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**R110-GD2 Cost  
Assessment: Business  
Support Costs**

**Final Report**

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# 1 Introduction

Ofgem's Gas Distribution (GD) cost assessment team commissioned Cambridge Economic Policy Associates (CEPA), in association with Economic Consulting Associates (ECA), to provide advice on the cost assessment process for RIIO-GD2/RIIO-2.

CEPA and ECA have prepared three briefing papers for publication alongside Ofgem's consultation paper on cost assessment. The topic of each paper is as follows:

- ❑ Econometrics and regional factors (prepared by CEPA);
- ❑ Business support costs (prepared by ECA); and
- ❑ Frontier shift (prepared by CEPA).

This paper discusses approaches to assessing Business Support Costs (BSCs) and the potential issues in their application, to inform Ofgem's thinking. The paper is structured as follows

- ❑ Section 2 provides some context to BSCs, describing what they are, summarising Ofgem's approaches to assessing them in RIIO-1, and noting recent BSC trends in the GD, gas transmission (GT) and electricity transmission (ET) sectors;
- ❑ Section 3 provides an overview of options for assessing BSCs (covering trend analysis, ratio and econometric benchmarking, and expert review), and considers a range of associated issues (eg choice of cost drivers, aggregated versus disaggregated benchmarking, choice of comparators);
- ❑ Section 4 concludes; and
- ❑ Annex A1 reviews Ofgem's approach to assessing BSCs in RIIO-1, alongside the approaches adopted by other regulators, which we have used in informing our review of approaches and issues.

## 2 Business Support Costs

### 2.1 What are business support costs?

BSCs are incurred supporting companies' general business activities and are one component of network companies' indirect operating expenditure (opex). They are distinct from other indirect opex which supports operational activities, referred to as closely associated indirect (CAI) costs.

Ofgem has a relatively consistent view across sectors on what constitutes business support activities, as follows:

- ❑ IT & telecoms (IT&T);
- ❑ Property management;
- ❑ Finance;
- ❑ Audit and regulation;
- ❑ HR and non-operational training;
- ❑ Procurement; and
- ❑ CEO and group management.<sup>1</sup>

### 2.2 BSCs in RIIO-1<sup>2</sup>

#### 2.2.1 Materiality

Across the five years to date of the RIIO-1 price controls for GD, GT and ET (2013/14 to 2017/18), BSCs accounted for 8.4% of total expenditure (totex). The proportion of BSCs in totex varies across the sectors: in ET it is 7.5%; in GD 8.3%; and in GT 14.9%.

Across all sectors, IT&T is the largest component of BSCs, ranging from 32% of total BSCs in ET to 40% in GD, as shown in Table 1. The next three largest categories are: CEO & group management, finance, audit & regulation; and property management. Across sectors, each of these accounts for between 14% and 16% of business support costs, although the significance of each varies somewhat by sector - from 13% to 18%.

<sup>1</sup> In addition, stores and logistics were treated as BSCs in RIIO-GD1, but as CAI costs in RIIO-T1. For RIIO-ED1, procurement was not identified as a separate category, 'Network Policy' costs (which were previously in BSCs) were moved to CAI, and non-operational capex for IT&T (and property for fast track determinations only) was included in the assessment of BSCs as a means of avoiding differences in network ownership strategies distorting results.

<sup>2</sup> This subsection focuses on the GD, GT and ET as the first price controls that will be set under RIIO-2.

**Table 1 Composition of business support costs (based on actuals from 2013/14 to 2017/18)**

	GD	GT	ET	All
CEO & Group Management	16%	15%	16%	16%
Finance, audit & regulation	13%	15%	18%	15%
HR & non-operational training	6%	5%	7%	6%
Insurance	8%	12%	9%	9%
IT & telecoms	40%	35%	32%	36%
Procurement	2%	3%	3%	3%
Property management	14%	14%	15%	14%
Stores and logistics	1%	-	-	1%

Source: Ofgem

## 2.2.2 Summary of Ofgem's approach to assessing BSCs

Ofgem used the same approach in assessing BSCs across its first RIIO-1 price controls, applying from 1 April 2013 to 31 March 2021 and covering GD, GT and ET. In the subsequent electricity distribution (ED) price control, running from 1 April 2015 to 31 March 2023, Ofgem adopted a different approach.<sup>3</sup> Details are provided in Annex A1, but in brief:

- ❑ *For GD, GT and ET* – Ofgem applied top-down benchmarking, focusing on aggregated BSCs, rather than individual categories, although considered insurance costs separately. Ofgem used an external benchmark, with a 'composite' cost driver,<sup>4</sup> set at the upper quartile (UQ).<sup>5</sup> There was little difference between the UQ of the overall external benchmark and that of the networks'. Ofgem assessed BSCs at the group level.<sup>6</sup>
- ❑ *For ED* – Ofgem applied top-down benchmarking,<sup>7</sup> with IT&T also subject to an expert review (which covered operational IT&T and non-operational capex IT, as well as BSC IT&T). Ofgem used a median benchmark of Distribution Network Operators' (DNO) own BSCs, from 2010-11 to 2022-23, with Modern Equivalent Asset Value (MEAV) as the cost driver. As with the other RIIO-1 price controls, Ofgem assessed BSCs at the group level.

<sup>3</sup> In these summaries, we focus on the approach to the RIIO-1 slow-track determinations but describe the RIIO-ED1 BSC approach for fast-track determinations in Annex A1.2.

<sup>4</sup> The cost driver was a composite of the cost drivers (e.g. IT end-users, revenue, employees, expenditure) for the individual BSC activities weighted by the cost of each activity in the total.

<sup>5</sup> Except for CEO and group management, for which a composite of the external and networks' upper quartiles was used.

<sup>6</sup> Networks in the same ownership group were assessed together. For example, the BSCs of National Grid's electricity and gas transmission, and gas distribution networks were assessed together.

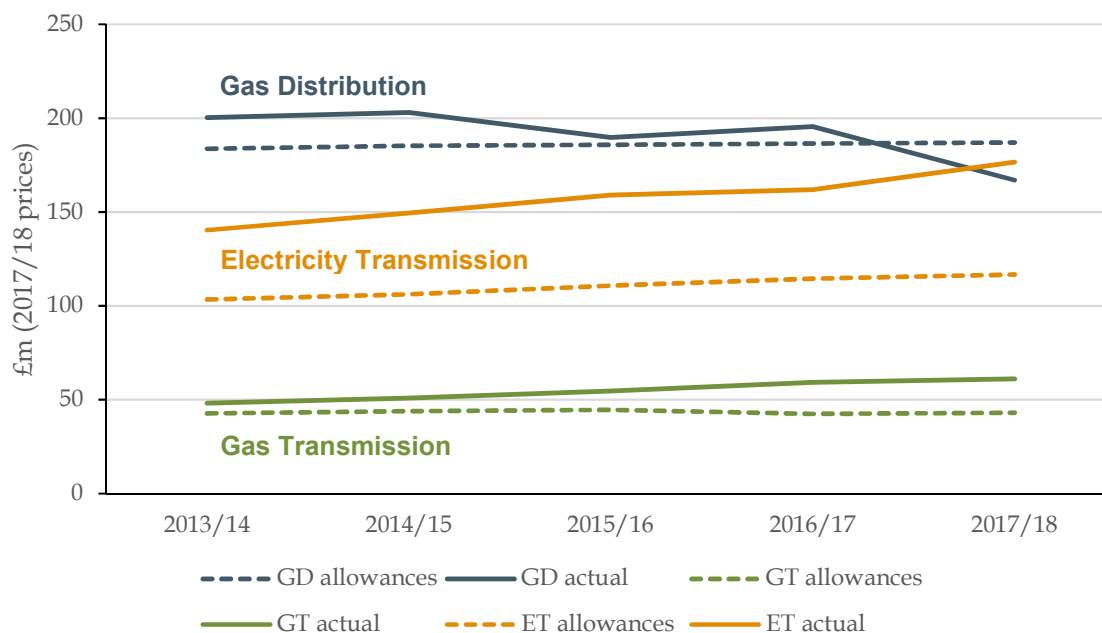
<sup>7</sup> Finance and regulation (including insurance), HR and non-operational training, property management, and CEO and group management.

### 2.2.3 BSC performance in GD, GT and ET

Across the first five years of the RII-GD1/T1 price controls, actual business support costs have exceeded allowances, see Figure 1. This is also true in each year, with the exception of GD in 2017/18, where the sector out-performed allowances. This underperformance against business support cost allowances, contrasts to the general outperformance of total expenditure (totex) allowances for these sectors in RIIO-1.

Figure 1, also shows the trend in business support costs and allowances, which varies across sectors. In particular, whilst in GD, there has been a general downward trend (with costs in 2017/18 some 17% lower than in 2013/14), both ET and GT have seen increases of just over a quarter.

**Figure 1 Business support costs - actuals vs allowances, 2013/14 to 2017/18**



Source: ECA calculations, Ofgem data

### 3 Options for assessing BSCs

There are a variety of potential approaches to assessing BSCs. In this section, we outline these approaches, and consider issues with their application. In doing so, it should be recognised that the approaches are not mutually exclusive and could be used in combination. For example, in RIIO-ED1, IT&T was assessed through a combination of ratio benchmarking and expert review, with an equal 50% weighting applied to each. Also, one approach can be used as cross-check for another. For example, the Utility Regulator (UR), used unit cost benchmarking as a 'sense check' to the econometric benchmarking it had relied on in setting certain allowances in Northern Ireland Electricity (NIE)'s RP6 price control (see Annex A1.3.1).

While the focus of this section is on approaches to assessing BSCs (ie as a bottom-up assessment, distinct from wider opex and/or totex), determination of totex allowances need not rely on a separate assessment of BSCs. Ofgem, in both its RIIO-GD1 and RIIO-ED1 price controls, used top-down totex benchmarking, inclusive of BSCs, alongside bottom-up assessments of BSCs and other elements of totex. Similarly, UR benchmarked elements of opex with a top down approach, inclusive of BSCs, in setting allowances for NIE.<sup>8</sup>

Such top-down benchmarking reduces the impact of one of the key challenges with bottom up benchmarking, which is the comparability across companies of individual activity costs (which are affected by different business models and approaches to cost allocation). We consider some of the issues of cost normalisation and comparability in the next subsection, before evaluating the following approaches to assessing BSCs:

- ❑ Trend analysis;
- ❑ Benchmarking – through ratio analysis and econometric analysis, and the associated issues of:
  - ❑ cost drivers,
  - ❑ aggregated and disaggregated benchmarking, and
  - ❑ external, cross sector or within sector comparators.
- ❑ Expert review.

#### 3.1 BSC data considerations

BSC data need to be fit for the purposes for which they are being used. This requires a clear understanding of the reported cost data and may entail adjustments to those costs. In this subsection, we consider some of the relevant issues regarding BSC data.

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<sup>8</sup> In final proposals, UR used an equal weighting of three top down models and the combined results of three 'middle-up' models, one of which was for BSCs. In its initial proposals, UR had used the middle-up models as a sense check to the results of the top-down models.

### 3.1.1 Cost definitions

An important first step to facilitate a BSC assessment is clear (and consistent) cost reporting definitions. Clear definitions, which are subject to little interpretation, increase understanding of and confidence in reported BSC data. Clear definitions also support, although do not guarantee, consistency of reporting.

Consistency of definitions is also important in at least two regards:

- ❑ Consistent definitions support meaningful comparison over time. If definitions do need to change, then clear definitions make it easier to apply adjustments that still allow for meaningful comparisons over time.
- ❑ Consistent definitions across entities (e.g. between different licensees in a sector, between network operators in different sectors, or between network operators and non-network companies) support more meaningful comparisons between them.

### 3.1.2 Cost normalisation / adjustments

Cost normalisation is the adjustment of costs to make them comparable over time and / or between entities. Below we note some of the potential cost normalisation issues that have arisen in assessing and benchmarking BSCs:

- ❑ *Atypical and non-controllable costs.* Cost normalisation typically involves the removal of atypical (or exceptional) costs that are not expected to recur.<sup>9</sup> This enables a more meaningful comparison over time (which could be supported by requiring companies to explain atypical costs in their business plans). In the context of setting allowances, normalisation also typically involves removing costs that are outside of a network's control, so analysis focuses on controllable costs.
- ❑ *'Gross' BSCs.* Some networks have previously allocated elements of BSCs elsewhere, eg to other indirect opex, to direct opex, or to capex. Across the RIIO-1 price controls, Ofgem conducted its BSC assessment on a gross cost basis by adding such allocated BSCs back to the submitted net costs, in order to have more consistent BSC data. These adjustments were reversed after the assessment to return to net costs.
- ❑ *Opex / capex trade-offs.* BSCs are indirect opex. However, there can be trade-offs between opex and capex, which may arise from the networks' business and operating decisions. For example, a network that outsources some activity may have higher opex but lower capex than one which retains the activity inhouse. Looking at BSCs in isolation runs the risk of such trade-offs not being factored into the assessment of the efficient level of BSCs. It was for this

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<sup>9</sup> Atypical costs may arise from activities such as reorganisations and head office moves, and one-off regulatory and legal projects. Providing guidance to companies on what qualifies as atypical will help with consistency across companies (as companies would not, then, apply their own definitions, which may differ).

reason that in RIIO-ED1 Ofgem included non-operational capex for IT&T (the most material BSC category) into its assessment of BSCs.

- ❑ *Group companies.* Where a network is part of a larger group of companies, much of its BSCs may be incurred at the group level and allocated to it. In such circumstances, BSCs costs may differ at the network level as a result of different allocation methods. To enable a consistent comparison, across RIIO-1 price controls, Ofgem assessed BSCs at the group level. Having determined group allowances, Ofgem allocated them to networks based on the same proportions as in the group's submitted cost forecasts.
- ❑ *Fixed cost normalisations.* It has been argued that elements of BSCs, and IT&T in particular, have a large proportion of fixed costs. Where this is the case, networks that are part of a group benefit from economies of scale, with the fixed costs spread across several networks. In neither GD1 nor ED1 did Ofgem make normalisations for fixed BSCs, although it considered them in developing its BSC approach for the ED slow track determinations (see Annex A1.2.2). In relation to this decision, Ofgem considered it inappropriate to make any fixed cost normalisation as, if it were to do so, it would need to change allowances in response to purchases by, or divestments from, groups.

As noted in the introduction to this section, the more disaggregated the level at which costs are compared, the more potential for differences in the types of cost reported against an individual category across networks and the greater the importance of making appropriate cost adjustments. Assessing costs at a more aggregated (eg totex) level largely nullifies this issue and the definition of costs and the need for cost normalisations becomes less important.

## 3.2 'Trend' analysis

'Trend' analysis was part of Ofgem's regulatory toolkit for assessing BSCs in RIIO-1. A narrow interpretation is that it involves analysing historical cost trends as a basis for forecasting costs. Under a broader interpretation, in the context of a price control regime, it can comprise a range of analyses, for example:

- ❑ analysis of historical trends and reasons for changes / movements;
- ❑ analysis of historical performance against price control allowances and reasons for differences; and
- ❑ analysis of forecast costs, to understand potential step changes and the network companies' justification for these.

The above analyses of costs can be conducted at both a disaggregated (ie BSC component) level and aggregated (ie total BSC) level, and controlled for cost drivers (see section 3.3.3). The analysis can also be done at the individual network level, in network groups, within sectors, and across sectors.

Such analysis will help to inform both the appropriate cost normalisation and the overall assessment approach for BSCs. For example, it may help:

- ❑ identify step changes in costs (say as a result of new lines of work that need to be undertaken), which may mean that historical benchmarks are less useful and greater emphasis placed on review of companies' justification for changes;
- ❑ in understanding whether differences in operating models result in differences in reported costs, and what cost normalisations may be required as a result to support meaningful benchmarking; or
- ❑ in understanding the confidence that can be placed in particular benchmarks, eg if there are strongly divergent trends over time in costs of potential comparators (controlled for cost drivers) or unusual 'lumpy' expenditure, then this may reduce confidence in their use as benchmarks.

As a minimum, trend analysis serves as a useful first step in understanding BSCs and informing other analysis. Also, if the trend analysis is not extended to include comparisons across other networks or sectors, then it is less sensitive to some of the above cost normalisations and adjustments which may be required to facilitate comparisons (although adjustments for atypical and non-controllable costs remain important in ensuring a meaningful comparison over time).

For setting or informing allowances, trend analysis is less useful if there is reason to believe past trends are not good indicators for the future and network companies are forecasting increased BSCs. In these circumstances, companies' justification for the additional activities and / or increased costs need to be understood and critically reviewed.

### 3.3 Benchmarking

Cost benchmarking involves the comparison of costs across companies. For these comparisons to be meaningful, consistency between the types of costs reported is required – hence appropriate cost normalisations and adjustments are important.

Benchmarking is widely used by economic regulators in setting price control allowances, including for BSCs. We consider there are two main benchmarking approaches of relevance for BSCs:

- ❑ Ratio benchmarking (eg unit costs). Ofgem used this in setting its bottom-up allowances for BSCs in RIIO-1; and
- ❑ Econometric benchmarking. UR used regression benchmarking for NIE's BSCs (see Annex A1.3.1).

Across both the above benchmarking approaches, there a range of factors to consider. These include the choice of cost drivers, the level at which to conduct the benchmarking

(ie disaggregated or aggregated), and what comparators to use. We consider each of these further below, having outlined the two main benchmarking approaches.

### 3.3.1 Ratio benchmarking

Ratio benchmarking involves the comparison of cost ratios, eg a cost per unit of cost driver. For example, for IT&T costs this could be £/end-user, or for HR costs, £/employee. The choice of cost driver is, therefore, clearly important, and we separately consider this in section 3.3.3.

Ratios can also be benchmarked at the aggregated (eg total BSC) level. For example, ratios for total BSCs could be expressed as £/MEAV (as for RIIO-ED1) or £/ composite cost driver (as for RIIO-GD1/T1). We outline the implications of disaggregated and aggregated analysis below (section 3.3.4), along with other benchmarking considerations.

### 3.3.2 Econometric benchmarking<sup>10</sup>

Econometric benchmarking can serve as a more sophisticated approach for assessing costs, compared to ratio benchmarking. For example, applying regression analysis will provide an estimate of fixed costs, and use of multivariate regression allows for multiple cost drivers to be more readily incorporated (although degrees of freedom need to be considered). Such models can also be used for predictive cost modelling, as opposed to trend analysis, where forecast cost drivers are available.

A general concern with econometric benchmarking in a price control context is whether there is an adequate sample size of network cost data to draw on. Regression with small samples will be highly sensitive to outliers and may not provide robust results. In this context, more years of cost data collected on a consistent basis are now available to Ofgem than at RIIO-1. However, these may not necessarily be a good indicator of the future, particularly in areas like IT&T.

Where econometric benchmarking is applied, Ordinary Least Squares (OLS) tends to be the approach adopted, although more sophisticated regression techniques, such as Stochastic Frontier Analysis (SFA), and non-regression techniques, such as Data Envelopment Analysis (DEA), have also been used. These more sophisticated methods are less frequently used and may be less familiar to stakeholders.

### 3.3.3 Cost drivers

Selection of appropriate cost drivers is an important part of BSC assessment, regardless of approach. Cost drivers can be assessed against whether they:

- ☐ make economic (or engineering) sense;
- ☐ are accurately and consistently measurable;

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<sup>10</sup> See CEPA's econometrics and regional factors briefing paper, which addresses a range of econometric modelling issues, including cost drivers.

- ❑ have a stable relationship with costs over time; and
- ❑ are (ideally) beyond the control (or influence) of network companies.

Some of the cost drivers used by Ofgem, or proposed in the course of RIIO-1, are summarised in Table 2 below, by BSC activity.

**Table 2 Potential business support cost drivers by activity**

Business support activity	Potential cost drivers
Finance	Revenue, MEAV
Procurement	Total spend, MEAV
Insurance	MEAV
HR & non-operational training	Direct employees, FTEs
IT & telecoms	IT end-users, FTEs, MEAV
Property management	Revenue, network length
CEO & group management	Revenue, MEAV

Source: see Annex A1.1 and A1.2

It is not the case that only a single cost driver of BSCs can be used. A Composite Scale Variables (CSV) can be constructed from multiple activity cost drivers (possibly weighted by activity cost) and used in both benchmarking and trend analysis, whilst multivariate regression analysis can directly incorporate several cost drivers. CSVs can suppress the potential bias of individual cost drivers, which may be misguided or subject to manipulation, and are a useful solution for applying a cost driver when aggregating multiple activities. Where multiple drivers are used, a further criterion for considering their inclusion is that they should not be strongly correlated with one another.

In RIIO-GD1/T1 Ofgem used a CSV in its benchmarking of aggregated BSCs, calculated from bottom-up activity cost drivers, weighted by the cost of each activity. UR also used a CSV (in preference to MEAV) for its middle-up regression analysis of BSC, comprised of network length (50%), customer numbers (25%) and units distributed (25%).

It should be noted that the choice over cost drivers is linked to the choice over the use of external benchmarks. In particular, the use of external benchmarks will limit the use of drivers that are specific to network sectors, such as network length and MEAV. See section 3.3.5 on external benchmarking.

### 3.3.4 Aggregated v disaggregated approach

BSCs can be assessed at either aggregated or disaggregated levels. Assessment at the disaggregated level involves separately assessing each of the individual categories (eg HR, procurement, IT&T), before they are summed to obtain total allowances for BSCs. Alternatively, BSCs can be assessed in aggregate (ie a 'top-down' assessment of BSCs or, more generally, a mid-level down assessment).

In principle, by abstracting away from individual cost items, an aggregated approach can help avoid issues arising from differences in cost data reporting, business strategies,

activity definitions, etc., which are more acute in disaggregated assessments. This is part of the benefit of adopting a top-down totex approach.

However, this is only a benefit for an aggregate assessment of BSCs if the differences result in allocation of costs *between* BSC categories. To the extent that, for example, different operating models result in higher BSCs (opex) but lower capex, this will not be addressed simply by using an aggregate approach to BSCs. However, it could be addressed by including the relevant elements of capex within BSC, as was done with non-operational capex for IT&T in the RIIO-ED1 slow track assessment.

A clear understanding of these cost trade-offs is required if any cost adjustments are to be applied to facilitate benchmarking. Such understanding could be developed through a disaggregated assessment (as noted in section 3.2), even if a disaggregated approach is not used in benchmarking BSCs.

A challenge with a disaggregated benchmarking approach is the choice of benchmark level. In particular, choosing, say, an upper quartile level of performance in each category of BSCs would likely result in an above upper quartile performance at the aggregate level. Such concerns were voiced by respondents to Ofgem's initial proposals in RIIO-GD/T1 and Ofgem switched from its previous disaggregated benchmarking of BSCs to an aggregated approach for final proposals (see Annex A1.1.2).

Across regulators, benchmarking of BSCs has been applied at the individual business support activity level, in aggregate, partially aggregated plus individual assessments, or in combination with other costs. In deciding which business support activities to assess together and which activities may need individual assessments, regulators need to be mindful of the risks (and accusations) of inconsistency across activities and 'cherry picking'.

### 3.3.5 Within sector, cross sector and external benchmarking

In determining a benchmark, Ofgem could potentially use comparators from:

- ☐ outside the network sectors (ie external benchmarks);
- ☐ across different network sectors such as GD, GT, ET and ED (ie cross sector benchmarks); or
- ☐ within a network sector such as ED (ie a within sector benchmark).

Across RIIO-1, Ofgem used or considered all three of these options. In RIIO-GD1/T1, Ofgem used external benchmarks to set BSC allowances, but also compiled cross sector benchmarks, while for RIIO-ED1 it benchmarked DNOs' BSCs against each other. In broad terms, there is a trade-off across these options between the comparability of costs and the number of comparators, both of which can affect the robustness of results.

## Comparability of costs

The usefulness of any benchmark depends on the comparability of activities underlying the costs. As BSCs relate to activities which support general business, rather than network operations, in principle they are comparable across different sectors, at least to some extent. However, in the case of external comparators, there is a greater likelihood of differences in costs arising from genuine differences between sectors and their operating environments, than there is for network comparators (particularly within the same network sector).

Identifying and understanding the extent of comparability of activities can, therefore, be an important element of using external benchmarks to set BSC allowances. For example, in RIIO-GD1/T1, in recognition of the possible higher regulatory burden of network companies compared to the external comparators, the benchmark for CEO and group management was a composite of the external benchmark and the network companies' own costs. We also note that, whilst at an aggregate level, there was very little difference between the external benchmark and the networks' own benchmark, there were material differences in some of the individual BSC categories.

External benchmarks, particularly at a disaggregated level, tend rely on proprietary data, and the underlying methodology, sample and data may not necessarily be publicly available. This may limit the understanding of the data and the corresponding ability to make appropriate adjustments to allowances (eg as for CEO and group management costs above). A lack of transparency in the data can also undermine the transparency of decisions.

## Number of comparators

Ofgem was able to rely on within sector benchmarking in RIIO-ED1 because of the number of available comparators, ie 14 DNOs managed by six companies / groups. This enabled the benchmarking to be conducted with a high degree of confidence in the comparability of the companies and their operating environment, and across a reasonable number of comparators.

In the case of GT, within sector benchmarking is not an option, as there is just one company. Therefore, benchmarking would need to involve either cross sector or external comparators.<sup>11</sup> In the case of ET, there are three companies and in GD eight networks in four companies (and three ownership groups). There may, therefore, be some scope to consider within sector benchmarking in these sectors, particularly in GD, if it were decided appropriate to be done at the network (rather than group) level. However, at the group level, three of four comparators may not allow for confidence in the resulting benchmark. The use of cross sector comparators, and extended to ED as in RIIO-GD1/T1, will provide for more comparators at the group level. Provided costs are defined and normalised in similar ways (see section 3.1) this should provide greater confidence in the resulting benchmark. Using external comparators further expands the number of

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<sup>11</sup> In principle, international gas transmission companies could be used, if BSC data were available, but differences in their operating and regulatory environments may still need to be recognised and accounted for.

comparators but, as discussed above, the comparability of activities of the external comparators to the network companies is more challenging to demonstrate.

### Other considerations

There are some implications from the use of external comparators for the approach to benchmarking BSCs, compared to within sector benchmarking and (to some extent) cross sector benchmarking. First, as noted in section 3.3.3, external benchmarks limit the choice of cost drivers, as those that are not common across all the comparators cannot be used. This means some of the candidate cost drivers in Table 2, such as MEAV and network length, cannot be used. In turn, the choice of cost drivers in cross sector benchmarking is more limited than within sector (eg network length could not be used as a meaningful driver with cross sector benchmarks).

Second, external benchmarks are typically limited to historical cost data, whereas network companies will have submitted forecast BSCs as part of their business plans. The implication of this is that the external benchmarks can be used to set a baseline of BSCs deemed efficient in a particular historical year. This baseline can then be 'rolled-forward' to provide for allowances over the duration of the price control. This rolling forward can entail adjustments for costs that network companies identify and justify in their business plans. This is broadly the process adopted for the RIIO-GD1/T1 price controls (see Annex). However, both cross sector and within sector benchmarking can incorporate forecast data. In the case of RIIO-ED1, which relied on DNO data rather than external benchmarks, the benchmark was calculated from both actuals (2010-11 to 2013-14) and forecasts (2014-15 to 2022-23).

Setting aside the role of external benchmarks, forecast data can be helpful to inform appropriate allowances, particularly where the past is not a good guide to the future. However, forecast data is inherently uncertain. In this regard, we refer to CEPA's guidance to the UR for NIE's RP6 price control. CEPA advised to focus on actual data when benchmarking Northern Ireland Networks against GB DNOs. With some 60 observations (4 years x 15 DNOs) there was a sufficient sample to rely on historical data. This meant allowances were set according to currently technically achievable efficiency levels rather than using forecasts that may be mistaken in hindsight.

However, given there is reason to believe the nature of BSCs may change in the future (particularly developments in IT), forecast costs should still be considered as part of a benchmarking sensitivity check.

## 3.4 Expert review

The third broad approach to assessing BSCs is expert review. The expert review is usually of specific activities (eg IT&T or insurance) and is conducted by a specialist consultant in those areas. The analysis often involves an amalgam of the above techniques, ie reviewing historical cost trends, analysing business plans and future investment needs, cost benchmarking, etc.

Expert review can be closely associated with conducting business case analyses, which may be undertaken to evaluate major investments. For BSCs, this may be the case for proposed major IT&T investments. Network companies would be required to demonstrate (in a quantitative manner) that the solution they have chosen is the most appropriate and the forecast expenditure is expected to be efficient. Businesses should propose a counterfactual to their proposed investment and expert review may then be needed to evaluate the appropriateness of the counterfactual and the investment itself.

Expert reviews are most likely to be of benefit for the more material BSC categories and where it is challenging to reasonably benchmark activities, either due to the difficulty of comparing costs across networks or other comparator groups or if there is reason to believe that the cost environment for these activities may significantly change in the future. In RIIO-ED1 Ofgem used an expert review of IT&T (covering non-operational capex, as well as opex), as well as a ratio benchmark.

Expert review is not a panacea in cost assessment. Such reviews place a high amount of trust in the judgement of the specialist consultants, and are typically costly and time-consuming (as contentious debate can arise between the expert reviewer and the network companies).

## 4 Conclusions

This paper outlined trend analysis, ratio and econometric benchmarking, and expert review as potential approaches to assessing BSCs in RIIO-2. Ofgem has considered or applied all of these in its RIIO-1 price controls.

We believe it appropriate for Ofgem to retain a toolkit of approaches to assessing BSCs in RIIO-2, as it did for RIIO-1. Only once Ofgem has received and analysed business plan data (as per section 3.2), will it be able to decide on the most appropriate approach(es).

Whilst subject to decision over the approach(es), we note that:

- ❑ assessment of BSCs at the group level and on a 'gross' basis can help address potential differences in cost allocations across companies within groups and across activities. This improves comparability for benchmarking purposes;
- ❑ in ED1, Ofgem did not consider it appropriate to adjust BSC benchmarks for fixed costs as to do so would require it to change allowances in response to purchase by or divestment from groups. Ofgem may wish to consider if the same reasoning applies across GD, GT and ET (to the extent there is cross-sector benchmarking), and, if not, consider the presence and impact of fixed costs in reviewing cost drivers;
- ❑ adopting an aggregated approach to benchmarking may help with cost allocation issues, reduce the risk of setting an inappropriate benchmark level, and be simpler than disaggregated benchmarking. However, separate consideration (eg expert review) of some individual categories may still be useful, particularly where they are material and / or have the potential for significant changes in the future (such as IT&T);
- ❑ extending the scope of the expert review of IT&T in ED1 to cover non-op capex and operational IT&T, as well as BSCs, helped address trade-offs between cost categories. Ofgem should consider applying the same approach for RIIO-2;
- ❑ Ofgem did not use regression analysis in RIIO-1 to assess BSC. Availability of a longer time series of data, on a more consistent basis, makes this an approach worth revisiting for RIIO-2;
- ❑ the absence of within sector comparators for GT and the limited number within each of GD and ET, makes use of cross sector and external comparators more viable options for RIIO-GD2/T2; and
- ❑ the minimal difference between the upper quartile of the aggregate BSC external benchmark in RIIO-GD1/T1 and the networks' provided some reassurance over the efficiency of BSCs in GD and transmission, but also calls into question what additional value an external benchmark provides. The data underlying external benchmarks tends to be less transparent than data across

energy networks, making it more challenging to be confident that costs are comparable relative to cross sector benchmarks.

## ANNEXES

### A1 Case Studies

To inform our paper, we reviewed the approaches Ofgem adopted in RIIO-1 to assessing BSCs, as well as those adopted by some other UK and international economic regulators. In this Annex we present case studies from these reviews, as follows:

- ❑ Section A1.1 describes Ofgem's approach to setting BSC allowances for the GD, GT and ET RIIO-1 price controls;
- ❑ Section A1.2 describes Ofgem's approaches to setting BSC allowances for the RIIO-ED1 price controls; and
- ❑ Section A1.3 provides summary reviews of the approaches to BSC allowance of some other UK and international economic regulators.

#### A1.1 RIIO-GD1 / T1

The current price controls for GD, GT and ET were the first to be set by Ofgem using its RIIO<sup>12</sup> framework. These price controls have an 8-year duration, from 1 April 2013 to 31 March 2021. In setting the price controls for these sectors, Ofgem applied slow-track determinations, except for SPT and SHET, which qualified for fast track determinations. In the following, we review Ofgem's approach to setting business support costs in its slow-track determinations, as more detailed documentation is available. Ofgem adopted the same approach to the bottom-up assessment of BSCs across GD, GT and ET.<sup>13</sup>

Ofgem developed the RIIO-1 price controls through consulting and deciding on its overall strategy, prior to receiving companies' business plans. After receiving and analysing business plans, Ofgem published Initial Proposals and, subsequently, taking into account responses to these Initial Proposals, Final Proposals. We structure our review around these stages, bringing the strategy and Initial Proposals phases together, before reviewing the Final Proposals.

<sup>12</sup> RIIO stands for Revenue = Incentives + Innovation + Outputs.

<sup>13</sup> Whilst Ofgem adopted the same *bottom up* approach to assessing business costs across sectors, in GD it set overall totex allowances by taking an unweighted average of bottom up and top down approaches. Therefore, in GD, BSC allowances were, in effect, set partly using the bottom up approach described below and partly through inclusion as part of the top down, totex regression approach.

### A1.1.1 Strategy and Initial Proposals

In its strategy documentation, Ofgem identified a regulatory 'toolkit' for assessing BSCS:<sup>14</sup>

- ❑ **Trend analysis:** Analyse historical trend of performance against price control baselines, including reasons and justifications for changes in costs in the forecast period and their relation to outputs.
  - ❑ Spot audits of small samples, further questioning of companies' business models and insourcing/outsourcing decisions, and how trends compare across electricity and gas
- ❑ **Regression:** Suggested using three years of panel data at both the group level and the individual company level.
  - ❑ Tested cost drivers included customer numbers and length of network; total direct costs; total assets from the regulated accounts (fixed and current); and employee numbers
- ❑ **Benchmarking:** Need to examine what benchmarking data is available (and applicable) for indirect costs.
- ❑ **Expert review:** Proposed using specialised experts for IT and property as the two largest cost areas of indirect costs.
  - ❑ The IT consultant would review:
    - Projected costs and historical costs;
    - IT requirements;
    - Proposed IT investment plans and operations costs;
    - Benchmarks against other companies with similar IT needs;
    - Comparing expenditure across TOs, DNOs, and GDNs; and
    - Furthermore, the system operations IT of National Grid would need specific review.
  - ❑ The property consultant would review:
    - Projected costs and historical costs;
    - Proposed property plans and costs;
    - Benchmarking against other firms with similar property needs;

<sup>14</sup> Ofgem, Consultation on strategy for the next gas distribution price control – Supplementary Annex – RIIO-GD1 Tools for cost assessment, 6.12-6.21.

- Comparing expenditure across TOs, DNOs, and GDNs; and
- Appropriateness of property related costs needed for network infrastructure.

For Initial Proposals, Ofgem used benchmarking and expert review to assess BSCs and set proposed allowances.

The BSC categories identified for RIIO-GD1/T1 were:

- ☐ IT & telecoms (IT&T);
- ☐ Property management;
- ☐ Finance;
- ☐ Audit and regulation;
- ☐ HR and non-operational training;
- ☐ Insurance;
- ☐ Procurement; and
- ☐ CEO and group management

Ofgem decided to assess insurance costs separately due to differences in risk appetites and appropriate levels of coverage between companies and sectors. Ofgem looked at overall industry insurance cost trends over TPCR4/GDPCR1 and forecast costs for RIIO-T1/GD1. For data from the first three years of GDPCR1, a negative trend was observed. For RIIO-T1/GD1, the insurance cost forecast was flat for gas distribution networks and moderately increasing for transmission. Ofgem allowed for additions to the allowance in line with the forecast increase for transmission, acknowledging the increasing value of assets requiring insurance coverage over RIIO-T1, while keeping the gas distribution network insurance cost allowance constant at 2010-11 levels.<sup>15</sup>

For Initial Proposals, Ofgem used a disaggregated benchmarking approach, ie benchmarking the above BSC categories individually. Benchmarks were derived by multiplying an 'activity cost driver' with the appropriate 'benchmark comparator'. The benchmark used was the lower of the networks' upper quartile benchmark and an

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<sup>15</sup> Ofgem, GD1 Initial Proposals – supporting document – cost efficiency, Appendix 6, 1.36-1.38.

external (Hackett) upper quartile benchmark.<sup>16</sup> Ofgem benchmarked at a group (rather than company or network) level.<sup>17</sup>

Activity cost drivers were as follows:

- ❑ **Revenue (£m):** finance; audit and regulation; property management; and CEO and group management
- ❑ **End-users (number):** IT and telecoms
- ❑ **Employees (number):** HR and telecoms
- ❑ **Total spend (£m):** procurement

For example, for IT&T, the activity cost driver is the number of end-users and the benchmark comparator is the networks' upper quartile total cost per employee.<sup>18</sup>

Further additions and adjustments included:

- ❑ Upward-only 'efficiency evidence additions' were allowed if a company demonstrated robust additional cost efficiency evidence (these additions ranged from 4.0% to 17.7%).<sup>19</sup>
- ❑ Additions for identified and justified exceptional costs over RIIO-GD1/T1.<sup>20</sup>
- ❑ Pre-benchmarking 'normalisations' were applied if a company allocated a portion of its BSCs to direct capex, opex, or repex, or to non-network businesses. These costs were added back to the submitted net costs so that the benchmark assessment was based on gross costs. These adjustments were reversed after the assessment to return to net costs.<sup>21</sup>
- ❑ National Grid's TSO businesses were included in the overall assessment, but they were subject to an independent detailed assessment in acknowledgement of the IT-intensive nature of their system operation, which was likely to push their costs above the benchmarked assessment.<sup>22</sup>
- ❑ Acknowledging the possibility of increased costs associated with meeting regulatory burdens for network companies relative to the external benchmark,

<sup>16</sup> An external benchmark was derived from a database developed by Hackett Group. The comparator group was designed to reflect the costs of an efficient company. Filters included excluding companies that are government-owned, price control regulated, and have more than £2 billion in revenue or more than 20,000 full-time employees. The exclusion of price control regulated companies meant a further adjustment was needed to account for networks' regulatory burden cost.

<sup>17</sup> For network companies that are part of a group, their operating costs are mainly derived from centralised group functions. Activities were thus benchmarked at the group level and then allocated to networks within groups in proportion to their cost forecasts.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid, Appendix 6, 1.19.

<sup>20</sup> Ibid, Appendix 6, 1.20.

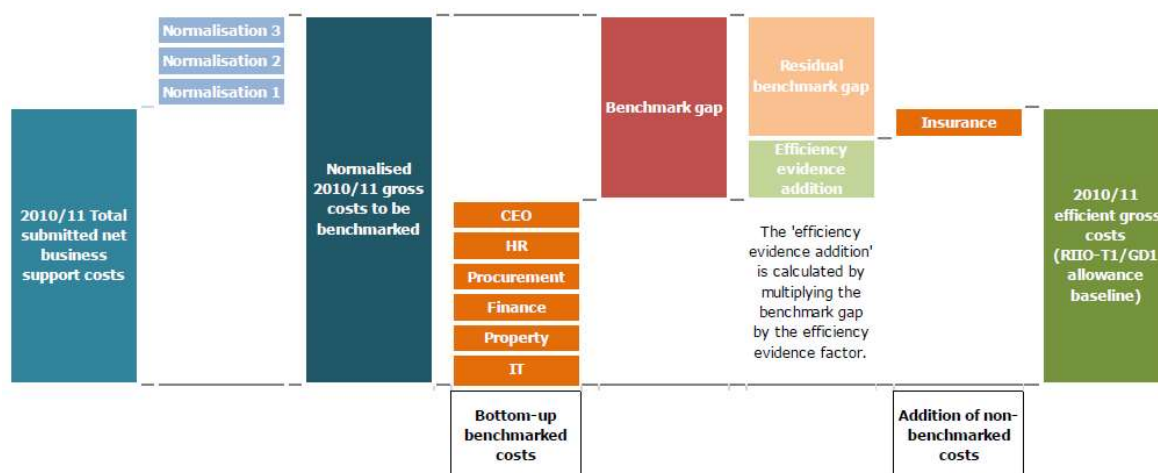
<sup>21</sup> Ibid, Appendix 6, 1.12.

<sup>22</sup> Ibid, Appendix 6, 1.21.

a composite upper quartile metric was derived from the Hackett data and Ofgem data on network company costs, taking the upper quartile of corporate communications and legal costs from the Hackett group and the networks upper quartile executive office costs.<sup>23</sup>

The proposed BSC allowance calculation process is summarised in Figure 2.

**Figure 2 Proposed process for calculating allowance baseline**



Source: GD1 Initial Proposals – Supporting document – cost efficiency, Figure A6.1.

### A1.1.2 Final Proposals

#### Concerns raised by respondents

Respondents to the Initial Proposals argued that the lack of a published report undermined the legitimacy of the Hackett external benchmark.<sup>24</sup> Respondents were also concerned about the non-comparability of the comparator group and the appropriateness of the chosen cost drivers, particularly for IT&T and property management.<sup>25</sup>

Other concerns included the analysis being too focused on the 2010-11 base year, a lack of recognition of additional costs that network companies will face (e.g. increased IT support costs), concerns about “cherry picking” (arising from the disaggregated approach and use of the lower of the external and network benchmarks), and SGN protesting that it should not be treated as part of the SSE group for benchmarking BSCs.<sup>26</sup>

<sup>23</sup> Ibid, Appendix 6, 1.35.

<sup>24</sup> Ofgem, GD1 Final Proposals – supporting document – cost efficiency, 5.9.

<sup>25</sup> Ibid, 6.16.

<sup>26</sup> Ibid, Appendix 6, 1.9-1.11.

## Ofgem response

Ofgem switched from a disaggregated (bottom-up) benchmarking of BSCs to an aggregated (top down) benchmarking, focusing on total BSCs rather than at the individual activity level.<sup>27</sup>

For this aggregated benchmarking approach, Ofgem derived a 'composite cost driver', taking an average weighted by the activity cost of each of the previous bottom-up activity drivers.<sup>28</sup> For benchmarking, the upper quartile for each activity in the Hackett comparator group (except CEO and group management where the Ofgem/Hackett composite was used) was used to represent the aggregate BSCs of an efficient proxy company.<sup>29</sup> Notably, the difference between the overall Hackett and network upper quartiles was extremely small.<sup>30</sup> This changed approach was intended to address the concern over 'cherry picking'.

Additional adjustments to baselines included applying operational growth for National Grid's transmission operations, a technical consultant's reassessment of transmission SO costs, and applying a 15% uplift to networks' finance, audit, and regulation costs in acknowledgement of the higher regulation costs network companies incur relative to the Hackett comparator group (which excluded price control regulated companies).

Ofgem did not make regional adjustments for property, arguing that network companies are not tied to particular geographic locations for non-operational property. Adjustments were also not made for additional IT support costs, where it considered the benchmark to be an efficient level.

Ofgem changed its approach to SGN's group costs, by separating it from SSE for initial benchmarking. Ofgem then set SGN's baseline allowance half on SGN's baseline and half on SSE's (in recognition of SSE's 50% ownership of SGN).<sup>31</sup>

## A1.2 RIIO-ED1

Below we review Ofgem's approach to setting allowances for BSCs in RIIO-ED1, which runs from 1 April 2015 to 31 March 2023. The review is structured around: Ofgem's consultation and decisions on the strategy for ED1 (ahead of business plan submissions); and the Draft and Final Determinations, covering both slow track and fast track determinations for which different bottom-up approaches were applied in assessing BSCs.<sup>32</sup>

<sup>27</sup> Ibid, 6.62.

<sup>28</sup> Ibid, Appendix 6, 1.14.

<sup>29</sup> Ibid, Appendix 6, 1.15.

<sup>30</sup> The Hackett upper quartile was 1.885% (the ratio of total cost to composite cost driver unit) compared to 1.888% for the networks' upper quartile.

<sup>31</sup> Ibid, Appendix 6, 1.17.

<sup>32</sup> In RIIO-ED1, as in RIIO-GD1, Ofgem placed 50% weight on the disaggregated bottom up modelling and 50% on totex econometric modelling.

### A1.2.1 Strategy Consultation and Decision

For RIIO-ED1, BSCs comprise:<sup>33</sup>

- ❑ HR and non-operational training;
- ❑ Finance and regulation;
- ❑ CEO and other corporate functions;
- ❑ IT&T (including non-operational capex); and
- ❑ Property management (including non-operational capex).<sup>34</sup>

Ofgem's decision to include non-operational capex in the assessment (eg for IT&T and property) was aimed at avoiding differences in DNO ownership strategy distorting results.<sup>35</sup>

Ofgem proposed using a mixture of techniques for the assessment, similar to those proposed for RIIO-GD1/T1, namely: historical and forecast trend analysis; benchmarking of costs against GB network companies and external benchmarks; and specialist consultant advice in the areas of IT and property (undertaking a similar assessment of IT and property as was done for RIIO-GD1/T1).<sup>36</sup>

In its Strategy Consultation, Ofgem proposed benchmarking BSC allowances against network companies' BSCs and an external benchmark, as was done for RIIO-GD1/T1.<sup>37</sup> In its Strategy Decision, in response to DNO concerns about external benchmarks, Ofgem stepped back from this slightly, noting that the benchmarking decision would be driven by the availability of suitable comparator metrics and data. Ofgem insisted that external benchmarking should be used, if possible, to ensure consumers do not pay more than necessary.<sup>38</sup> If external benchmarks were unavailable, Ofgem would only benchmark between DNOs.<sup>39</sup> To avoid creating an artificially efficient benchmark for BSCs, Ofgem would benchmark against the average (rather than upper quartile), with the results fed into the totex analysis, where upper quartile benchmarking would be applied.<sup>40</sup>

For the fast track assessment, Ofgem proposed reviewing companies' evidence that their costs are efficient and justified, by comparing historical and projected BSCs, evidence of

<sup>33</sup> Ofgem, Strategy decisions for the RIIO-ED1 electricity distribution price control – Tools for cost assessment – Supplementary annex to RIIO-ED1 overview paper, 9.1.

<sup>34</sup> For RIIO-ED1, Network Policy, which in DPCR5 was included in BSCs, was moved to Closely Associated Indirect Costs, as was done for RIIO-GD1/T1. This would facilitate benchmarking between ED and GD, GT and ET.

<sup>35</sup> Ibid, 9.19.

<sup>36</sup> Ofgem, Strategy consultation for the RIIO-ED1 electricity distribution price control – Tools for cost assessment – Supplementary annex to RIIO-ED1 overview paper, 9.8.

<sup>37</sup> Ibid, 9.4.

<sup>38</sup> Ofgem, Strategy decisions for the RIIO-ED1 electricity distribution price control – Tools for cost assessment – Supplementary annex to RIIO-ED1 overview paper, 9.20.

<sup>39</sup> Ibid, 9.2.

<sup>40</sup> Ibid, 9.4.

historical efficiency gains, and how forecast levels compare to historical performance. Ofgem also anticipated using benchmarking, either at the individual or aggregate level.<sup>41</sup>

The slow-track assessment would first establish a historical base year, normalised for exceptional costs and additional justified costs in future years. This would be benchmarked against network companies and an external comparator group.<sup>42</sup>

For costs submitted above the calculated benchmark, the allowance would be reduced to the benchmark. If submitted costs were below the benchmark, Ofgem considered three options:

1. The allowance is set at the benchmark (as was done for RIIO-T1/GD1);
2. The allowance is set at the submitted cost; or
3. The allowance is set as the average of the submitted cost and the benchmark.

Ofgem chose the first option as respondents argued that, otherwise, Ofgem would be engaging in cherry picking, there could be resulting punishments/rewards through the Information Quality Incentive (IQI) process, and allowing the benchmark would incentivise efficient cost proposals.<sup>43</sup>

Ofgem had an initial list of proposed activity cost drivers (Table 3), but they were criticised by respondents as crude measures. DNOs were particularly concerned about using cost per end user as a cost driver for IT&T given a large proportion of IT&T costs are fixed.<sup>44</sup> Respondents proposed alternative cost drivers, also included in Table 3, which were intended to reflect the characteristics of a good cost driver (ie be stable over time, be beyond the control (or influence) of the DNOs, and not be strongly correlated with one another.)

**Table 3 Proposed benchmarks for BSCs**

Business support activity	Ofgem proposed cost driver	Suggested metric
Human Resources and Non-Operational Training	Cost per direct employee	Total employees (FTEs)
Finance and Regulation	Cost as a percent of base revenue	Number of customers and network scale (MEAV)
CEO and other corporate functions	Cost as a percent of base revenue	MEAV
IT&T	Cost per end user within the DNO business	FTEs and MEAV
Property Management	Cost as a percent of base revenue	Network length

Source: Ofgem, Strategy decisions for the RIIO-ED1 electricity distribution price control – Tools for cost assessment – Supplementary annex to RIIO-ED1 overview paper, Table 9.2.

<sup>41</sup> Ofgem, Strategy consultation for the RIIO-ED1 electricity distribution price control – Tools for cost assessment – Supplementary annex to RIIO-ED1 overview paper, 9.13.

<sup>42</sup> Ibid, 9.15-9.16.

<sup>43</sup> Ofgem, Strategy decisions for the RIIO-ED1 electricity distribution price control – Tools for cost assessment – Supplementary annex to RIIO-ED1 overview paper, 9.13-9.15.

<sup>44</sup> Ofgem, Strategy consultation for the RIIO-ED1 electricity distribution price control – Tools for cost assessment – Supplementary annex to RIIO-ED1 overview paper, 9.23.

As with RIIO-GD1/T1, Ofgem proposed that insurance (within Finance and Regulation) would not be benchmarked due to differences across industries and differing risk profiles. Instead, these costs would be assessed against historical spend and the submitted justification.<sup>45</sup>

Ofgem proposed to benchmark just the opex elements of IT&T and Property Management, but to also look at the total costs (including non-operational capex). This was to ensure DNOs are not overspending on capex relative to opex (and to avoid distorting results from different ownership strategies - as already noted above).<sup>46</sup> Furthermore, specialist consultants would again be hired for assessing IT&T and Property Management.

## A1.2.2 Draft and Final determinations

### Fast-track assessment

For the BSC assessment of fast-track DNOs, Ofgem benchmarked group-level, aggregated BSCs against the median, using a composite driver. Benchmarked costs were then allocated to individual DNOs within a group in proportion to their submitted forecasts.<sup>47</sup>

For the composite driver, Ofgem identified an appropriate activity size metric for each business support activity (Table 4) and weighted each by the contribution of the activity to overall costs. Alternative size metrics were applied as a sensitivity check (and were found to be immaterially different).

**Table 4 Business support drivers**

Business support activity	Size metric used	Alternate size metric
Finance	Revenue	MEAV
Procurement	Total spend	MEAV
Insurance	Excluded from benchmarking	
HR & non-operational training	Employees	n/a
IT & telecoms	IT end-users	n/a
Property management	Revenue	Network length
CEO & group management	Revenue	MEAV

Source: Ofgem, RIIO-ED1: Draft determinations for the slow-track electricity distribution companies – Business plan expenditure assessment – Supplementary annex to RIIO-ED1 overview paper, Table 10.6.

The assessment of BSC efficiency was derived from a Monte Carlo simulation, varying the input parameters for the benchmark a number of times to produce a range of results for

<sup>45</sup> Ibid, 9.21.

<sup>46</sup> Ibid, 9.22.

<sup>47</sup> Ofgem, RIIO-ED1: Draft determinations for the slow-track electricity distribution companies – Business plan expenditure assessment – Supplementary annex to RIIO-ED1 overview paper, 10.28-10.29.

each DNO group.<sup>48</sup> If a DNO looked inefficient, Ofgem reviewed their ‘narrative’ for high BSC justification.<sup>49</sup>

In their response to the draft determination, DNOs argued this analysis was too complex, suggesting a number of alternatives, and that the Monte Carlo simulation model had errors,<sup>50</sup> but Ofgem retained this analysis for the final determination.

### Slow-track assessment – draft determinations

Ofgem stated it had reviewed the following approaches for assessing BSCs:<sup>51</sup>

- ❑ Aggregated and disaggregated assessment;
- ❑ DNO and group level assessment;
- ❑ Ratio benchmarking, regression analysis, Monte Carlo simulation, and combinations of these;
- ❑ Assessment with and without fixed cost normalisation (including accounting for economics of scale);
- ❑ A range of possible cost drivers, and a documented cost driver selection process;
- ❑ Inclusion or exclusion of insurance costs; and
- ❑ Different timeframes: actuals (2010-11 to 2013-14), DPCR5 (2010-11 to 2014-15), RIIO-ED1 forecasts (2015-16 to 2022-23), or all 13 years (2010-11 to 2022-23).

Ofgem stated its decision criteria considered the appropriateness of the assumptions, economic rationale, statistical tests, sensitivities, level of complexity, expert views, and a ‘sense check’ of the results.

Ofgem decided to conduct ratio benchmarking on the aggregate of four BSC categories (finance and regulation including insurance, HR and non-operational training, property management, and CEO and group management) at the ownership group level. IT&T BSCs were subject to a separate assessment combining ratio analysis (weighted at 50%) and expert review (weighted at 50%). The expert review of IT&T BSCs was in combination with the expert review of operational IT&T and non-operational capex IT.<sup>52</sup> For the slow track determinations (but not fast track), Ofgem decided to remove non-operational capex for property from the BSC assessment as it *“sought greater transparency of these costs and concluded that capex expenditure should not be captured within the opex assessment of business support.”*<sup>53</sup>

<sup>48</sup> The final view for input into the totex models was the average of one thousand simulations. Ibid, 10.30.

<sup>49</sup> Ibid, 10.31.

<sup>50</sup> Ibid, 10.32.

<sup>51</sup> Ibid, 10.33-10.34.

<sup>52</sup> Ibid, 10.35.

<sup>53</sup> Ibid, 10.46

Assessing costs at the ownership group level somewhat addresses the sharing of costs across DNOs within a group and differences in allocation methodologies across ownership groups. The comparator for the ratio benchmarking is the industry median ratio for 2010-11 to 2022-23.<sup>54</sup>

Ofgem used MEAV as the cost driver for the ratio analysis.<sup>55</sup> The other drivers – used in the fast-track analysis – were rejected either due to their lack of economic rationale, their endogenous nature, or differences between fast-track and slow-track DNO submissions which lowered Ofgem’s trust in the submitted data.

Ofgem engaged technical consultants to undertake a qualitative assessment of DNOs’ IT&T expenditure for the slow-track assessment, including business support IT&T. The consultants recommended reductions for four of the DNOs (ENWL, NPgN, SSEH, and SSES), commenting on the lack of credible justification in their submitted information. While recognising that the cost of a single network can be higher than for DNOs in a larger group, the consultants felt ENWL’s forecast costs were not fully justified. It was also noted that support costs for smart meter infrastructure should be managed within forecasts costs.<sup>56</sup>

### **Slow track assessments - Final determinations**

Ofgem made no changes to its assessment of BSCs between draft and final determinations. The DNOs generally strongly supported Ofgem’s approach to BSCs.<sup>57</sup>

In response to comments, Ofgem asserted that regional labour adjustments for BSCs should not be applied with the view that these can be procured on a national basis.<sup>58</sup> ENWL argued a fixed cost adjustment should be made for it as a single licensee DNO. Ofgem argued this is an issue of scale that applies to all DNOs and if such allowances were made for each DNO, adjustments would have to be made every time a DNO was purchased or divested from a DNO group.<sup>59</sup>

An argument was made that only the quantitative assessment of IT&T should be used in setting BSC IT&T allowances, as the quantitative and qualitative business support IT&T assessments were not aligned (with the former done at a group level and the latter on a DNO specific basis).<sup>60</sup> In asserting its decision, Ofgem argued that the 50% weighting applied to the quantitative assessment of IT&T, and which was agreed with the DNOs prior to the draft determination, was appropriate (noting the better comparability and consistency of these DNO costs than operational IT&T and non-operational capex IT&T, to which a 25% weighting was applied to the quantitative elements).<sup>61</sup>

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<sup>54</sup> Ibid, 10.36.

<sup>55</sup> Ibid, 10.37.

<sup>56</sup> Ibid, A7.10-A7.12.

<sup>57</sup> Ofgem, RIIO-ED1: Final determinations for the slow-track electricity distribution companies – Business plan expenditure assessment – Supplementary annex to RIIO-ED1 overview paper, 10.47.

<sup>58</sup> Ibid, 4.16.

<sup>59</sup> Ibid, 10.60.

<sup>60</sup> Ibid, 10.58.

<sup>61</sup> Ibid, 10.62.

## A1.3 Non-Ofgem Case Studies

In this section, we provide brief reviews of the approaches to assessing BSCs adopted by other economic regulators:

- ❑ Northern Ireland: Utility Regulator (UR): Northern Ireland Electricity (NIE)'s 6<sup>th</sup> Price Control (RP6);
- ❑ Great Britain: Civil Aviation Authority (CAA): Review of Gatwick Airport;
- ❑ Ireland: Commission for Energy Regulation (CER): Gas Networks Ireland (GNI) Price Control 4 (PC4); and
- ❑ Commerce Commission New Zealand (CCNZ), Gas distribution default price-quality path, 2017-22.

### A1.3.1 Northern Ireland - Transmission & Distribution 6<sup>th</sup> Price Control (RP6)

On 30 June 2017, the Utility Regulator (UR) published the final determination of Northern Ireland Electricity (NIE) Networks' sixth price control (RP6), which runs from 2017 to 2024.

#### Overall approach to benchmarking

For its previous price control (RP5), NIE Networks' allowances for Inspections, Maintenance, Faults and Tree cutting (IMF&T) costs and indirect costs (encompassing BSCs)<sup>62</sup> were set by econometric benchmarking by the Competition Commission (CC) (now the Competition and Markets Authority) during the RP5 price control referral.<sup>63</sup> NIE Networks was compared to the 5<sup>th</sup> placed DNO (out of 15).

For RP6, UR conducted its own econometric benchmarking exercise (supported by its consultants, CEPA) of IMF&T and indirect costs. For its own analysis, the UR focused on historical data, excluding forecast data. This was to ensure that the RP6 allowances were set according to currently technically achievable efficiency levels rather than using forecasts that may be mistaken in hindsight. Correlations based on actual cost relationships in the electricity industry were seen by the UR as being more reliable.<sup>64</sup>

<sup>62</sup> IMF&T costs are those required to maintain the day to day operation of the network, whilst indirect costs cover Closely Associated Indirect (CAI) and Business Support costs. They do not include Direct Network Investment and some other operating costs.

<sup>63</sup> UREGNI, Northern Ireland Electricity Networks Ltd – Transmission & Distribution 6<sup>th</sup> Price Control (RP6): Final determination, 30 June 2017, 5.11-5.12.

<sup>64</sup> Ibid, 5.76.

UR's econometric benchmarking was based on a balanced panel of four years of GB DNO data (4 years x 15 DNOs = 60 observations), which was considered to be a sizeable enough time-series of historical data.<sup>65</sup>

Some costs were excluded to ensure the comparability (i.e. costs 'smoothly' incurred by all DNOs) and controllability (i.e. to some degree within management control) of the costs being benchmarked against GB DNOs.<sup>66</sup> Numerous data adjustments were made to ensure NIE Network's comparability with the GB DNOs benchmark, e.g. NIE Networks' 110kV transmission assets were moved to the distribution business to improve comparability with GB DNOs' 132 kV lines. GB DNOs were used as the main comparator group due to their higher number compared to there being only three TOs in GB.

Highlighting the importance of regulatory confidence in networks' cost data reporting, the UR detailed the need for improved data quality assurance processes within NIE Networks, citing major errors in NIE Networks' initial IMF&T and indirect costs submission and inadequacies in their data recording and reporting methods, despite cost allowances that had been earmarked for these processes.<sup>67</sup>

For the final determinations, in estimating an efficiency gap, UR provided equal weighting to the results of 3 top down models of IMF&T and indirect costs and the combined results of the following 3 'middle-up' models (which together covered the same costs as the top down models):<sup>68</sup>

- ❑ Network operating costs (NOC) (cost driver: length, density, overhead line length);
- ❑ Closely Associated Indirect (cost driver: Composite Scale Variable (CSV), overhead line length); and
- ❑ Business Support Costs (cost driver: CSV).

UR also conducted unit cost comparisons (eg cost per customer, per line length, and per unit of electricity distributed) at aggregated and disaggregated levels as a sense check to the econometric benchmarking. UR reported that the results concurred with the findings of the econometric analysis.

### Approach to business support costs

UR defined BSCs as encompassing 'overhead' type costs, including Network Policy, HR, Finance & Regulation, CEO, IT & Telecoms (IT&T), and Property Management.<sup>69</sup>

A number of adjustments were made to the data, to ensure comparability with the GB DNOs, to which UR was benchmarking NIE. For BSCs this involved adding in non-

<sup>65</sup> Ibid, 5.77.

<sup>66</sup> Ibid, 5.22.

<sup>67</sup> Ibid, 5.46-5.52.

<sup>68</sup> In draft determinations, UR had only used the middle up models as a sense check on the top down. However, in their response to UR's draft determination, NIE Networks had criticised the top-down benchmarking approach, arguing in favour of their disaggregated approach.

<sup>69</sup> Ibid, 5.5.

operational capex on property into property management (so any potential trade-offs are considered together). By contrast, IT&T non-op capex was not included within business support (given its lumpy nature) and was, instead, subject to a separate assessment conducted by Gemserv.

As already noted, UR included business support costs within the top down regressions and as a separate 'middle up' regression. For the middle up BSC regression, UR used a CSV as the cost driver. The CSV was based on network length (50%), customer numbers (25%) and units distributed (25%). This was the same cost driver as used by CC at RP5 and by Ofgem in its ED1 regression analysis. MEAV was considered a credible cost driver (for BSCs and CAIs), but the CSV was preferred on the basis of precedent and the individual components involving less discretion in their determination than MEAV.<sup>70</sup>

Having established an efficient base year from the regression analysis (across IMF&T and indirect costs), UR considered justification forwarded by NIE Networks for increases. UR applied twin tests of 'newness' and 'exogeneity' in deciding whether to allow claims for increases. UR did not allow any additional claims for business support costs.

### **A1.3.2 GB – CAA, Economic regulation at Gatwick from April 2014**

The CAA is, amongst other functions, the economic regulator for Gatwick airport. Gatwick's current licence, granted by CAA in February 2014, includes commitments on airport charges for the period 1 April 2014 to 31 March 2021; commonly known as the sixth quinquennium (Q6). Prior to granting this licence, CAA had consulted stakeholders on the economic regulation of Gatwick and published initial proposals and final proposals, which included consideration of support costs, as we summarise below.

#### **CAA Initial Proposals**

CAA's initial proposals for Gatwick<sup>71</sup> were partly informed by a consultancy report on support costs commissioned from Helios. Helios identified Gatwick's central support costs as consisting of:

- ❑ Finance (including insurance);
- ❑ Legal;
- ❑ Communications (including government affairs);
- ❑ Strategy and regulation;
- ❑ HR;
- ❑ IT; and
- ❑ Airport management.

<sup>70</sup> Ibid, Annex B, CEPA Efficiency Modelling, pp13.

<sup>71</sup> CAA, Economic regulation at Gatwick from April 2014: initial proposals, CAP1029, pp 101.

Helios first reviewed historical trends and forecasts. In particular, they reviewed actual costs against CAA's forecasts set at the price determination in 2008 for Q5 (covering the period 2008-09 to 2013-14).<sup>72</sup> Changes in support costs from 2005-06 to 2018-19 are assessed against Q5 and Q6 trends in cost per passenger.

Helios then undertook a similar assessment (assessing trends and levels of costs over Q5 and Q6) at the functional level (ie the areas covered above). They also broke down functional costs into:

- ☐ Staff costs (net of capitalisation);
- ☐ Rent and rates (only included for 2006-7 communication costs);
- ☐ Utility costs;
- ☐ Maintenance, equipment & IT expenditure;
- ☐ General expenses (advertising, marketing and communications, consultants, insurance, bad debts); and
- ☐ Intra-group charges.

### ***Benchmarking approach***

Helios applied a benchmarking approach, which is divided into three elements

- ☐ People costs (marginal employment cost plus tax and pension contributions; outsourcing costs);
- ☐ Process cost (cost of technology for a function: desktops, helpdesks); and
- ☐ Overhead (the rest).

In assessing support costs, Helios adopted the following as their primary set of metrics:

- ☐ Total cost per function;
- ☐ Cost per passenger;
- ☐ Costs as a percentage of revenue;
- ☐ Function spend per FTE; and
- ☐ Staff cost per staff.

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<sup>72</sup> The assessment was of both intra-group costs and total central support costs. Regarding intra-group costs: prior to the separation of Gatwick, in 2009, BAA provided central functions and recharged these to its airports, then including Gatwick. From 2011-12, Gatwick provides all its own support functions, but this followed a transition period from 2009 (where BAA continued to provide some services to Gatwick).

They also used some other metrics to understand the data, including: the manager/non-manager ratio; function FTE/employees, and senior management costs.

### **Benchmarks employed**

For their benchmarking, Helios used a combination of external benchmarks and comparator airports/airlines:

- ❑ External benchmarks used were either public domain or purchased from Gartner and the National Computing Centre (used for IT), Hackett (Finance, HR), and US General Counsel Metrics (Legal, adapted to the UK). For peer groups, defined at the industry sector level, comparisons were made with transportation and/or utilities peer groups. Adjustments were made to reflect Gatwick's complexity for Hackett's Finance and HR benchmarks to ensure a comparable peer group; and
- ❑ Further benchmarks were also derived from data (anonymously received) from three airports and an airline to complement the broader benchmarks.

### **CAA final proposals**

#### **Concerns Raised by Gatwick Airport**

Gatwick airport were very critical of Helios's central support cost benchmarking,<sup>73</sup> stating that it was not consistent with reliable evidence. Gatwick presented a benchmarking exercise, from AT Kearney, which covered 32 airports, and which argued most of the claimed central support cost efficiency savings from the Helios study were not credible. Gatwick noted that AT Kearney had spent a number of months at the airport "*checking in detail the definitions of the functions and costs to be benchmarked in order to ensure comparability within the benchmark*".<sup>74</sup>

Gatwick's criticisms included:

- ❑ CAA failed to follow their own guidelines for benchmarking (set out in "The Use of Benchmarking in the Airport Reviews – Consultation Paper – December 2000");
- ❑ Helios failed to normalise data to ensure like-for-like comparisons, meaning it is unclear whether differences against benchmarks are measurement errors or genuine differences in efficiency;
- ❑ Data from the airport benchmarks was limited, meaning comparisons were not meaningful;

<sup>73</sup> Gatwick commented on Helios's draft final report, as the final report was not completed in time for initial proposals.

<sup>74</sup> Economic regulation at Gatwick from April 2014: CAA's initial proposals: Response from Gatwick Airport Ltd, June 2013, pp 60.

- ❑ Efficiencies were ostensibly identified, yet Helios did not consider achievability nor possible quality of service effects; and
- ❑ Questioned whether Helios's benchmarking exercise was as rigorous as previous KPMG benchmarking (and offered their own benchmarking exercise – as noted above).

### CAA decisions

The CAA considered several factors in interpreting the evidence for support costs:

- ❑ A wide range of benchmarks was used in the Helios report, but they sometimes provided conflicting efficiency assessments, suggesting a wide range in central support function costs;
- ❑ Helios's report lacked a detailed understanding of the drivers of, and the potential cost saving proposals for, central support costs;
- ❑ Acknowledged AT Kearney benchmarking report suggesting that Gatwick is at or below average levels of cost in most areas of central support (in comparison to an undefined sample of European airports)

The CAA accepted that Gatwick's central support costs are close to average, but they concluded that Helios report did still identify scope for improvements relative to more efficient benchmarks, with staff costs being relatively high and Gatwick's business plan implying an unjustified deterioration in performance over Q6.<sup>75</sup>

The CAA adopted the 'core' efficiencies (which entailed removal of unjustified increases, including in insurance and consultancy costs) proposed in Helios's report, adding £0.7 million in central support efficiencies by 2018-19 (after accounting for the impact of staff cost efficiencies on central support costs). This compares to Helios's overall estimate of potential reductions in support costs of £2.9m to £5.4m per year by the end of Q6.

### A1.3.3 Ireland – Gas Networks Ireland (GNI) PC4

In August 2017, the Commission for Energy Regulation (CER) published its decision on distribution revenues for Gas Networks Ireland (GNI) price control (PC4) for October 2017 to September 2022.

PC4 consists of both top-down and bottom-up assessments of expenditure.

The bottom-up assessment derives a base year 'normalised' capex and opex. In the case of business support, the cost areas subject to bottom-up assessment were:

- ❑ Head of Networks;
- ❑ Regulatory and Corporate Services;

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<sup>75</sup> CAA, Economic regulation at Gatwick from April 2014: final proposals, pp 101.

- ❑ Finance;
- ❑ HR; and
- ❑ Facilities.

CER first reviewed performance in the previous price control (PC3). In reviewing the high year-to-year variation in PC3 business support costs, GNI noted this was due to changes in activities or increases in workload for some functions as well as the increased role of the Group & Shared Service Centre.<sup>76</sup> Business support opex had an overall outturn of €93.4m compared to an allowance of €102.3m.

For business support opex, a normalised cost range was developed based on PC3 expenditure (this would remove one-off costs and those not expected to occur in the future). This informed the 'base' opex estimate for PC4. Step-up or step-down adjustments were then considered for additional activities or activities no longer required under PC4.<sup>77</sup> Business support activities were assessed individually, using the PC3 cost range as a guide, with adjustments made in consideration of GNI's justifications and expected future trends. CER's overall assessment (conducted by its consultants, CEPA) of business support costs was 5.5% below GNI's request.<sup>78</sup> The CRE fully adopted CEPA's business support costs recommendation in its decision paper.<sup>79</sup>

For IT opex (which is assessed in aggregate and separately from business support costs), GNI requested a 35% increase for PC4 relative to PC3. This requested increase was above the industry benchmarks. CEPA noted GNI claimed €6.4m in opex benefits but considered GNI's explanations for the increase to be inadequately detailed. Rather than expect GNI to immediately reduce its IT opex spend, CEPA recommended a linear downward adjustment over 5 years.<sup>80</sup>

Two key issues in evaluating opex, which both relate to the business support opex assessment:<sup>81</sup>

- ❑ IT is both an 'expense' and a 'functional area'. IT expenses were thus combined and assessed separately from other functional areas.
- ❑ Between PC3 and PC4, key business support functions changed with the adoption of the Independent Transmission Owner (ITO) structure. PC3 cost allowances for many of GNI's indirect activities are now delivered through a combination of distribution and network resources and group resources as part of the multi-utility Ervia Group.<sup>82</sup> This partly contributed to the PC3 outturn for business support costs being 9% below the allowance. 'Group and Shared Services' costs were thus assessed separately for PC4.

<sup>76</sup> CRU, PC4 Distribution Decision Paper, pp 34.

<sup>77</sup> CEPA, PC4 Review of GNI Distribution Revenues, pp 45.

<sup>78</sup> Ibid, pp 46.

<sup>79</sup> CRU, PC4 Distribution Decision Paper, pp 62.

<sup>80</sup> CEPA, PC4 Review of GNI Distribution Revenues, pp 53.

<sup>81</sup> Ibid, pp 5.

<sup>82</sup> Ibid, pp 3-4.

The top-down assessment benchmarks GNI against an industry average (GB GDNs plus GNI) and considers the potential for a 'frontier shift' in ongoing efficiency improvements. As part of the top-down assessment, CEPA found GNI's efficiency to be lacking compared to the GB GDN benchmark. A 0.75% annual, compounding 'catch-up' efficiency was recommended, along with an ongoing efficiency factor of 1%, which was higher than GNI's proposed factor of 0.5%.<sup>83</sup>

#### **A1.3.4 Commerce Commission New Zealand (CCNZ), Gas distribution default price-quality path, 2017-22**

Business support opex, which is aggregated with system operations and network support to form 'non-network opex', is defined as including:<sup>84</sup>

- ☐ human resources and training (other than operational training);
- ☐ finance and regulation including compliance activities, valuations and auditing;
- ☐ chief executive and director costs;
- ☐ legal services;
- ☐ consulting services (excluding engineering/ technical consulting);
- ☐ property management;
- ☐ corporate communications;
- ☐ corporate information technology;
- ☐ industry liaison and participation;
- ☐ commercial activities including pricing, billing, revenue collection and marketing; and
- ☐ liaison with Transpower, consumers and electricity retailers;

Where possible, business support capex expenditure is to be provided separately for business support opex.<sup>85</sup>

Opex is first quantitatively assessed, looking at steps, trends, and rates, and whether these figures fall within or outside of a business-as-usual (BAU) range. If they fall outside of the

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<sup>83</sup> Ibid, pp 54-55.

<sup>84</sup> CCNZ, Electricity Distribution Services Input Methodologies Amendments Determination 2017, pp 195. Note this definition is not made in the input methodologies determination document for gas distribution.

<sup>85</sup> Ibid, pp 210.

BAU range, the Asset Management Plans (AMP) are subject to quantitative and qualitative scrutiny.<sup>86</sup>

The BAU variance check is compared against the multi-year average, with a 5% tolerance for opex. For individual opex categories, a materiality check is applied. Any expenditure that is less than 3% of total opex or capex may not be scrutinised further. For any expenditure variances that are found to be unsupported, forecasts are reverted to the upper bound of the BAU variance (the 'fallback forecast').<sup>87</sup> An additional check is applied for opex, where the present value (PV) of the adjusted forecast is compared to the PV of the opex step and trend modelling (which also incorporates a productivity parameter), and the higher of the two forecasts is used.

For the 2017-22 price-quality regulation, the business support opex allowance for First Gas Transmission was raised, citing the higher allowance of the fallback model, and it was lowered for Vector, citing a loss of economies of scale.<sup>88</sup>

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<sup>86</sup> CCNZ, Gas default price-quality path reset 2017: Current views on forecasting expenditure, 31 October 2016. Accessed online here:

[https://comcom.govt.nz/\\_\\_data/assets/powerpoint\\_doc/0022/106384/Gas-DPP-reset-2017-Current-views-on-forecasting-expenditure-31-October-2016.PPT](https://comcom.govt.nz/__data/assets/powerpoint_doc/0022/106384/Gas-DPP-reset-2017-Current-views-on-forecasting-expenditure-31-October-2016.PPT)

<sup>87</sup> The fallback forecast was applied for Vector's business support opex submission:

[https://comcom.govt.nz/\\_\\_data/assets/pdf\\_file/0008/104102/Gas-DPP-2017-Draft-reasons-paper-10-February-2017.PDF](https://comcom.govt.nz/__data/assets/pdf_file/0008/104102/Gas-DPP-2017-Draft-reasons-paper-10-February-2017.PDF)

<sup>88</sup> CCNZ, Gas Pipeline Business Price-Quality Regulation 1 October 2017 Reset: Expenditure Model.