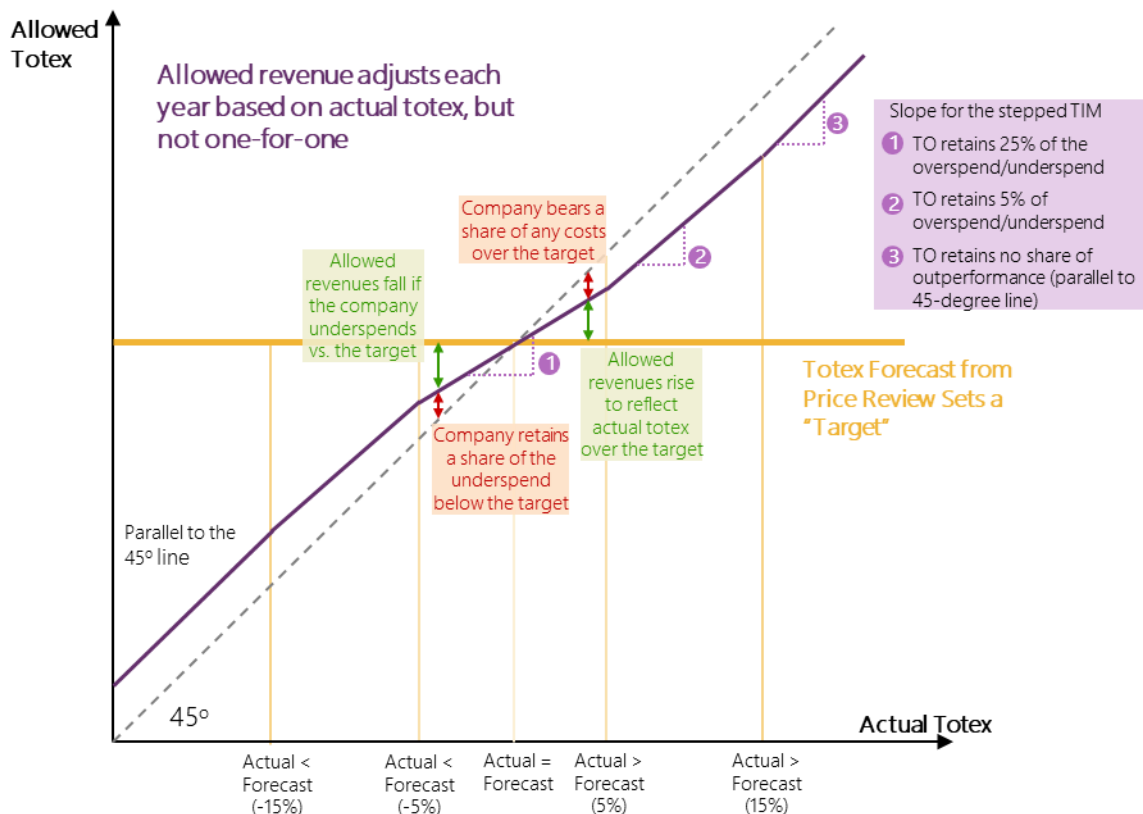
Source: NERA Analysis.

At RIIO-ET2, Ofgem applied a flat TIM, whereby each TO bore/retained a fixed rate of any over/underspend. Ofgem has revised the TIM sharing factors downwards in RIIO-ET3 compared to RIIO-ET2, thus reducing TOs' exposure to the overall risk of underperformance. Ofgem argues that the new stepped approach to the TIM reduces the risk of the overall project portfolio, hence justifying a lower R&C costs allowance.[137]

Ofgem's suggestion that a lower sharing factor on the TIM allows the R&C cost allowance to be set at a lower level is illogical. Reducing the TIM sharing factors reduces the TOs' exposure to cost-over-runs above a given target level of costs defined by baseline allowances. However, if baseline allowances are set below expected costs, the TO will still expect to suffer disallowances of its expected costs, even if the TO receives compensation for some share of the overspend via the TIM.

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[137] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.37.

In short, lowering the TIM sharing factors does not obviate the need to set the cost targets under the TIM mechanism at a realistic level. To do otherwise will systematically disallow some of the TOs' efficient costs, and deter investment.

Ofgem provides two key reasons for reducing the TIM sharing factors at RIIO-ET3:[138]

- TOs investment pipeline is significantly larger, increasing their financial exposure under the TIM; and

- The majority of that increased expenditure will be on large capital projects which come with a significant risk of cost overruns due to factors in the wider economy, supply chain constraints, or planning delays.

Ofgem expects TOs to undertake higher capital expenditure in RIIO-ET3 as compared to RIIO-ET1 and RIIO-ET2. In Ofgem's words, this carries *"a significant risk of cost overruns due to factors in the wider economy, supply chain constraints or planning delays"*.[139]

Ofgem cites this increased risk as justifying its proposal to reduce the RIIO-ET3 TIM sharing factors, to minimise the risks of overspend and to manage risks of forecast inaccuracies. This acknowledgment of increased risk directly contradicts Ofgem's reasons for its decision on R&C allowances. By setting R&C allowance at a level equal to the lower bound of the RIIO-ET1 range, and below the observed level in RIIO-ET2, Ofgem risks systematically underfunding the additional R&C costs associated with the TOs' expanding capital programmes.

5.5. Ofgem's Exclusion of Some Project Risks is Unjustified and Risks Underfunding Projects

Ofgem has excluded three risk sources from its assessment of project risks, namely (i) change in scope of assets or project design, (ii) impacts on civils/structure as a result of changes in scope of assets or project design, and (iii) supply chain impacts not attributable to the project risks listed in Section 5.2.

Ofgem provides no rationale or evidence to justify why these three risk types should be excluded from the project risks that need to be remunerated through the R&C allowances. Their omission from R&C costs allowances appears unjustified and their omission from the cost analysis used to set the R&C allowance would leave these costs unfunded. We consider each risk category below:

- **Change in scope of assets or project design** – It is likely changes in the scope of projects will occur that cannot be predicted prior to the development phase of works. For example, if market information about the pipeline of new generation projects changed after the tender of a project, the scope of assets or project design may need to be reviewed to align with the new, anticipated requirements from transmission users. Further, if new technologies were to develop, which could improve the final asset and benefit consumers, disallowing changes in scope of assets or projects design from R&C costs allowances would prevent TOs from using such technologies. Excluding these risks from project risks, and thus not funding them through

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[138] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.191.

[139] Ofgem (1 July 2025), RIIO-3 Draft Determinations – Electricity Transmission, para. 5.191.

the R&C allowance, reduces the TOs' flexibility to respond to changes in the available technology, which ultimately harms consumers.

- **Impacts on civils/structure as a result of changes in scope of assets or project design** – It is unclear why the impacts on civils/structure would be considered as a separate element from the "change in scope of assets or project design" risk factor described above. A change of scope of assets or project design could impact civils/structures, potentially increasing project costs. Hence, the impact on civils/structure is also a project risk and the same logic that requires funding of R&C costs due to "changes in scope of assets or project design" would also justify funding this category of R&C costs.

- **Supply chain impacts not attributable to ground conditions, weather related delays/impacts, outage delays, consenting delays, additional land purchase costs, and labour shortages** – Projects may be delayed or suffer cost increases due to conditions in the supply chains on which the TOs rely, but do not control. For instance, problems at equipment manufacturers' facilities, logistical delays in transporting equipment, or supply chain shortages may delay transmission projects. While the TOs may be able to manage them, they cannot wholly control them. For example, given current geopolitical trends, notably the introduction of tariffs by the United States, the costs and timings associated with importing necessary materials and equipment may vary significantly in the coming years for reasons beyond the TOs' control. Omitting the costs associated with these risk sources ex ante would, again, limit the TOs' ability to respond to unpredictable events, which could increase the risk of TOs not being able to deliver projects within the targeted timeframe.

5.6.   We Recommend Ofgem Relies on Outturn Data to Estimate RIIO-ET3's R&C Costs Allowances

As explained above, Ofgem appears not to provide any evidence to support its proposal to establish a £100,000 threshold for R&C costs, above which projects would only be awarded R&C costs allowance equal to 5 per cent of the project's direct costs. Ofgem also fails to evidence its decision to set the allowance at 5 per cent. Its position risks materially underfunding the TOs' efficient costs. Instead, we recommend the following:

- We recommend Ofgem relies on average R&C costs experienced on SPT's historical projects over the RIIO-ET2 period to set its RIIO-ET3 R&C costs allowance. There may be a case for Ofgem to apply different R&C costs allowances for load-related and non-load-related projects, as these different types of projects are associated with different R&C costs, with load-related projects incurring higher R&C costs on average. This is especially important as SPT expects the majority of its projects in RIIO-ET3 (92.1 per cent in total value) to be load-related. Therefore, relying on evidence from a sample of SPT's projects, we recommend Ofgem sets R&C costs allowances for load-related and non-load-related projects equal to 12.9 per cent and 9.2 per cent, respectively; and

- The evidence on how R&C costs vary with project size shows there is no justification for a differential treatment by project size, so we recommend removing the £100k threshold.

Unless Ofgem can demonstrate that some categories of cost within reported, historical R&C costs are funded through other mechanisms, we recommend that all R&C cost categories be included in the calculation of the required, percentage R&C allowance.

6. Conclusion

As set out in this report, we have reviewed how Ofgem has set allowances in its RIIO-ET3 Draft Determination for indirects, NOCs and R&C costs, making recommendations on how Ofgem should change its cost assessment for these cost categories in its Final Determination.

6.1. We Recommend Ofgem Accepts TOs' Indirect Proposal, or at Least Places Significantly Higher Weight on its TO-Specific, Forward-Looking Analysis

On indirects, we show that Ofgem's historical benchmarking models suffer from material flaws, and there is limited room for improving the statistical analyses given the small data sample available. Relying on Ofgem's models to determine TOs' indirect allowances therefore risks introducing substantial errors in the cost assessment.

We recommend Ofgem accepts TOs' indirect cost proposals as submitted in their business plans, since Ofgem's cost assessment has provided no evidence to suggest the companies' indirect cost estimates are inefficient. In preparing its Final Determination, Ofgem may question whether this recommendation of accepting SPT's business plan proposal on indirect costs is efficient protects adequately the interests of consumers, as required by its statutory duties.

The consumer interest, and in particular the need to remunerate the TOs' costs as they ramp up activity to support net zero, would not be well-served by using unreliable statistical analysis to make arbitrary reductions in licensees' business plan cost proposals. Such an approach would represent bad regulatory practice, and undermine investment incentives. Hence, in the absence of any reliable evidence that SPT's costs proposals contain any elements of inefficiency, and the serious statistical flaws with its own modelling, we consider it would protect the consumer interest for Ofgem to conclude from its analysis that it has no basis to deem SPT's cost forecasts are inefficient, and to fund them in their entirety.

If Ofgem does wish to make use of the analysis performed to date, we would suggest Ofgem puts materially higher weight on the forward-looking, TO-specific analysis, to mitigate the substantial risk of underfunding TOs' indirect activities caused by Ofgem's historical regressions. While this forward-looking analysis also suffers from significant limitations, placing more weight on this analysis would be justifiable, on grounds that neither the historical or forward-looking analysis suggests SPT's business is inefficient, and the result of the forward-looking analysis is materially closer to SPT's own cost projections.

6.2. We Recommend Ofgem Alters its UMs to Fund Adequately Changes in ETOs' Indirects as Capex Rises

Ofgem's proposals for indirect UMs in the Draft Determination create substantial risks of cost under-recovery for TOs' indirect activities to support UM capex projects.

Because of the inconsistency between TOs' approaches to allocating baseline and UM-funded projects, we consider it would be reasonable for Ofgem to set ex ante allowances for total indirects to avoid risks of underfunding companies due to cost allocation issues. The provision of an ex

ante allowance also ensures utilities are incentivised to maximise efficiency, and investors have certainty on their revenues.

However, if Ofgem does wish to retain its current approach, we recommend that it (i) removes the £25 million threshold on project size and sets the CAI UIOLI allowance at 14.1 per cent of the expected capex, based the RIIO-ET3 CAI regression estimated in levels (instead of in logs) using TOs' outturn data between 2014-2024; and (ii) replaces the BSC re-opener with a more straightforward mechanism (e.g., automatic uplift based on TO's CAI UIOLI allowances, at a pre-defined rate).

In addition, we propose Ofgem publishes the detailed reporting requirement and assessment criteria to provide the companies with necessary guidance. Without this guidance, ETOs cannot know at the point of incurring indirect costs to support a growing capex programme whether those costs will be remunerated.

6.3.   We Recommend Changes to Ofgem's Assessment of NOCs to Avoid Conflating Inefficiency with Changes in Circumstances over Time

Because Ofgem's historical unit cost approach incorrectly assumes any real terms increase in unit costs are due to efficiency deterioration, we propose that Ofgem removes the materiality threshold and uses the annual average cost approach in all circumstances to set NOCs allowances for RIIO-ET3, as opposed to the unit cost approach. At a minimum, we recommend Ofgem removes the monetary (£1 million) materiality threshold, since this imposes an arbitrary restriction on small unit cost areas, on the basis that no justification was provided by Ofgem in the Draft Determination for its relevance.

We also recommend that Ofgem improves its annual average cost approach by accounting for increases in workload between RIIO-ET2 and RIIO-ET3. This could be achieved by normalising the total cost of RIIO-ET2, using the ratio of RIIO-ET3 workload to RIIO-ET2 workload, before taking the average. This adjustment aims to eliminate the impact of workload changes between RIIO-ET2 and RIIO-ET3, ensuring that the only volume effect on the calculated annual average cost is from the forecast workload in RIIO-ET3.

6.4.   We Recommend Ofgem Sets R&C Allowances to Reflect Historically Observed R&C Costs

Ofgem's proposed allowances for R&C costs are likely to materially underfund the TOs' efficient costs. Ofgem does not provide any supporting evidence or analysis for its decision to exclude projects with an R&C below £100,000, or the proposed allowance at 5 per cent of the project's direct costs. Ofgem also provides no justifications for excluding certain cost categories from the R&C allowances.

Therefore, we recommend Ofgem removes the £100,000 threshold and sets an allowance based on the average R&C costs experienced on TOs' historical projects over the RIIO-ET2 period. SPT's data also suggests it may be appropriate to set different R&C allowances for load-related and non-

load-projects. Based on SPT's data in RIIO-ET2, we recommend an allowance for R&C costs of 12.9 per cent for load-related projects and 9.2 per cent for non-load-related projects.

In addition, unless Ofgem can demonstrate that some categories of cost within reported, historical R&C costs are funded through other mechanisms, we recommend that all R&C cost categories be included in the calculation of the required, percentage R&C allowance.

Appendix A. Sensitivity Analysis on Ofgem's Historical Regressions for Indirect

Table A.1 below shows the regression results of Ofgem's CAI and BSC models, estimated by removing either SHET or SPT from the sample. In contrast to the substantial deterioration in model performance after the exclusion of large companies (i.e., NGET and/or NGGT) as discussed in Section 3.2.5, Table A.1 shows that removing either SPT or SHET from the sample has a smaller impact on the models' performance.

Table A.1: Regression Results of Ofgem's CAI and BSC Models Without Either SHET or SPT

	CAI model			BSC Model		
	Ofgem result	**Excl. SHET**	**Excl. SPT**	**Ofgem result**	**Excl. SHET**	**Excl. SPT**
Coefficients						
Constant	-5.69***	-5.44**	-5.77	3.51***	3.63***	3.37***
CSV				0.84***	0.70***	0.97***
Capex	0.15*	0.38	0.11			
MEAV	1.01***	0.85*	1.03*			
Time trend	-0.04	-0.05	-0.01			
GT dummy				-0.77***	-0.80***	-0.72***
Statistical tests						
RESET	0.491	0.370	0.585	0.075*	0.000***	0.043**
Heteroskedasticity	0.421	0.479	0.883	0.010**	0.256	0.612
Normality	0.508	0.032**	0.103	0.201	0.107	0.218
Adjusted R squared	0.92	0.96	0.93	0.87	0.91	0.94
Number of observations	33	22	22	44	33	33

*Note: *** p < 0.01, ** p < 0.05, * p < 0.1.*
Source: NERA Reproduction of Ofgem Models.

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