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Making a positive difference for energy consumers

RIIO-ED2 Sector Methodology Consultation: Annex 2 Keeping bills low for consumers

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The next electricity distribution price control (RIIO-ED2) will start in April 2023. We are consulting on the methodology we will use to set this price control.

This document sets out our proposals in several areas of the price control that are essential to keeping consumer bills low, including our approach to cost assessment, the use of uncertainty mechanisms, increased competition, and ensuring the submission of high-quality company Business Plans. This document is an Annex to the RIIO-ED2 Sector Methodology Consultation and should be read alongside it.

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1. Introduction

Chapter summary

This Chapter provides a brief introduction to this annex and sets out the document structure.

Introduction

1.1 In December 2019, we published our Framework Decision, which set out our proposed approach to the RIIO-ED2 price control.

1.2 This document forms part of our consultation on the sector methodology that we intend to apply for RIIO-ED2. We want the Distribution Network Operators (DNOs) to provide the network services that consumers value.

1.3 In this document, we describe our proposals for how we will achieve the delivery of these services while keeping bills low for consumers.

1.4 We propose to use a range of different tools when we set cost allowances and uncertainty mechanisms to minimise the impact of forecasting risk.

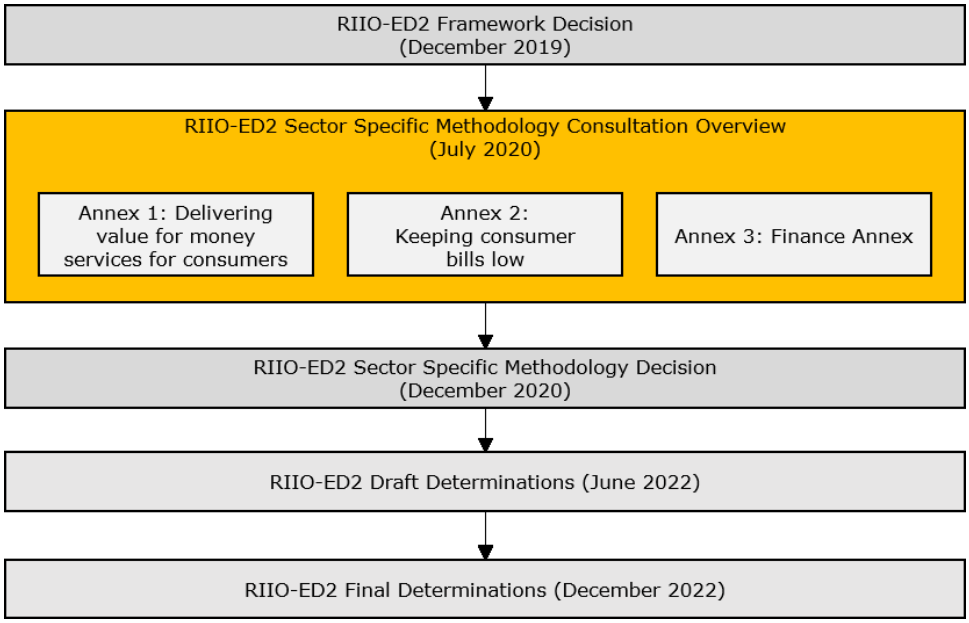
1.5 We also propose to use competition to establish an efficient cost level, where doing so would be in the interests of consumers.

1.6 In setting a price control, we rely upon information that DNOs present to us in their Business Plans. We are proposing to use a Business Plan Incentive to encourage companies to give us good quality, efficient and ambitious plans.

Document structure

1.7 Figure 1 below sets out how this document fits in with the wider RIIO-ED2 Sector Methodology Consultation.

Figure 1: RIIO-ED2 Methodology Consultation documents map



1.8 This document should be read alongside:

- The RIIO-ED2 Sector Methodology Consultation Overview document
- Our Annex documents covering our proposals on RIIO-ED2 outputs and delivering value for money services for consumers, and proposals on key regulatory finance areas
- Our draft Business Plan Guidance, updated to reflect the requirements for RIIO-ED2, and draft Business Plan Data Templates (BPDTs).

2. Cost Assessment Overview

Chapter summary

In RIIO-ED2, a key objective is maintaining a high level of service quality for consumers whilst ensuring the costs of doing so are incurred efficiently. In this Chapter, we set out our proposals on the key cost assessment tools that we propose applying to the price control.

Introduction

2.1 One of the core elements of RIIO-ED2 is to assess DNOs forecast total expenditure (totex) and develop our view of the efficient level of costs that will allow DNOs to carry out their activities and deliver an appropriate level of outputs for consumers.

2.2 For RIIO-ED2, we want the DNOs to be more efficient and we propose to set appropriate ongoing efficiency targets. We will challenge the DNOs to provide well-justified Business Plan submissions that represent value for money for consumers. This will ensure that they provide a secure and reliable supply of electricity at an efficient cost while making sure that any new assets they install meet customers' needs into the future, taking into account how those needs might change.

2.3 This Chapter sets out a high-level overview of the key challenges for cost assessment in RIIO-ED2, and our proposed approach to assessing efficient costs. The following Chapters discuss and seek views on the technical aspects of our approach to benchmarking, our primary cost assessment tool for DNOs, regional and company specific factors, Real Price Effects (RPEs) and ongoing efficiency. We also discuss and seek views on how we will treat proposals for strategic investment and the role of Engineering Justification Papers (EJPs) and Cost Benefit Analysis (CBAs).

2.4 We established a number of working groups with DNOs and other stakeholders in order to inform our approach to RIIO-ED2. The Cost Assessment Working Group (CAWG) has been the main forum at which we have discussed and developed our approach to cost assessment, as set out in this document. We will continue to hold these groups in the coming months to facilitate ongoing dialogue and transparency, and to help inform our final decision on our approach to cost assessment ahead of DNO Business Plan submissions in 2021.

2.5 Full details of all RIIO-ED2 workings groups, including minutes and slide packs is available from our website.[1]

2.6 In June 2019 we published our RIIO-2 tools for cost assessment consultation.[2] This consultation was focused on the other three sectors (Gas and Electricity Transmission, and Gas Distribution). While we were clear that we were not consulting on the RIIO-ED2 price control at that time, we did highlight that the cost assessment tools discussed in that consultation may be capable, in principle, of application to RIIO-ED2. In this consultation, we are setting out where we propose to apply the same approach as some or all of the other RIIO-2 sectors as well as where we consider that a specific approach to RIIO-ED2 is likely to be required.

RIIO-ED1 approach to cost assessment

2.7 In RIIO-ED1, we used a toolkit of methodologies that built on the extensive work in Distribution Price Control Review 5 (DPCR5)[3] and corresponding working groups, as well as, where appropriate, incorporating the approach to the RIIO-1 price controls for the transmission and gas distribution sectors.

2.8 We applied a broad toolkit approach to our cost assessment in both our fast-track and slow-track assessment in RIIO-ED1. We made use of quantitative and qualitative assessment, DNO narrative and supporting evidence, historical cost and performance data and company forecasts. We carried out benchmarking at both the totex level and at the disaggregated level.

2.9 There are a number of lessons learned from RIIO-ED1 that we will take into account for RIIO-ED2. These include:

- The need for early and continuous partnership, working and communication with stakeholders.
- The need for reduced complexity and greater transparency in our econometric analysis.
- Earlier documentation of our RIIO-ED2 close out process.
- Further clarity on treatment of any data issues with submitted Business Plans.

[1] https://www.ofgem.gov.uk/publications-and-updates/riio-ed2-working-groups
[2] https://www.ofgem.gov.uk/publications-and-updates/riio-2-tools-cost-assessment-consultation
[3] Distribution Price Control Review 5, the price control applicable to electricity distribution companies between 1 April 2010 and 31 March 2015

- Further clarity on treatment of adjustments to allowances in our assessment of Output Delivery Incentives (ODIs) and Price Control Deliverables (PCDs), specifically the Network Asset Secondary Deliverables (NASD) in RIIO-ED1.

2.10 Following the assessment of RIIO-ED1, significant work was also carried out by Ofgem and the DNOs to develop the Regulatory Instructions and Guidance (RIGs). The RIGs have been reviewed annually throughout RIIO-ED1 and form the base of the Data Templates for RIIO-ED2.

Key challenges for cost assessment in RIIO-ED2

2.11 There are a number of key challenges and questions for RIIO-ED2 which are significant in the context of our approach to cost assessment.

2.12 DNOs have an increasingly diverse set of tools at their disposal in terms of the solutions available to manage supply and demand on their local networks. For RIIO-ED2, where further increases in flexibility and active network management offer genuine alternatives to traditional network reinforcement, it is increasingly important that our approach to cost assessment ensures technology neutrality. In establishing a level playing field to better assess the different solutions available to DNOs, we want to identify the most efficient overall approach and drive the best value for consumers. We will discuss this further in Chapter 3 on our approach to aggregated econometric analysis.

2.13 Low Carbon Technology (LCT) rollout, dominated by, for example, the uptake of electric vehicles and the installation of heat pumps, may vary significantly by region and by DNO. Different forecasting assumptions and demand scenarios will present a challenge for our cost assessment approach in both determining what to set allowances for and how to ensure delivery, given that our benchmarking has typically required a common baseline. We will discuss this further in Chapter 7 on Forecasting for Net Zero.

2.14 At price control review, the outturn of the existing price control, (eg RIIO-ED1) would traditionally inform and guide the next price control (RIIO-ED2). However, the pace and scale of the energy system transition expected during the 2020s to support the decarbonisation of an increasingly decentralised and digitalised energy system presents some key challenges to our cost assessment. This includes our treatment of anticipatory or strategic investment to support new sources of demand, particularly for transport and heat purposes, and the evolving role of the

DNOs in responding to more renewable energy being produced locally. This transition affects our ability to use historical costs in our econometric benchmarking of forecast costs. We will discuss this further in Chapter 3 on our approach to aggregated econometric analysis.

2.15 As set out in the Overview Document, facilitating decarbonisation at lowest cost is one of our core priorities as an independent economic regulator. For RIIO-ED2, how the local electricity grids facilitate a rapid take-up of electric vehicles and anticipate potential increases in electricity flows caused by the decarbonisation of heat, are key questions that need to be addressed. These are key factors in the design of the price control and our approach to cost assessment is focussed on ensuring this is achieved at lowest cost to consumers.

2.16 In doing so, we will need to demonstrate the validity and robustness of our assessment in a simple and transparent way. There is no single pathway to Net Zero and the drive towards decarbonisation brings with it uncertainty as to what future expenditure is required. These challenges are complex and our approach must consider multiple trade-offs.

2.17 We expect Net Zero targets to have a significant impact on the requirements from the electricity distribution networks as set out above. These changes, including to the nature of DNO costs, will increase our reliance on data. The level of uncertainty means we must be careful in our use of historical and forecast information in our benchmarking. Increased use of data will form part of a holistic approach to benchmarking. We believe this approach can reduce the risk of creating any barriers that could distort incentives and help ensure the pursuit of solutions that minimise costs to consumers.

Overview of our proposed cost assessment toolkit for RIIO-ED2

2.18 For RIIO-ED2, we propose that we build on the developments in RIIO-ED1 and continue to use a toolkit of methodologies, as well as incorporating the latest thinking from our approach to cost assessment from the RIIO-2 price controls for the transmission and gas distribution sectors where appropriate.

2.19 Our proposed RIIO-ED2 cost assessment toolkit comprises:

- Econometric benchmarking

- Activity level analysis and modelling
- Individual project review
- Expert review
- Cost Benefit Analysis (CBA)
- Uncertainty Mechanisms

2.20 We will continue to develop elements of our toolkit ahead of the Sector Methodology Decision and Business Plan submissions. Our proposals on cost assessment set out in this document reflect developments in our own thinking, responses to our open letter consultation, developments in the other sectors and views expressed by stakeholders at RIIO-ED2 working groups.

3. Our Approach to Aggregated Econometric Analysis

Chapter summary

The Chapter discusses and seeks views on options for undertaking benchmarking in RIIO-ED2.

Introduction

3.1 For RIIO-ED2, we propose to use a toolkit of methodologies in our approach to cost assessment. Econometric analysis or benchmarking represents our primary cost assessment tool within this toolkit. Modelling different levels of aggregation and different cost drivers provides useful information to assess DNOs comparative efficiency.

3.2 Efficiency adjustments that we estimate through benchmarking are discussed in this Chapter. Efficiency adjustments relating to changes in productivity over time, otherwise known as Ongoing Efficiency, are discussed in Chapter 0.

3.3 A wide spectrum of options and approaches to econometric benchmarking exist for RIIO-ED2. At one extreme, benchmarking at a totex level or aggregated (ie top-down) can be used to gauge overall business efficiency, taking into account the potential trade-offs between capital expenditure (capex) and operational expenditure (opex). At the other extreme, more specific benchmarking applied at granular disaggregated levels (i.e. bottom-up) of activity and costs that form all or part of capex or opex can be useful in assessing individual activities.

3.4 Totex or top-down benchmarking as an assessment tool has the advantages of allowing a simple comparative analysis across DNOs. It is largely immune to trade-offs between activities and reporting differences, and avoids cherry picking between different models. We also believe that totex encourages DNOs to deploy the lowest cost solution to a problem over time. This could be increasingly significant over RIIO-ED2, where we expect active network management and flexible network solutions to become genuine alternatives to traditional reinforcement based solutions. A criticism of totex benchmarking is that the model, limited to a few cost drivers, leads to a less intuitive relationship between cost drivers and costs.

3.5 As an alternative, middle model or middle-up benchmarking, where broad blocks of expenditure are benchmarked such as total controllable opex and capex, is a more disaggregated approach when compared to totex benchmarking. Depending on the aggregation of costs and the cost drivers selected, this approach can be useful in providing a different perspective for cost assessment and provide insight on causes of inefficiency.

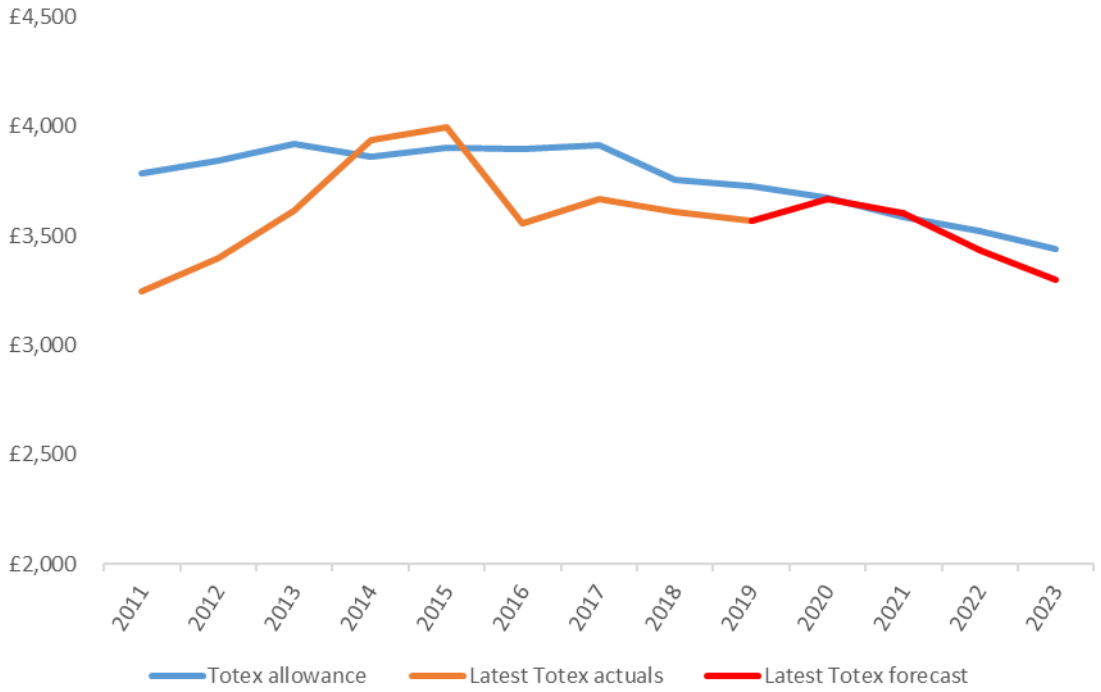
3.6 Granular disaggregated or bottom-up benchmarking, where each individual cost type can be assessed and compared to different cost drivers, potentially using different techniques, has the advantage of being able to yield useful information on why some DNOs are more or less efficient than others. Criticisms of this approach are around the risks of cherry picking, or risks of creating confusing, or unintended, incentives.

3.7 The three indicative approaches highlighted represent only three options on a spectrum, there are other approaches to aggregating costs for benchmarking purposes, as well as different ways of combining the results of benchmarking as a way of crosschecking analysis or providing additional insight into cost trade-offs.

3.8 Discussions with the DNOs and other stakeholders through the CAWG revealed a variety of views with some in support of a more totex based approach to econometric benchmarking, citing the strong incentive properties of this approach, while others noted support in principle for middle-up and bottom-up disaggregated benchmarking. Recognition was also given to the fact that certain cost activities are not suitable for benchmarking and that a qualitative approach to assessment may need to be considered.

3.9 We have spent significant time reviewing the advantages and disadvantages of these different approaches to cost assessment, as well as reviewing our RIIO-ED1 approach. This Chapter sets out, at a high level, the three indicative benchmarking approaches for RIIO-ED2: a totex approach; a hybrid approach; and a granular disaggregated approach. We also set out other approaches to aggregating costs.

Figure 2: Totex against allowances in DPCR5 and RIIO-ED1 (£m)



3.10 As noted in our Annual Report[4], key drivers of underspend (4%) against totex allowances in RIIO-ED1 are around the lower than forecasted uptake of low carbon technologies (LCTs) such as heat pumps and electric vehicles, increase in energy efficiency measures and innovative techniques and solutions by DNOs to minimise costs.

Totex modelling

3.11 In RIIO-ED1, baseline allowances were set at the totex level. Our cost assessment toolkit included two different types of totex model both utilising regression analysis, a powerful econometric technique that allows the examination between two or more variables of interest, in our case, costs and cost drivers.

3.12 We defined totex as the sum of opex and capex, where opex excluded the costs outside of the DNOs control (e.g. license fee) and capex was measured as capital expenditure as opposed to capital consumption (analogous to depreciation). In line with our approach in RIIO-ED1, for RIIO-ED2 we propose to continue to use totex as this is a simple measure of the amount of cash being spent. It is also simple to

[4] Regulatory Financial Performance annex to RIIO-1 Annual Reports 2018-19 https://www.ofgem.gov.uk/publications-and-updates/regulatory-financial-performance-annex-riio-1-annual-reports-2018-19

understand and the costs relate to the current state of technology, government regulation and environmental concerns, and the DNOs' levels of efficiency.

3.13 In the first totex model, the cost driver used was a composite scale variable (CSV)[5] which combined Modern Equivalent Asset Value (MEAV), a way of measuring the total replacement cost of all the assets on a DNO's network, and customer numbers. We applied an 88% weighting on MEAV, and 12% on customer numbers.

3.14 In the second totex model, the CSV cost driver combined MEAV with several disaggregated workload cost drivers. We applied a 68.1% weighting on MEAV, 13% on units distributed, 0.8% on overhead line length, 9.5% on total faults, 3.9% on total length, 1.9% on total ONI and 3.1% on spans cut.

3.15 As highlighted in Chapter 2, DNOs have an increasingly diverse set of tools at their disposal. For RIIO-ED2, as a principle we want to ensure technology neutrality i.e. we want to establish a level playing field for flexible network solutions and active network management against traditional network reinforcement solutions such as asset replacement. We also want to remain neutral to different company business models i.e. outsourcing vs. insourcing of different work activities. Some stakeholders have argued that MEAV, our primary cost driver in our totex benchmarking in RIIO-ED1, incentivises traditional, "asset heavy" solutions, and that for RIIO-ED2 there should be greater importance on exogenous cost drivers such as customer numbers, customer density, peak demand etc.

3.16 It is our view that for RIIO-ED2, selected cost drivers should:

- Make economic and/or engineering sense.
- Be accurately and consistently measurable.
- Have a relatively stable relationship with the costs over time and incorporate as much relevant information as possible.
- Be beyond the control of the network company.

3.17 Both totex models for RIIO-ED1 used 13 years of data, which included five years of historical data from DPCR5, and 8 years of forecast data for RIIO-ED1. As highlighted in Chapter 2, the various pathways to Net Zero and the wider low

[5] A composite variable is a variable made up of two or more variables or measures that are highly related to one another conceptually or statistically.

carbon energy system transition presents new challenges in terms of our ability to use historical costs in our econometric benchmarking of forecast costs.

3.18 Some of the DNOs have argued that the use of historical costs in benchmarking of forecast costs should not be as relevant in RIIO-ED2, given the expected change in existing DNO activities and the introduction of new activities that are likely to be required to facilitate decarbonisation. This remains an important consideration but we must equally recognise the importance of ensuring DNOs submit robust and challenging Business Plans.

3.19 One of the ways we propose to challenge Business Plans in RIIO-ED2 is by utilising the full suite of historical data that we have available, where appropriate to do so. This suite of data includes up to 13 years of historical data from the DPCR5 and RIIO-ED1 price controls, and a minimum of 5 years of forecast data for RIIO-ED2.

3.20 Cost exclusions were applied in RIIO-ED1 to both totex models, as some costs were not explained by the cost drivers used, or there was a substantial change in the nature of the activity being undertaken. The following costs were excluded:

- Transmission connection point (TCP) changes
- critical national infrastructure (CNI)
- rising and lateral mains (RLM)
- improved resilience
- smart meter call out cost
- quality of service
- new streetwork costs.

3.21 The results of both totex models were combined using an arithmetic average (at slow-track the totex models were weighted at 25%, at fast-track they were weighed at 12.5%). We defined efficient costs equal to the upper quartile (UQ) (75th percentile) costs of the combined outputs of the totex models, then rolled forward efficient base year costs for changes in outputs and workload volumes, applied our view of growth in input prices and ongoing efficiency, and added back costs that we assessed separately.

3.22 We believed that this approach addressed the risk of cherry picking, where the combination of separate UQ benchmarks might result in a benchmark that is tougher than any of the DNO forecasts.

3.23 The RIIO-GD2 approach to econometric benchmarking, at Draft Determinations, combined regression and non-regression analysis. The regression analysis component consisted of a single top-down totex model and was the main tool for assessing costs, with 84% of forecast controllable costs assessed in this way. The efficient costs were defined as equal to the 85th percentile of the output of the totex model.

3.24 Similar to RIIO-ED1, in RIIO-GD1 the efficiency benchmark was set at the UQ. Justification for changing this approach in RIIO-GD2 to the 85th percentile centred on sector wide outperformance of cost allowances throughout RIIO-GD1, and the better data, and improved robustness in modelling available in RIIO-GD2.

3.25 Further details on the approach used in RIIO-GD2 can be found in the RIIO-GD2 Draft Determinations.[6]

3.26 For RIIO-ED2, we propose that totex modelling remains a key component of our toolbox approach to assessing comparative efficiency. We propose to draw on learning from RIIO-ED1; developments from RIIO-T2 and GD2 and to consider responses to this consultation in developing our specific totex modelling approach for RIIO-ED2.

Consultation Questions

COQ1: Do you agree with our proposal to include totex benchmarking in our toolbox for cost assessment in RIIO-ED2?

COQ2: What cost drivers do you consider appropriate for our proposed totex benchmarking? Why?

COQ3: What are your views on the use of both historical and forecast data in our modelling?

COQ4: At what level should we set the efficiency benchmark?

Middle-up modelling

3.27 As indicated, middle-up modelling is a more disaggregated approach to econometric benchmarking when compared to totex modelling. In RIIO-ED1, the 'middle model' terminology was used to describe the combined use of the 'bottom-

[6] https://www.ofgem.gov.uk/publications-and-updates/riio-2-draft-determinations-transmission-gas-distribution-and-electricity-system-operator

up' totex model, one of the two totex models used, and also a family of regression models with individual cost drivers.

3.28 As highlighted, model weightings differed between slow-track and fast-track. At slow-track the middle-up models were weighted at 25%, while at fast-track these models were weighted at 12.5%. Greater emphasis was put on the top-down and middle-up modelling at slow-track, because of the improvements DNOs made to the quality of their Business Plan data. As a result, we had more confidence in the two totex models and weighted them higher in our cost assessment.

3.29 In RIIO-2 tools for cost assessment[7], it was noted that other potential variations to the middle-up model could be tested for robustness including changes to existing cost drivers, the addition of new cost drivers or the aggregation of certain cost activities.

3.30 It is our view that middle models can help to overcome some of the disadvantages of either top-down totex modelling or bottom-up disaggregating modelling, and can provide a different perspective on cost analysis.

3.31 We will continue to develop our thinking on the use of middle modelling in the run up to Draft and Final Determinations, specifically on the level of aggregation to utilise for a potential middle-up approach, and in identifying complementary costs and cost-drivers. We propose to utilise the following criteria, developed by CEPA for RIIO-GD2, in considering suitable levels of aggregated costs, or cost pools:

- **complementarity:** Is there a strong technical/economic reason to believe that activities or groups of expenditure are complementary and should be benchmarked together and a consistent set of cost drivers can be identified?
- **cost trade-offs:** Can DNOs make trade-offs in expenditure between the different activities/areas included in the cost pool, and so benchmarking those activities/costs together will help avoid biased relative efficiency results or unintended managerial incentives for the DNOs?
- **cost boundary complexity:** How complex is the boundary of cost reporting data that needs to be defined to benchmark the identified cost pool/activity (eg how well defined is the group of costs within Ofgem's regulatory reporting templates)?

[7] https://www.ofgem.gov.uk/system/files/docs/2019/06/maindocument_riio-2_tools_for_cost_assessment.pdf

- **risk of inaccurate/biased models:** Is there too much 'noise' in the data to be confident that including certain types of expenditure within aggregated regressions could lead to inaccurate model results, or coefficient estimates that are difficult to interpret using engineering/economic logic?

Consultation Questions

COQ5: Do you agree with the proposed criteria for developing cost pools for a middle-up approach?

COQ6: What cost drivers would be appropriate in a middle-up approach?

Other approaches to aggregating costs

3.32 Aside from the top-down and middle-up approaches discussed, there are a variety of other approaches to aggregating costs that could be considered for our cost assessment in RIIO-ED2.

3.33 In developing the RIIO-GD2 approach, we engaged CEPA to develop a series of options that could, in principle, be considered as alternative approaches to aggregating costs[8]. One of the options developed was totex and opex plus modelling, the latter element being less aggregative than top-down totex modelling but more aggregative than bottom-up modelling approaches. This option would include totex modelling but more disaggregated regression based modelling would be undertaken for pooled opex and other costs, where clear complementarities and trade-offs for pooling exist.

3.34 The totex and opex plus approach is similar to the RIIO-ED1 approach combining the top-down and bottom-up totex models, but with the additional consideration for trade-offs between different opex activities. This approach may capture the trade-offs and complementary nature of different opex activities and involve less risk from drawing boundaries between different activities.

Consultation Questions

COQ7: What are your views on the CEPA developed totex and opex plus approach? What opex activities are there trade-offs that support the rationale for testing 'totex and opex plus' modelling?

[8] https://www.cepa.co.uk/news-insights/view/ofgem-consult-on-cost-assessment-tools-techniques

Disaggregated modelling

3.35 Disaggregated modelling or bottom-up benchmarking refers to our assessment of the costs of undertaking activities specific to capex, opex etc.

3.36 This section provides a short introduction to disaggregated modelling, with Chapter 7 providing further detail by specific cost area or activity.

3.37 In RIIO-ED1, our disaggregated modelling incorporated a mixture of cost assessment techniques appropriate to the activity in question, including regression analysis, ratio analysis, trend analysis and technical assessment. Once all the analysis was complete, it was summed together to give a total value, and then combined with our top-down and middle-up modelling.

3.38 As previously highlighted, we benchmarked the efficient level of totex for each DNO using the UQ of the combined outputs from the top-down, middle-up and bottom-up modelling. This addressed the risk of cherry picking that combining three separate UQ benchmarks might result in a benchmark that is tougher than any of the DNO forecasts. We use UQ rather than the frontier to allow for other factors that may influence the DNOs' costs.

3.39 There are advantages and disadvantages of more or less disaggregated benchmarking for selecting explanatory variables. In RIIO-ED1, it was our view that the bottom-up, activity-level analysis, which provided a different totex result allowing for comparison with the other models, allowed us to take into account a greater number of potential factors to explain costs. Some stakeholders argue that more disaggregated benchmarking helps to explain the causes of differences in DNO cost performance/efficiency, which more aggregated models such as middle-up or totex fail to achieve.

3.40 However, other stakeholders argue that at more disaggregated levels it is more challenging to establish explanatory variables that meaningfully reflect all of the cost drivers of the costs of particular activities, and that more aggregative cost pools are more likely to reflect the more aggregative narrative of drivers of electricity distribution costs.

3.41 Through the CAWG, we have spent time reviewing the fitness for purpose of the RIIO-ED1 disaggregated models for RIIO-ED2. Broadly, we consider that the RIIO-ED1 models could fit into three different categories:

- Suitable for RIIO-ED2 with no adjustments
- Suitable for RIIO-ED2 with some adjustment/considerations
- Not suitable for RIIO-ED2. Further detail on our

3.42 While taking into account any lessons learned and developments in our thinking, and unless stated otherwise, it is our view that any disaggregated modelling approach considered for RIIO-ED2, would be based on the RIIO-ED1 approach. The RIIO-ED1 approach to disaggregated modelling is discussed in Chapter 7 and in Appendix 3.

Consultation Question

COQ8: Do you believe it is appropriate to use bottom-up, activity-level, disaggregated modelling in RIIO-ED2?

Combining the result of our econometric analysis

3.43 As discussed, in RIIO-ED1 at both fast-track and slow-track, we combined our top-down and middle-up modelling with our more disaggregated analysis, to inform our views on the costs proposed in the DNOs' Business Plans and to set final totex allowances.

3.44 At fast-track the analysis was weighted at 12.5% for the top-down and middle-up modelling, and 75% for our disaggregated analysis. At slow-track, we had greater confidence in the totex models and gave them greater weight, applying a 25% weighting to each and a 50% weighting to our disaggregated modelling.

3.45 As noted previously, there are advantages and disadvantages to aggregated and disaggregated-type benchmarking. In RIIO-ED1, at slow-track, it was our view that these approaches deserved equal weighting in our cost assessment.

3.46 We benchmarked the efficient level of totex for each DNO using the UQ of the combined outputs from the three models. This efficiency challenge was set at the 85th percentile in RIIO-GD2 draft determinations, justified by sector wide outperformance in RIIO-GD1.

3.47 At Draft Determinations in RIIO-GD2, disaggregated modelling did not inform the overall totex allowances, and thus there was no requirement on combining or aggregating the results of econometric analysis as there was in RIIO-ED1 and

RIIO-GD1. However, disaggregated allowances were required for the setting of Price Control Deliverables (PCDs). In these instances, scale and weighting factors were used to derive disaggregated allowances from the top-down totex allowances for each GDN, based on company-specific data.

Consultation Questions

COQ9: If we use a combination of aggregated and disaggregated modelling approaches, how should we determine the weight we apply to each, in combining our analysis?

COQ10: If we did not use disaggregated modelling approaches, what approach should we consider for disaggregating totex allowances for the setting of PCDs?

4. Model specification

Chapter summary

The Chapter discusses and seeks views on some of the more technical aspects of our econometric analysis including estimation techniques and model specification.

Introduction

4.1 On model specification, there are four key components, common to any piece of econometric analysis. These include:

- **Cost Aggregation** – the level of cost aggregation at which the analysis is performed (discussed in Chapter 3).
- **Cost Drivers** – the choice of the corresponding cost drivers (discussed in Chapter 3).
- **Sample size** – the choice of sample size and use of data (discussed in Chapter 3)
- **Estimation technique** – the choice of the mathematical relationship (e.g. linear vs. non-linear) that links costs and cost drivers (i.e. the functional form).

4.2 This Chapter discusses, at a high level, some of the estimation techniques available and sets out our proposed criteria for selecting our regression models for RIIO-ED2.

Estimation techniques

4.3 The most commonly used or tested techniques for benchmarking of regulated infrastructure are:

- **OLS models.** These are often conducted on 'pooled' data (i.e. using every data point without accounting for the year that data point has been observed) and is referred to as a pooled OLS (POLS). OLS identifies the average expenditure levels for the comparators based on their cost drivers/explanatory variables, which can be adjusted to a chosen efficiency benchmark if deemed appropriate. This is referred to as corrected OLS or corrected POLS (jointly referred to as COLS)

- **Random effects (RE) models.** POLS does not specifically identify comparators' inefficiency, rather the error term comprises both company effects and statistical noise. With RE it is possible to exploit the panel nature of the data (ie explicitly accounting for the fact that comparators are observed over time) and thus to identify the company effect within the error term, and this effect can be interpreted as inefficiency
- **Stochastic frontier analysis (SFA) models.** Like RE, SFA allows for the separate identification of inefficiency, however it requires a significant amount of data for the estimation process to run successfully.

4.4 Additional information on these estimation techniques can be found in RIIO-2 tools for cost assessment[9] document.

4.5 There is a wide variety of models that could be used in our regression analysis. In line with our approach in RIIO-ED1 and RIIO-GD2, we propose to use OLS models for our RIIO-ED2 cost assessment.

Consultation Question

COQ11: What model estimation options should be considered for our cost assessment and why?

Functional form

4.6 The specification of the functional form is an important aspect of the econometric methodology. Different functional forms reflect different assumptions on the relationship between the dependent and explanatory variables.

4.7 The models we used in RIIO-ED1 employed a Cobb-Douglas form. This functional form has been widely used in benchmarking, as it is simple to understand and analyse.

4.8 In the case of a single explanatory variable, the model takes the following general form:

$$\log(cost) = \beta_0 + \beta_1 \log(cost\ driver) + \epsilon$$

[9] https://www.ofgem.gov.uk/publications-and-updates/riio-2-tools-cost-assessment-consultation

4.9 Where β_0 is a constant term, β_1 is the coefficient associated with the cost driver and ε is the error term representing the component of costs not explained by the cost driver. When both cost and cost driver are expressed in logarithmic terms, β1 can be interpreted as the elasticity of costs with respect to the driver – if the cost driver increases by 1%, costs can be expected to increase by β_1%. Therefore, if β1 is less than one, an activity can be said to have increasing returns to scale (with respect to the given driver).

4.10 For RIIO-ED2, our minded to position is to continue to use the Cobb-Douglas functional form because it is simple to understand and analyse.

Consultation Question

COQ12: Do you agree with our proposal to continue using Cobb-Douglas functional form? Why?

Criteria for selecting regression models

4.11 We propose the following three main criteria in selecting suitable regression models:

- **economic/technical rationale** – Do the model specifications and results have a clear economic/technical rationale?
- **transparency** – Including the data used, the results and ease of interpretation for stakeholders
- **robustness** – Does the model pass statistical tests? Is the model sensitive to the underlying assumptions?

Economic/technical rationale

4.12 As a first step to building an appropriate econometric model, it is important to justify the variables (i.e. the cost drivers) that are assumed to explain given costs from a theoretical, engineering or business perspective. This should guard against the possibility of 'data mining', whereby we are merely picking up spurious relationships between variables.

4.13 Moreover, the choice of the functional form (i.e. the type of relationship between costs and drivers) should also be based, in part, on an underlying economic and engineering understanding of the electricity distribution networks. For example, if

there is a strong rationale for believing an explanatory variable has a U-shaped relationship with costs, this may justify the use of squared terms in the functional form. This might be the case for the effect of network density on the cost to run the emergency service, as both low and high levels of density might be associated with higher costs for a DNO. Visual inspection of the data could help investigate the presence of such non-linear relationships.

4.14 Other aspects to consider while selecting a model are consistency with policy objectives and the potential for models to generate perverse incentives.

Transparency

4.15 For a model to be used in our econometric analysis it is important that it is clearly explained and can be interpreted by the DNOs and other stakeholders. These criteria could suggest that it is beneficial to avoid complex estimation approaches and also to choose a parsimonious model. However, in some cases more complex techniques and specifications may be necessary to ensure the selected model captures all the relevant aspects of the relationship between costs and drivers.

4.16 The rationale for selecting the final model or models (as compared to the alternatives) should also be clear. The models should be replicable, and methods used should be capable of being implemented using standard econometric packages.

4.17 In PR14, Ofwat implemented a version of the 'translog' functional form mentioned above, which introduces squared and cross-product terms in order to capture potential non-linear effects. However, the use of these models makes it more difficult to identify the specific effect of each variable on costs. They also require the introduction of a larger number of explanatory variables in each one of the models to account for these variations. Following Bristol Water's PR14 appeal[10], the CMA noted that Ofwat's models were difficult to interpret and, given the small sample size and the data requirements of translog, its use seemed overly ambitious.

[10] Bristol Water plc appeal to the Competition and Market Authority under section 12(3)(a) of the Water Industry Act presented to Ofwat on 6 October 2015: file:///C:/Users/sharkeyk/AppData/Local/Microsoft/Windows/INetCache/IE/2QNIKR5W/Bristol_Water_plc_final_determination.pdf

Robustness

4.18 The statistical robustness of a model could be defined as covering three broad areas:

- the robustness of the model to appropriate statistical tests
- the stability of the model to changes in, for example, the data sample or precise model specification
- the ability of the model to explain the existing data and to forecast future costs.

4.19 In Appendix 5, we have identified some of the statistical tests that we propose to use in assessing model robustness.

Consultation Question

COQ13: Do you have any views on our proposed model selection criteria?

5. Regional and Company Specific factors

Chapter summary

This Chapter presents and seeks views on options for the treatment of Regional and Company Specific factors as part of our RIIO-ED2 Cost Assessment methodology.

Introduction

5.1 Regional and company specific adjustments are adjustments made to a DNO's cost allowances to reflect specific factors that might mean the efficient level of costs is higher in some regions than in others. These regional factors can lead to higher or lower costs that are not related to relative efficiency. They apply to costs that are outside the DNOs' control and adjustments are typically made either pre, within or post modelling. These approaches are detailed further in this chapter.

Background

5.2 In RIIO-ED1, we made a number of pre-modelling adjustments to submitted cost data for regional factors. These included labour costs, urbanity and sparsity effects. In RIIO-ED1, the onus was placed firmly on the DNOs to justify, through robust and transparent evidence that a regional or company specific adjustment was warranted. Once the criteria had been satisfied, adjustments were incorporated into the models which supported the benchmarking analysis.

5.3 In RIIO-ED1, a view was taken that there should no regional or company specific adjustments unless the DNOs can satisfy two requirements:

- That such and adjustment is justifiable, demonstrated by robust and transparent factors; and
- the DNO has managed those factors appropriately

5.4 In RIIO-GD1, the onus was on GDNs to justify their case for any proposed adjustments, in line with the criteria outlined in 5.3. A similar approach was outlined in the RIIO-GD2 tools for cost assessment publication and explained further in the RIIO-GD2 Draft Determination publication. The RIIO-GD2 Draft Determination Publication document noted there are two types of company-specific claims:

- Those relating to adjusting historical data to ensure comparability in benchmarking
- Those relating to forecast expenditure that should be assessed outside of the standard benchmarking model to ensure comparability

Table 1: RIIO-ED1 Final Determinations: Totex model normalisations and exclusions (£m 2012-13 prices)

DNO	Regional labour cost adjustments	Company specific factors	Costs excluded from the totex regression	Total adjustments over RIIO-ED1
	£m	£m	£m	£m
ENWL	25	0	-33	-8
NPgN	19	0	-24	-5
NPgY	25	0	-23	2
WMID	24	0	-11	13
EMID	23	0	-11	12
SWALES	13	0	-5	8
SWEST	21	0	-6	15
LPN	-163	-117	-85	-365
SPN	-67	0	-63	-130
EPN	-32	0	-55	-87
SPD	21	0	-97	-76
SPMW	28	-113	-47	-132
SSEH	15	-32	-59	-76
SSES	-58	0	-26	-84
TOTAL	**-106**	**-262**	**-545**	**-913**

Table 2: RIIO-ED1 Final Determinations: Disaggregated model normalisation factors (£m 2012-13 prices)

DNO	Regional labour cost adjustments	Company specific factors	Total adjustments over RIIO-ED1
	£m	£m	£m
ENWL	25	0	25
NPgN	19	0	19
NPgY	25	0	25
WMID	24	0	24
EMID	23	0	23
SWALES	13	0	13
SWEST	21	0	21
LPN	-163	-117	-280
SPN	-67	0	-67
EPN	-32	0	-32
SPD	21	0	21
SPMW	28	-13	15
SSEH	15	-32	-17
SSES	-58	0	-58
TOTAL	**-106**	**-162**	**-268**

5.5 Regional factors were accounted in the RIIO-ED1 benchmarking. Regional labour adjustments were applied to reflect the additional cost of London wages. Labour costs were benchmarked using pre-modelling adjustments to normalise labour costs. These adjustments were applied to the two totex models and the disaggregated model. In the RIIO-GD2 Draft Determinations proposals, we considered GDNs' Business Plans and undertook our own analysis and concluded that some of the differences in costs between GDNs continued to be explained by factors beyond their control.

5.6 A different criteria was used to assess company-specific factors in RIIO-GD2:

- Is the claim material in nature?
- Is the claim unique in nature?
- Is the claim outside the control of a company?
- Is the claim excluded from the cost drivers used in our econometric modelling?
- Is the claim excluded from our other adjustments, such as regional factors?

Our Proposed Approach

5.7 Before a regional/company-specific factor adjustment approach is chosen it is necessary to determine what costs should be appropriately adjusted. Our proposed criteria:

- the regional or company-specific factor in question is clearly defined
- this factor, and the subsequent costs it drives, are beyond the control of an efficient company (having taken all the feasible measures to mitigate the costs)
- the company (or a small number of companies) are impacted by a significant amount, and in a materially different way to others

5.8 We consider that the onus is on DNOs to justify their case for any proposed adjustments, in line with the principles outlined above. We will set a high evidential bar for accepting any cost adjustment claims, and we do not expect to consider claims that are not materially significant enough to warrant an adjustment.

5.9 We propose that there are three approaches for taking account of regional and company specific factors within the cost assessment framework:

- Pre-modelling adjustment: the data is adjusted ahead of our modelling, as we have done previously in RIIO.
- Within-model adjustment: the regional factor is controlled for through the explanatory variables included in our models.
- Post-modelling adjustment: our models are based on unadjusted data; however special cost factor adjustments would be applied prior to us determining the expenditure allowance.

Pre-modelling adjustments

5.10 It may be sensible to adjust data ahead of modelling, particularly if regional or company-specific costs affect the accuracy of the modelling (as evidenced by changes in coefficients and efficiency scores). Pre-modelling adjustments can then be reversed out after the efficiency analysis (i.e. added back into the modelled cost allowances). DNOs discussed in the CAWG that pre-modelling adjustments can affect wider modelling outcomes if the data is flawed or inaccurate proxies are used for adjustment.

Regional Labour

5.11 The relative cost of labour in different regions can influence the underlying cost base of companies operating in different regions. The degree to which these labour pressures influence costs will depend on a number of factors such as the magnitude of structural differences in labour costs across regions. Both GD1 and RIIO-ED1 had very similar approaches except from the Standard Occupational Classification (SOC) level that was chosen for the) Annual Survey of Hourly Earnings (ASHE) data[11].

5.12 In RIIO-ED1, labour cost differentials between London, the South East and elsewhere in Great Britain were taken into account. Labour indices were calculated using the Office of National Statistics (ONS) ASHE data. We took into account the additional labour costs associated with working in London and the South East and considered the proportion of work that is done in these areas and elsewhere. The adjustments affected all DNOs. Three companies submitted cases for additional company specific factors that should be taken into account prior to our benchmarking.

5.13 The RIIO-GD2 Draft Determinations proposals only used 2-digit Standard Occupational Classification (SOC) level of ASHE data. In RIIO-ED1, we also used 2-digit SOC level of ASHE data (as opposed to 2- and 3-digit SOC level data for RIIO-GD1). The 2-digit SOC level data was used to reduce uncertainty and missing data in the ASHE wage estimates.

5.14 Pre-modelling adjustments can provide a clear monetary effect that can be related back to specific company activities. However, removing these costs from modelling could remove the incentives on companies to mitigate them where possible.

Urbanity and Sparsity

5.15 Sparsity factors seek to account for cost differentials attributable to sparsely populated areas, primarily due to the difficulty in providing emergency and repair services over large geographical areas that may have more limited infrastructure. Urbanity factors attempt to correct for cost differentials which are driven by lower labour productivity levels in densely populated urban areas, largely due to above

[11] Office of National Statistics, *Employee earnings in the UK Statistical bulletins*. Available here.

ground congestion and having to work around other utilities. In this section we also refer to urbanity factors as 'density' factors.

5.16 In RIIO-ED1 we made an adjustment for sparsity in RIIO-ED1 determinations. The directions focused on additional costs of servicing customers. For RIIO-ED1, we made an adjustment to SSEPD for the higher costs working in a remote location. Both sparsity and urbanity adjustments were made in RIIO-GD2 where a pre modelling adjustment was noted as the most appropriate method for urbanity and sparsity.

Within-model adjustments

5.17 Within model adjustments is when the regional factor is controlled through the explanatory variables included in the cost assessment model. In this section, we discuss potential methods of making within-model adjustments to account for regional labour differences and urbanity/sparsity, as well as the pros and cons of this approach. Any explanatory variable(s) that we may choose to include in our models to account for regional factors would be subject to such a model specification satisfying the various model robustness tests.

5.18 As part of our initial model development for RIIO-ED1, we engaged Frontier Economics to investigate and recommend suitable benchmarking approaches. Frontier Economics recommended we consider a range of explanatory variables to capture the impact of input prices on costs. All specifications identified included a capital price index (BEAMA index for Basic Electrical Equipment). We decided against applying this approach and instead made pre-modelling adjustments.

5.19 In its initial assessment of Business Plans for PR19, Ofwat tested models using an explanatory variable but found that it was not significant in most models and the sign and size were different to the prior expectation for this variable. Ofwat also considered making ex ante adjustments to cost data before running its models (in line with our previous approaches), but found that compared with models without these adjustments, the introduction of the adjustment did not seem to improve the capacity of the model to explain the data. Ofwat included company adjustments, classified as cost drivers in model regressions[12]. Furthermore, companies submitted 62 company-specific adjustments where 43 were rejected and 19 accepted/reviewed by Ofwat.

[12] Ofwat, "Supplementary technical appendix: Econometric approach", January 2019. Available here.

5.20 Further, Ofwat considered that the inclusion of a density variable in its models (discussed further below), and a square of density, captured the effect of regional wages as the two are correlated.

5.21 CEPA considered that regional wages could be explored further using within model adjustments. However, it can be difficult to develop simple regional wage indices that produce consistently significant and intuitive results. CEPA also noted that using within-model adjustments can cause difficulty in interpreting the model.

Urbanity and sparsity (within-model adjustments)

5.22 CEPA considered that regional wages could be explored further using within model adjustments. However, it can be difficult to develop simple regional wage indices that produce consistently significant and intuitive results.[13]

5.23 The use of a density variable in econometric modelling may deal with the need for a separate urbanity adjustment. The introduction of density into econometric modelling has been considered or employed in a number of price controls and there is a range of possible explanatory variables that could be used to capture its effect on efficient costs.

5.24 Ofwat (PR19) has accounted for urbanity and sparsity by way of an explicit density cost variable within its models. It tested a range of different density measures and concluded that the weighted average density was the most advantageous (from a modelling perspective). It found that unlike other density measures such as the average number of households per length of main (as it previously applied in PR14), the weighted average density is beyond company control and better reflects relative densities within regions.

5.25 To capture density, Ofwat calculated the population density per each local authority district (LAD) in terms of population per square km. The weight it assigned to the density of each LAD was the population in the LAD (which resides within the company's service areas) divided by the total population in the company's service area.

5.26 In Ofwat's Cobb-Douglas functional form, the coefficients of explanatory variables can be interpreted as elasticities. Ofwat was able to study how the elasticity of

[13] Ofgem - RIIO-2 tools for cost assessment consultation: Annex Tools for Cost Assessment – Annex 1 Available here.

costs for different levels of aggregation varies with respect to density across companies, and relate this to the economic and technical rationale behind their prior expectations.

5.27 CEPA listed a number of proxies for density that have been considered in the context of cost assessment, including:

- total connections divided by total length of mains, or number of customers divided by service area: these variables reflect network activity or use per unit of network size, and are a 'simple' way to capture the density of the network
- Ofwat-style weighted average density variable: this variable reflects the percentage of the population living in densely populated areas
- percentage of urban assets: assets in urban areas may cost more to operate due to, for example, harder access, traffic permissions and restricted land footprints.

5.28 CEPA then ran illustration regressions on RIIO-GD1 totex under four separate model specifications: (i) no urbanity/sparsity adjustments, (ii) a pre-modelling urbanity/sparsity adjustment, (iii) a linear density term included in the model and (iv) linear and quadratic density terms included to capture the U-shape relationship between density and costs. The results of this analysis are presented in Table 3.

Table 3: Density illustration regressions

	(i) No sparsity/urbanity adjustment	(ii) Pre-modelling adjustment	Within model density controls	
			(iii) Linear	(iv) Linear and Quadratic
Totex CSV	0.739***	0.758***	0.739***	0.743***
Density			-0.049**	0.211
Density Squared				0.016
Time Trend	-0.017***	-0.019***	-0.019***	-0.019***
Constant	34.952***	37.549***	38.161***	38.398***
Observations	80	80	80	80
R-squared	0.891	0.924	0.898	0.897

Source: CEPA Analysis. *** p<0.01, ** p<0.05, *p<0.1.

5.29 Comparing the outputs presented in Table 3, it is evident that the predictive power is greater when the urbanity/sparsity pre-modelling adjustment is applied, which implies that the density explanatory variable may not be capturing the full effect of

urbanity/sparsity on costs. However, overall there were not significant differences between the efficiency scores of the pre- and within-modelling adjustment model specifications

Post-modelling adjustments

5.30 Post-modelling adjustments can be used for costs that are not sufficiently captured by pre-modelling and/or within model adjustments. One main advantage in using post-modelling adjustments is that the emphasis is placed on DNOs to justify adjustments for regional factors, which may lead to a more transparent regulatory process. One drawback with post-modelling adjustments, is the potential lack of data normalisation and comparability could affect the ability to benchmark accurately.

5.31 The RIIO-GD2 tools for cost assessment publication noted that post-modelling adjustments could lead to an increasingly complex regime and could lead to companies considering it a 'one-way bet'[14]. It was also noted that post-modelling adjustments could be used for well-defined costs but not appropriate for general models applicable to all GDNs. For those reasons, post-modelling adjustments were not considered in RIIO-GD2.

Summary and next steps

5.32 There are a number of advantages and disadvantages on the proposed approaches outlined. For example, one advantage in using a pre-modelling adjustment is that it can ensure the adjustment is consistent with technical and economic rationale before being applied. A within-model adjustment allows for quantitative analysis to test the applicability of the regional factor rather than imposing own judgements. A post-modelling adjustment can lead to a more transparent regulatory process where emphasis is placed on DNOs to justify adjustments.

5.33 We will continue to work with stakeholders on Regional and Company specific factors up to RIIO-ED2 Draft and Final Determinations.

[14] Ofgem - RIIO-2 tools for cost assessment consultation: Annex Tools for Cost Assessment – Annex 1 Available here.

Consultation Questions

COQ14: Do you agree with the proposed criteria for assessing regional and company specific cost factors that we have outlined?

COQ15: What are your views on our approaches to account for regional and company specific cost factors in our modelling?

6. Real Price Effects and Ongoing Efficiency

Chapter summary

This Chapter discusses our approach to assessing both Real Price Effects (RPEs) and ongoing efficiency in RIIO-1, and highlight a number of factors that we consider important for assessing both topics in RIIO-ED2.

Introduction

6.1 We adjust base revenues of network companies with a general price inflation index across the price control period. Additional adjustments could be necessary where the evolution of some of DNOs' input prices (e.g. wages) significantly differs from this price index. We refer to the differences between input prices and general price inflation as Real Price Effects (RPEs). RPEs are a form of uncertainty mechanism. Chapter 11 sets out our proposals on managing uncertainty in RIIO-ED2.

6.2 To help form our view of the efficient cost level for each DNO, we will also account for the productivity improvements we expect them to make over the RIIO-ED2 period. We refer to ongoing efficiency assumptions as the reduction in the volume of inputs required to produce a given volume of output - i.e. the productivity improvements that we consider even the most efficient company is capable of achieving.

6.3 Setting an appropriate ongoing efficiency challenge is vital to ensuring networks continually strive to identify and exploit opportunities to optimise their processes and operations. By doing so, networks are able to remain resilient in the face of change and ensure value for money for consumers.

Real Price Effects

Background

RPE indices

6.4 For RIIO-ED1, DNOs submitted RPE proposals in their Business Plans. We then used a number of criteria to assess these proposals, and made a final decision on whether adjustments were justified.[15] These criteria included:

- **Exposure to risk**. We considered the risk of inaccurately forecasting DNOs' ex-ante allowance without RPEs, as well as the impact of RPEs on the overall riskiness of the price control framework.
- **Impact on incentives**. We considered the role of RPE indexation on DNOs' efficiency.
- **Volatility and predictability of network charges**. We assessed whether RPE indexation would increase volatility of network charges.
- **Balance of charges between current and future consumers**. We considered the lag between the change in input price indices and its impact on DNOs' allowances.
- **Complexity and unintended consequences**. We examined the complexity of using ex-ante allowances against an indexation approach.
- **Resource costs**. We considered the additional costs associated with applying RPEs.

6.5 Following our assessment, we decided to use the below RPE indices in RIIO-1:

[15] See https://www.ofgem.gov.uk/ofgem-publications/91566/riio-ed1finaldeterminationsrpemethodologydecisionpdf

Table 4: Indices used for RPE assumptions in RIIO-1 price controls

Index	Source	Sector(s) applied in
RPI	ONS	ED, ET, GD, GT
Labour		
Average earnings index for private sector incl. bonus	ONS	ED, ET, GD, GT
Average weekly earnings (AWE) private sector incl. bonus	ONS	ED, ET, GD, GT
AWE construction incl. bonus	ONS	ET, GD, GT
AWE transport and storage	ONS	ET, GD, GT
PAFI Labour and Supervision in Civil Engineering	BCIS	ED, ET, GD, GT
BEAMA labour cost index: electrical engineering	BEAMA	ED, ET
Materials – opex		
FOCOS Resource Cost Index of Infrastructure: Materials	BCIS99	ED, ET, GD, GT
Materials – capex/repex		
PAFI Plastic Pipes and Fittings	BCIS	GD
PAFI Pipes and Accessories: Copper	BCIS	ED, ET, GD
PAFI Pipes and Accessories: Aluminium	BCIS	ED
PAFI Structural Steelwork – Materials: Civil Engineering Work	BCIS	ED, GD, GT
Equipment and plant		
PAFI Plant and road vehicles	BCIS	ET, GD, GT
Machinery and equipment (Output PPI)	ONS	ED, ET, GD, GT
Manufacture of machinery and equipment (Input PPI)	ONS	ET, GD, GT
Plant and road vehicles: providing and maintaining	BCIS	ED

Cost structure

6.6 To determine RPE adjustments in RIIO-GD1 and RIIO-ED1, we weighted input price trends based on the assumed proportions of the inputs in each expenditure area (e.g. opex, capex) as reported in network companies' Business Plans. For GDNs and slow tracked DNOs, we used a notional cost structure to this effect. This is because setting RPEs based on individual organisational structures might reward potentially inefficient cost structures.

6.7 In the RIIO-2 draft determinations for gas distribution and transmission[16], we proposed a different approach to the one used in RIIO-1. We said we would include adjustments for RPEs for all network companies based on forecasts of input price indices in upfront allowances. Then, we would 'true up' RPE adjustments annually based on out-turn differences between CPIH and input price indices.

6.8 Similar to RIIO-GD1, we proposed to use a notional cost structure for gas distribution companies.[17] We considered that this methodology was not appropriate for transmission companies, as there were insufficient comparator companies to generate a notional cost structure.

6.9 To assess the materiality of RPE submissions for gas and transmission, we followed the approach proposed by CEPA for RIIO-2 gas and transmission.[18] This assessment focused on two tests:

- identifying cost categories that represent a relatively large share of totex.
- identifying cost categories that would likely face relatively large movements over time.

6.10 Under CEPA's approach, a cost category has to pass at least one of the two tests to be considered material, and hence suitable for indexation. In the draft determinations for RIIO-2 gas distribution and transmission, we indicated that we would use the same input price indices as RIIO-1. Only SHET had a proposed RPE adjustment for plant and equipment costs, as other company cost submissions did not pass the materiality test for this cost category. We outline the proposed RPE input price indices and weightings for gas and transmission in RIIO-2 in Appendix 1.

Indexation of RPEs

6.11 We set ex-ante allowances for RPEs in RIIO-ED1. This means that we adjusted DNOs' allowance before the start of RIIO-ED1, based on our forecasts of how much certain input prices would deviate from general price inflation. In other words, we did not directly index base revenue with input prices during the price control. We made this decision because of the challenges in designing an RPE index and appropriately addressing its interaction with other areas on RIIO-ED1.

[16] RIIO-2 Draft-Decisions, July 2020
[17] RIIO-2 SSMD, p. 71
[18] CEPA, RIIO-GD2 and T2: Cost Assessment - Frontier shift methodology paper (May 2020)

We had taken the same approach for DPCR5, and we did not think there was a sufficiently strong case for changing our approach at the time.

Our proposed approach

6.12 For RIIO-ED2, we propose to index DNOs' uncertain costs where possible, as opposed to setting ex-ante RPE allowances based on forecasts.[19] We want to ensure that incentives on outputs and costs only reward companies for genuine performance improvements. In our view, the indexation of cost allowances where feasible and appropriate will help us to achieve this, as it will reduce the forecast risk associated with setting ex-ante allowances. We proposed the same approach for gas distribution and transmission in our RIIO-2 draft determinations.[20]

6.13 As part of our cost assessment, we will decide on the appropriate input price indices to index DNOs' uncertain costs. However, we expect DNOs to provide evidence justifying the need for RPEs, as well as proposing and justifying input price indices as part of their Business Plans.

6.14 We propose to place strong emphasis on the materiality of RPE claims, and to impose a high evidential bar to ensure their appropriateness. We consider these principles are important, as they will challenge DNOs to focus on key risk areas, and to produce robust evidence of why general consumer price inflation is not an adequate proxy for particular input prices. This will optimise our assessment process by allowing us to focus only on significant and robust claims, and will ensure only genuine input price risks are treated.

6.15 Similar to RIIO-ED1 and the draft determination for RIIO-GD2, we propose using a notional cost structure to set DNOs' RPE adjustment in RIIO-ED2. This would avoid using each DNO's actual cost structure, which might reward DNOs with potentially inefficient cost structures. Our proposal is to use the same input and expenditure categories used in RIIO-ED1.

6.16 Input categories distinguish between the various types of inputs required by network companies to deliver their services to consumers. To enable a common assessment of RPEs across DNOs, we established a common format for input

[19] This was previously discussed in the ED2 Open letter, and ED2 Framework Decision
[20] See RIIO-2 draft determinations for gas distribution and transmission

categories. In RIIO-ED1, we used the following input categories in our assessment and we propose using the same in ED2:

- general labour (capex and opex)
- specialist labour (capex and opex)
- materials (capex and opex)
- plant and equipment
- transport
- other

6.17 Expenditure categories distinguish between the various types of activities that network companies undertake in delivering their services to consumers. Similar to input categories, we established a common format for expenditure categories across DNOs. In RIIO-ED1, we used the following expenditure categories in our assessment and we propose using the same in RIIO-ED2:

- load related capex
- non-load related capex - asset replacement
- non-load related capex – other
- faults
- tree cutting
- controllable opex

Consultation Questions

COQ16: Do you agree with our proposed approach to index RPEs, rather than setting an ex-ante allowance based on forecasts?

COQ17: Do you agree with our proposal to have a high materiality threshold for RPEs? What are your views on the materiality level for RPE submissions, and the criteria we use to select input price indices?

COQ18: Do you agree with the suggested common input and expenditure categories for structuring RPEs in ED2?

Ongoing Efficiency

Background

6.18 For RIIO-GD1 and T1, we developed ongoing efficiency assumptions with a growth accounting approach, by using historical productivity data from the EU KLEMS

database.[21] In doing so, we selected sectors that we considered comparable to electricity and gas transmission and distribution activities, such as the construction sector.

6.19 For RIIO-ED1, we accepted the ongoing efficiency assumption proposals submitted by DNOs in their Business Plans, as they were in line with our view of the savings an efficient company could make. These assumptions ranged between 0.8% and 1.1% per year for the slow-tracked DNOs.

6.20 Below is a summary of RIIO-1 ongoing efficiency assumptions:

Table 5: Summary of RIIO-1 ongoing efficiency assumptions

	RIIO – GD1	RIIO – GT1 (NGGT TO)	RIIO – ET1 (NGET TO)	RIIO – ED1
Opex	1%	1%	1%	-
Capex	0.7%	0.7%	0.7%	-
Repex	0.7%	-	-	-
Totex	0.8%	0.7%	0.7%	0.8% -1.1%

6.21 In the RIIO-2 draft determinations for gas distribution and transmission[22], we set out our proposal to apply an overall ongoing efficiency challenge of 1.2% per year for capex and repex, and 1.4% for opex for all network companies (apart from electricity distribution). We chose the upper bound of our initial reference ranges for ongoing efficiency[23], to set companies a stretching ongoing efficiency challenge that helps deliver value for money for consumers.

6.22 To inform this assumption, we commissioned consultants (CEPA) to undertake a full assessment of evidence on ongoing efficiency. CEPA used growth accounting analysis to obtain the first baseline range for the ongoing efficiency assumption, derived with the following parameters[24]:

- *Data source*: EU KLEMS;
- *Time period*: 1997-2016;

[21] See EU KLEMS growth and productivity data here.
[22] RIIO-2 Draft Determinations Core Document, p. 44
[23] 0.5% - 1.2% for capex and repex, 0.7% - 1.4% for opex.
[24] CEPA, RIIO-GD2 and T2: Cost Assessment - Frontier shift methodology paper (May 2020).

- *Comparator sectors*: unweighted average of selected industries (excluding manufacturing),[25] and the weighted average of all industries (excluding real estate, public admin, education, health and social services); and
- *Productivity metrics*: Value Added Total Factor Productivity (for capex and repex), and Value Added Labour Productivity (opex).

6.23 We considered forward-looking productivity forecasts to inform our ongoing efficiency proposal, chose not to put weight on such forecasts.[26] Short and medium term risks to the economy influence these forecasts, such as the UK's exit from the European Union and COVID-19. We considered that network companies are not as exposed to these short-term risks (to volume and revenue) as their comparators in the wider economy and are better able to withstand any short-term shocks. As a result, these forecasts may underestimate ongoing efficiency improvements achievable by network companies.

6.24 We also considered wider evidence on the scope for productivity improvements. In the RIIO-2 draft determinations for gas distribution and transmission, we proposed to incorporate a 0.2% ongoing efficiency challenge to account for previous innovation funding awarded in RIIO-1. Indeed, we believe that consumers have effectively provided the network companies with additional upfront allowances through innovation funding, and that this should have driven efficiency.

6.25 CEPA derived the additional ongoing efficiency challenge to account for these expected improvements by treating innovation funding like an investment previously made by consumers. Efficiency improvements in RIIO-2 can then be seen as the 'return on investment' of innovation funding. A 0.2% additional challenge corresponds to a reasonable return of 4.2% on RIIO-1 innovation funding to consumers.

6.26 The RIIO-2 draft determinations for gas distribution and transmission also set out our intention to apply an ongoing efficiency challenge to all components of totex as default position, including cost categories that are not subject to RPE indexation. Indeed, using the CPIH index for general inflation (instead of RPI) for costs without RPE indexation may already embed efficiency improvements. However, we followed

[25] This includes construction and maintenance of an asset combined with some customer-/business-facing services (construction, wholesale and retail trade: repair of motor vehicles and motorcycles; transportation and storage; and financial and insurance activities).
[26] We considered the forecasts produced by the Office of Budget Responsibility and Bank of England for instance

CEPA's conclusion that it was not possible to determine any significant detrimental impact of applying ongoing efficiency assumptions to these cost areas.

Our proposed approach

6.27 For RIIO-ED2, we want companies to be more efficient and we propose to set appropriate ongoing efficiency targets. We expect network companies to provide forecasts of their ongoing efficiency assumptions as part of their Business Plans, and to clearly demonstrate how these forecasts compare to what they have delivered previously. We will also consider the work completed in RIIO-T2 and GD2 price controls to inform our assessment.

6.28 Similar to gas distribution and transmission, we propose considering a wide range of evidence to inform our ongoing efficiency challenge:

- growth accounting analysis;
- historical performance of the DNOs, including the potential to make use of the companies' historical data;
- forward-looking productivity forecasts for the UK economy;
- wider evidence on the scope for productivity improvements, e.g. as a result of innovation funding received by the DNOs during RIIO-1.

6.29 We outline the methodological considerations of these different sources of evidence below.

Growth accounting

6.30 Growth accounting estimates the value of historical productivity improvements in different sample industry groupings as the basis for estimates for future efficiency gains. It is an econometric methodology where growth in productivity is determined by the growth of company's outputs that is not explained by the growth of inputs (e.g. labour or capital).

6.31 As highlighted in CEPA's GD2 Frontier Shift report[27], there are various parameters to consider when using a growth accounting approach to set ongoing efficiency assumptions:

- the choice of dataset;

[27] See Annex 3 of the June 2019 RIIO-2 Tools for Cost Assessment Consultation here.

- the time period;
- the choice of comparators; and
- the productivity metrics.

6.32 Regulators commonly use the EU KELMS dataset to set ongoing efficiency assumptions, including Ofgem for RIIO-1. It is not the only dataset available, however. For example, the UK Office for National Statistics (ONS) also produces growth accounting data based on its Annual Business Survey (ABS). Our proposal is to continue using the EU KELMS database as our primary source of data, but we are considering using complementary datasets to set ongoing efficiency challenges to DNOs.

6.33 We will consider the appropriate data timeframe for our RIIO-ED2 ongoing efficiency assumption. In RIIO-1, for gas distribution and transmission we used data spanning 1970-2007 from EU KLEMS data. When choosing a timeframe, we propose to consider business cycles (i.e. periods of booms and busts). Choosing a timeframe with incomplete business cycles could bias estimates of historical productivity gains.

6.34 We used comparison sectors to determine ongoing efficiency assumptions in RIIO-1. Comparability was determined based on whether these sectors had similar business processes to the networks (i.e. their comparable use of labour, materials, and other inputs in the production process) for the type of cost activity considered (e.g. opex or capex). For RIIO-ED2, we could also consider the competitiveness of sectors to ensure that we capture productivity gains of efficient companies, as well as the stability of productivity improvements over time.

6.35 We can use different productivity metrics with a growth accounting approach:

- total factor productivity, which include labour, capital and intermediate inputs;
- partial factor productivity;
- labour productivity; or
- labour and intermediate inputs productivity.

6.36 Two measures of outputs are also commonly used to measure outputs for ongoing efficiency. The first is gross output, simply defined as the aggregation of a company's output (i.e. output from capital, labour and intermediate inputs such as energy, materials, and services). The second one is value added, which is gross

output net of intermediate services (i.e. outputs from capital and labour inputs only).

6.37 We propose to use a growth accounting approach as our primary source of evidence to inform our RIIO-ED2 ongoing efficiency assumption. It is a well-established methodology and would be consistent with the approach undertaken in gas distribution and transmission for RIIO-2.

Historical performance of DNOs

6.38 For RIIO-ED2, we are interested in exploring ways in which we can utilise network companies' historical performance data from previous price controls. We could use this evidence to understand how outturn efficiency improvements compares to ED2 forecasts, and how it could inform our cost assessment.

6.39 We did not directly use historical data from the network companies in RIIO-1. This was to avoid productivity gains from privatisation influencing ongoing efficiency assumptions, as we used a data timeframe going back to 1970 in our growth accounting analysis. More generally, if we embed network companies' historical efficiency into future targets we risk transferring potentially poor historical performance into lower efficiency targets.

6.40 Nevertheless, we will investigate whether we can apply methodologies such as the one used by Ajayi et al. (2018)[28] to inform ED2. In their paper, Ajayi et al. (2018) use the Data Envelopment Analysis (DEA) Malmquist total factor productivity approach to study historical electricity distribution productivity.

6.41 DEA is a linear programming technique that allows estimating the efficiency of different companies: a frontier performance is constructed using available data, and each individual company's performance is measured based on its distance to the frontier. The 'Malmquist' total factor productivity index allows decomposing historical efficiency gains into 'catch-up' to the frontier and 'ongoing efficiency'.

6.42 We propose to explore how DNOs' historical performance can be used to inform their ongoing efficiency assumption. With this approach, we would not need to infer DNOs' future productivity improvements based on other sectors, such as with

[28] See https://www.ofgem.gov.uk/ofgem-publications/146010

the growth accounting approach for instance. Instead, we would directly observe what improvements DNOs have been able to deliver in the past.

Productivity forecasts

6.43 We propose to explore whether to use forward-looking estimates of efficiency gains can inform DNOs' ongoing efficiency assumption. In response to our RIIO-2 Sector Specific Methodology Consultation (SSMC) for gas distribution and transmission, several stakeholders suggested looking at productivity forecasts computed by the Office of Budget Responsibility (OBR) and Bank of England (BoE) for instance. Using forward-looking evidence could help us better apprehend DNOs' potential future efficiency gains.

Wider evidence

6.44 We propose to consider whether innovation funding previously awarded to DNOs could deliver efficiency benefits over ED2. Consumers have funded innovation in the energy sector for over a decade via various innovation mechanisms as part of the price control or through innovation competition. This regulatory funding is not available to competitive industries in the wider economy. As DNOs innovate and embed new practices in their day-to-day operations and business models, this should increase their efficiency. As a result, including the impact of previous innovation funding could inform DNOs' future efficiency gains.

Reporting ongoing efficiency assumptions and other considerations

6.45 We propose the DNOs should report ongoing efficiency assumptions separately in the business plan data templates (BPDTs), as opposed to embedding these assumptions in submitted costs. This would increase transparency and improve our ability to assess DNOs' costs.

6.46 We discussed the interaction between RPEs and ongoing efficiency with stakeholders at a CAWG. One stakeholder argued that ongoing efficiency assumptions should not be applied in cost categories that were RPE-indexed. Some also argued that the same high RPE materiality bar should hold when determining which cost categories to apply an ongoing efficiency assumption.

6.47 We aim to further explore the link between RPE-indexation and ongoing efficiency assumptions, including for non-RPE cost areas subject to CPIH general price

indexation, including relevant considerations from the cost assessment process from the wider RIIO-2 controls to date.

Consultation Questions

COQ19: Do you agree with our proposed approach, and its scope, to set an ongoing efficiency assumption for RIIO-ED2?

COQ20: Do you agree with our proposal to use a growth accounting approach as our primary source of evidence to set an ongoing efficiency assumption? What parameters would best support this approach?

Summary and next steps

6.48 We will continue working with stakeholders on RPEs and ongoing efficiency assumptions in the run up to the RIIO-ED2 Draft and Final Determinations.

6.49 Specifically, for RPEs, we will further consider the criteria used to assess DNOs' RPE submissions, as well as the materiality threshold of RPE claims. For ongoing efficiency, we will continue to assess the different methodologies and evidence to inform the ongoing efficiency challenge. We will also continue exploring the interactions between ongoing efficiency assumptions and the rest of the price control, particularly innovation funding and price indexation.

7. Disaggregated Cost Assessment

Chapter summary

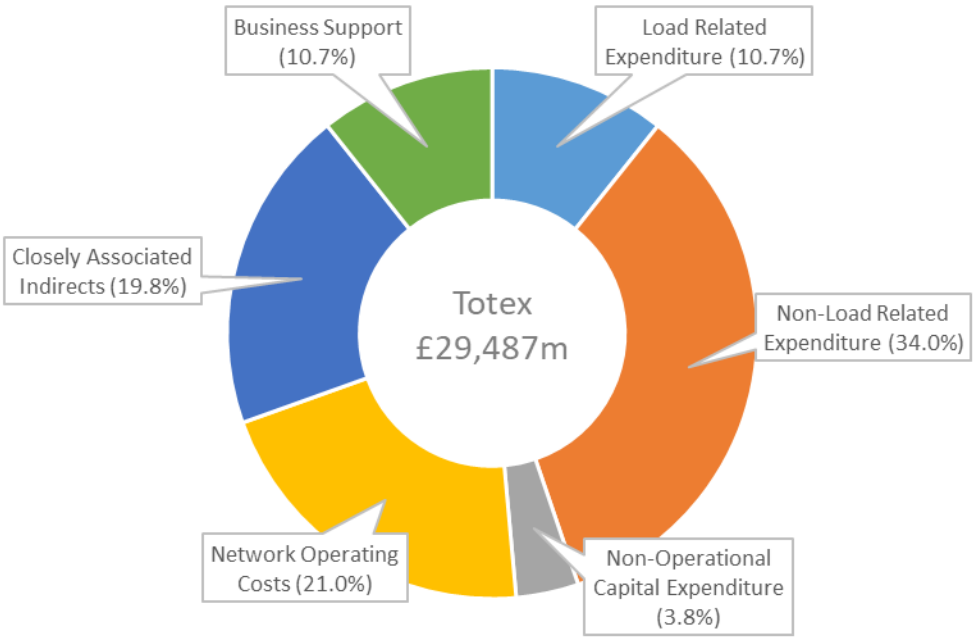
This Chapter provides an overview of key disaggregated cost categories and seeks views on our proposals on the key disaggregated cost assessment tools that we propose applying to the price control.

Introduction

7.1 Network investment in the electricity distribution networks relates to the direct investments to maintain or improve network reliability in order to maintain compliance with relevant legislation and industry standards and obligations. There are two key parts to this, load related expenditure (LRE) and non-load related expenditure (NLRE).

7.2 LRE relates to investments to expand current network capacity or to connect with new generation or demand sources. Indirect operating costs are split between two categories. Those costs that support the operational activities of the DNO (Closely Associated Indirect costs (CAIs)) and those costs required to support the overall business (Business Support Costs (BSCs)).

Figure 3: Breakdown in RIIO-ED1 allowances by cost area



7.3 As discussed in Chapter 3, we used three different econometric models for our benchmarking in RIIO-ED1. A top-down totex model using high-level drivers, a bottom-up totex model using an aggregated driver based on our disaggregated analysis, and disaggregated, activity-level modelling.

7.4 In Chapter 3, we also set out options for our cost assessment approach in RIIO-ED2, including the role of disaggregating benchmarking, and as highlighted, the review required to assess the fitness for purpose of the RIIO-ED1 disaggregated models.

7.5 We propose to use the RIIO-ED1 disaggregated modelling approach as a starting point in developing our approach for RIIO-ED2, while taking into account any lessons learned and developments in our thinking, unless stated otherwise.

7.6 In the following sections, we provide an overview of the key cost areas including RIIO-ED1 allowances, a breakdown of the costs in that area, and we detail some developments to our approach, where appropriate. Further information on specific elements of our RIIO-ED1 disaggregated cost assessment approach is provided in Appendix 3.

Load related expenditure

Overview

7.7 In RIIO-ED1 LRE accounted for £3,110m or 11 per cent of allowances. LRE refers to expenditure relating to the following activities:

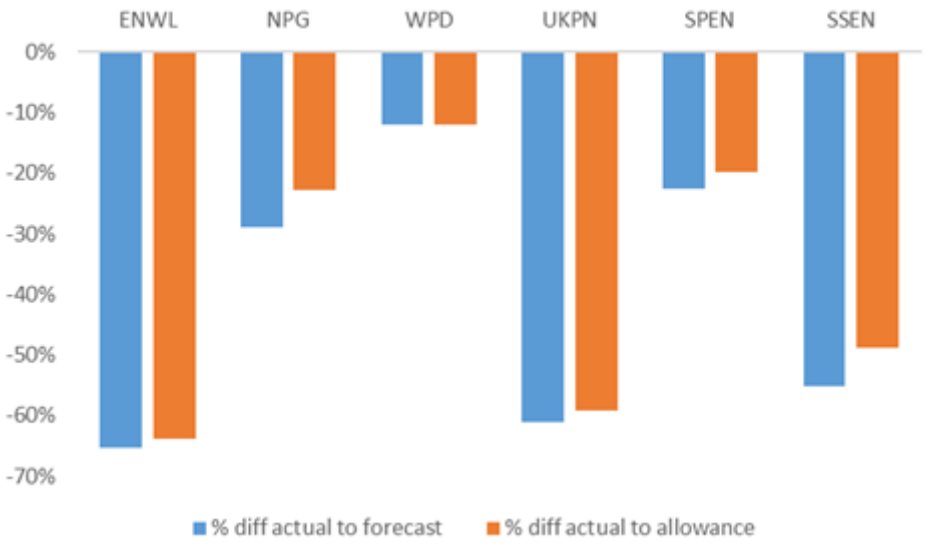
- Reinforcement, which is work carried out on the networks in order to enable new load growth (including demand and generation). This is broken down into the following activities:
  - primary reinforcement schemes
  - n-1 primary reinforcement
  - low carbon technology (LCT) driven reinforcement
  - secondary reinforcement (non-LCT)
  - fault level reinforcement
- Transmission connection point (TCP) charges, which includes investment costs relating to the points at which the DNO networks connects to the transmission networks

- Connections, which mainly relates to the provision of new or upgraded network exit points to new or existing customers
- High Value Projects (HVPs), which covers specific schemes (typically load related) where the related expenditure passes the high value project threshold.

7.8 In setting allowances for LRE, we have to consider the following three questions:

- What is the forecasted future demand?
- What impact will this have on the network?
- What is the most efficient solution to address this impact?

Figure 4: LRE actual expenditure against RIIO-ED1 allowances and ED1 forecast to date



7.9 Figure 4: LRE actual expenditure against RIIO-ED1 allowances and ED1 forecast to date presents the difference of actual expenditure against the DNOS forecast and allowances in RIIO-ED1. In the first four years of RIIO-ED1, all DNOs underspent their LRE allowances, with the largest in the ENWL (64%), UKPN (59%) and SSEN (49%) networks. As highlighted in our last RIIO-ED1 Annual Report[29] the primary driver of underspend in LRE has been due to the underlying economic conditions creating uncertainty in demand for electricity.

7.10 Our approach to LRE in RIIO-ED2 will be one of the most important aspects to get right. Underinvestment in networks now could put Net Zero targets at risk, while

[29] https://www.ofgem.gov.uk/publications-and-updates/riio-1-electricity-distribution-annual-report-2018-19

not applying the necessary control measures could be costly for consumers, in terms of investment in assets that are either underutilised or not used at all. In the Overview Document, we are consulting on the different models we could take to enable the right investment to meet future demand and to protect consumers' interests.

7.11 In the following section, we discuss the issues that are relevant to LRE in RIIO-ED2. These include:

- Forecasting for Net Zero
- Establishing network impacts
- Treatment of flexibility
- Load Indices.

7.12 How we will assess whether DNOs have proposed the most efficient solution is addressed through the sections on Cost Benefit Analysis (CBAs) and Engineering Justification Papers (EJPs).

7.13 This section should be read in conjunction with Chapter 4 of the Overview Document.

Forecasting for Net Zero

7.14 As set out in the Overview Document, the transition to Net Zero will mean an increased demand for electricity as people and businesses switch to cleaner sources of energy, particularly for transport and heat. While there are various interim targets for Net Zero, there remains uncertainty around the pathway(s) that DNOs may follow to achieve these targets. This has implications for how we set allowances for LRE.

7.15 Historically, our approach to LRE has been to base projections of demand for each DNO on a single central forecast. This reflected the fact that the demand for energy has been relatively stable. Within this approach, DNOs could identify what regional variations they anticipated. By applying a consistent set of underlying assumptions across DNOs, it was reasonably straightforward to benchmark companies against each other. This provided us with confidence in our ability to set allowances at the efficient level.

7.16 In our preparation for the first set of RIIO-2 price controls, specifically the preparation of Business Plans for the transmission and gas distribution sectors and

the ESO, we asked all the networks, including the DNOs, to work together to develop a consistent view of the future across all five regulated sectors.

7.17 As we acknowledge in Chapter 4 of the Overview Document, this approach may still be applicable for RIIO-ED2, in full or in relation to specific forecasted outputs. However, there may be circumstances when a more decentralised and region-specific approach to forecasting demand is required.

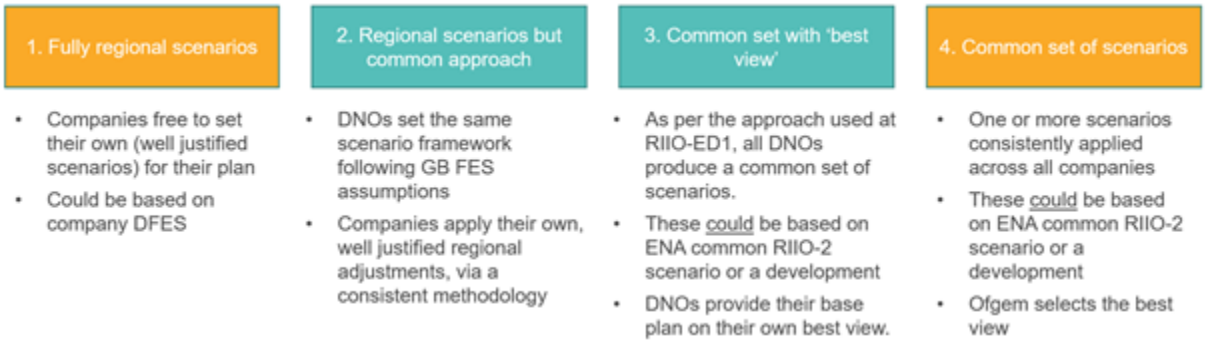
7.18 This may be the case where devolved governments have different targets for Net Zero, while some regional and local authorities are bringing forward decarbonisation ambitions and strategies that go further and faster than the commitments made by the UK, Scottish and Welsh governments.

Our proposed approach

7.19 In our RIIO-ED2 Framework Decision, we outlined a minded to position that DNOs develop a core baseline scenario and set out what network investment would be required to meet this scenario. This information will enable us to conduct comparative cost benchmarking, where appropriate.

7.20 DNOs and other stakeholders have suggested different approaches to establishing a forecast scenario for RIIO-ED2. These are summarised in Figure 5.

Figure 5: Review of forecasting options



7.21 We propose to follow Option 3 as a means of deriving a core baseline scenario for the purposes of benchmarking. This requires a common set of scenarios from which DNOs would select their own "best view".

The potential role of regional forecasts in investment planning

7.22 Our proposed approach for establishing forecast scenarios, Option 3, is to fulfil a specific function (benchmarking). This does not necessarily mean that this approach should form the basis of the investment plan. In Chapter 4 of the Overview Document, we describe the various factors that need to be considered in establishing whether and in what circumstances a centralised set of forecasted outputs should be used, or when a more decentralised approach should be adopted. We expect to make a decision on this in December 2020.

7.23 As we also highlight in Chapter 4 of the Overview, establishing a regional plan is likely to rely heavily on the resource and knowledge of the DNO and this puts the DNO in a position of influence over the nature of the resulting plan. However, DNOs also have other incentives that could affect their input.

7.24 Therefore, the more we deviate from a central forecast scenario, the more confidence we will need to have in the process that DNOs have gone through to establish a regional plan.

7.25 In recent years, DNOs have begun producing Distribution Future Energy Scenario (DFES) documents and workbooks and there is the potential that, among other uses, these can help to establish a 'best view' regional forecast of demand for the purpose of identifying investment requirements.

7.26 At present, the approach each DNO takes to producing their DFES varies considerably. There can be differences in assumptions underpinning future growth scenarios, how stakeholders are engaged in the process and the level of transparency and open access to data that surrounds the process.

7.27 In Chapter 6 of the Overview, we describe our intention to introduce a licence condition on DNOs to require a Network Development Plan (NDP) for a five-to-ten year time window, based on a single central/best view network forecast of changes in demand and generation, reinforcement needs, and expected flexibility use. We expect that DFES scenarios will provide a basis for deriving the NDPs. We will therefore be developing the licence condition to reflect the need for DFESs to be produced in a consistent manner, be auditable, for data to be fully available, and to demonstrate how such data is used as an input into the NDP.

7.28 In addition, if regional forecasts are to be used for investment planning, we will expect there to be evidence of structured and effective consultation with national and local stakeholders and supported by leadership from democratically accountable bodies. We will expect plans to consider how regional and national targets align, and for there to be robust, transparent modelling to establish a 'most likely' regional pathway to Net Zero.

Establishing network impacts

7.29 Having established a forecast of future demand, DNOs then need to identify the impact any increases in peak demand are likely to have on their networks.

7.30 On some networks, there is currently limited information available on the utilisation particularly down to LV level. Even where this information is available to the DNO, it is not always visible to other stakeholders.

7.31 Without this information, it is hard to establish what investment will be required to meet anticipated load growth and whether the proposed solution is likely to do so in an efficient manner.

7.32 Without DNOs making the information on forecast demand and current network utilisation publicly available, it is hard for flexibility providers to offer up alternative solutions to meet load growth. Therefore, in proposing their solution, the DNO may have only considered a narrow range of potential options. The role of flexibility in RIIO-ED2 is discussed in more detail below.

Our proposed approach

7.33 We consider that a DNO can only adequately assess and justify the need for additional capacity if they understand the existing demand on their networks, and the utilisation of existing network capacity. This information is also essential to demonstrate that any investment was made efficiently and achieved the intended outcome.

7.34 There may be different credible approaches that DNOs can take in assessing the existing capacity of their networks. The most obvious is for DNOs to deploy network monitoring in parts of their network that may be constrained and use this as part of the needs case to justify investment.

7.35 We therefore expect DNO proposals for LRE to be accompanied by an increase in monitoring equipment rolled out across their network, where it has demonstrable net value for the DNOs or network users.

7.36 DNOs should make this information available in a digitised and open manner. We expect DNOs to have in place effective processes for sharing network planning information, both to other network licensees, including the ESO, and to network users.

7.37 Associated with the need for LRE to be accompanied by much better understanding of the utilisation of the network, we are proposing to further our methodology for using Load Indices. This is discussed in more detail below.

Consultation Questions

COQ21: Do you agree with our proposed approach on forecasting options for RIIO-ED2

COQ22: What are your views on our proposal for establishing network impacts and assessing LRE requirements for RIIO-ED2?

Flexibility in RIIO-ED2

Background

7.38 DNO should justify their proposed investment through their CBAs and EJPs, as set out in Chapters 8 and 9. Underpinning this is a need for DNOs to demonstrate that they have considered the full range of possible solutions, and that their proposal is the economic and efficient and represents best value for consumers.

7.39 In 2018, DNOs made a commitment to opening up Flexibility Markets and creating opportunities for new flexible network solutions to compete with traditional network solutions, on a business-as-usual basis.[30] Therefore, in RIIO-ED2, we expect DNOs to consider flexibility solutions in response to forecast load growth.

7.40 In Chapter 4 of the SMC Overview Document, we propose the regulatory arrangements we consider are necessary to govern how DNOs interact with

[30] See https://www.energynetworks.org/electricity/futures/flexibility-in-great-britain.html

flexibility markets. A DNO's LRE proposals will need to demonstrate they have met the minimum requirements that we have specified in this regard.

Challenges for our cost assessment in RIIO-ED2

7.41 A key challenge for our cost assessment is that the flexibility solutions have quite different associated costs when compared to a traditional network based solution. Flexibility costs primarily consist of payments made by DNOs to contracted flexibility providers, such as demand-side response aggregators or generators. To contract flexibility services, DNOs also incur fixed costs, such as the IT costs required to run tenders, contact providers and procure contracts. In comparison, the cost for traditional network infrastructure solutions consist of an initial capital investment, depreciated over a long-term time period, and ongoing operational and maintenance costs.

7.42 The lack of historical data for flexibility costs presents an additional challenge. Flexibility markets are still at an early stage in GB, with the earliest flexibility tender only in 2018. Given the early development stage of these markets and lack of a reliable 'market price' for flexibility, most DNOs administer fixed prices for flexibility procurement. While we expect investment proposals to be accompanied by robust justification, without accurate historical cost data, our ability to challenge costs and ensure consumer value is limited.

Our proposed approach

7.43 We think that flexibility presents a significant opportunity to reduce network costs and lower bills for consumers, and we aim to reflect this in the allowances we set for DNOs in RIIO-ED2. In assessing a DNO's proposal, we propose to compare the costs and benefits of traditional network based solutions with those offered by flexible network solutions, on a like-for-like basis.

7.44 Future demand is subject to significant uncertainty, and we think that flexibility can provide options value by deferring investments until load growth is less uncertain for instance. We propose to account for these factors in our assessment, as we think it represents a potentially significant benefit to consumers.

7.45 In the previous section on 'Establishing network impacts' and in Chapter 12, we set out our requirement for DNOs to have in place transparent and robust processes for identifying and assessing options to resolve network needs, and using

competition where cost effective. This should include engaging with other network companies, current and prospective network users to support identification of solutions. DNOs should explore smart network control options including network reconfiguration and voltage control where these do not have detrimental impacts on network users' electricity supply quality.

7.46 Building on this, we propose requiring a strong justification for why a particular solution, flexibility or asset-based, is submitted in the Business Plan and how this compares against alternatives. This should include robust rationale evidenced through EJPs and CBAs, where appropriate, and stakeholder review through the CEGs.

Consultation Questions

COQ23: Do you agree with our proposal to compare flexibility solutions and network based solutions evenly in our cost assessment?

COQ24: How should we treat the fixed costs of procuring flexibility when considering flexibility solutions as an alternative to reinforcement?

Load Indices

Background

7.47 In RIIO-ED1, we used a Load Indices (LIs), one of our network output measures, to assess network risk by comparing network demand with capacity. The LIs categorises primary substations (EHV and higher) into five bands (LI1 - LI5) based on each substation's loading percentage or utilisation (see Appendix 4 for breakdown of existing LI bandings). This loading percentage is the percentage of the substation's firm capacity that is utilised at the point of maximum demand. LIs are only applied to primary networks at present, due to limitations of secondary substation monitoring.

7.48 Effectively, LIs operate as secondary deliverables for primary network reinforcement expenditure, tying a DNOs investment to the delivery of a particular level of utilisation at the end of the price control period. LIs also help identify demand driven intervention requirements, and enable network risk to be tracked over time. DNOs are required to deliver an equal or equivalent reduction in loading risk to substations as was forecast to be delivered by schemes (such as reinforcement activities) included in their baseline allowance.

7.49 In RIIO-ED1, we decided not to set specific outputs for LI delivery at the start of the price control due to the uncertainty around how they would interact with other parts of the price control. Our rationale at the time was that given the number of factors that contribute to level of network utilisation, setting outputs for LIs in RIIO-ED1 would not provide a robust way to measure DNOs performance over the price control. We did however commit to using LIs as part of our assessment of efficient LRE, rather than as a standout closeout mechanism in their own right.

7.50 As indicated, the decarbonisation of transport and heat, the decentralisation of generation, and the increase in the use of flexibility, in pursuit of Net Zero, is changing the demands on the networks, specifically the electricity distribution networks. It is our view that the LIs need to be developed further in order to:

- Adequately assess the risks that networks are likely to face in facilitating this decarbonisation
- Be suitable for use in setting robust network outputs.

Our proposed approach

7.51 For RIIO-ED2, in line with our ambitions for LIs, we have identified the following priority areas on which to focus the development of LIs methodology:

- Revision of current methodology
- Commonality of reporting
- Expansion of methodology.

7.52 We propose to review levels and width of the LI bandings as they are sensitive to small increases in demand and are set close to capacity limits. This makes it more difficult to assess the loading risk on network assets.

7.53 We will continue to develop our thinking on how network risk associated with drivers other than demand are dealt with and incorporated within the LI methodology. This includes, but is not limited to:

- Fault Level – intervention driven by fault level duty exceeding equipment ratings or design fault levels
- Flexibility – measure of network demand managed by flexibility contracts
- Distributed Generation – intervention driven by generation demand exceeding generation capacity.

7.54 We want to ensure consistency of approach across the sector, and propose a review of and development of further guidance for the calculation of firm capacity.

7.55 In line with our proposals on establishing LRE requirements to meet forecast demand, we want to explore options for extending the LI methodology to cover all voltage levels, where appropriate.

7.56 We intend to build upon the existing RIIO-ED1 arrangements, while ensuring that the outputs that we set, in relation to loading risk on the networks, are more reflective of the network investment delivered, to increase coverage and consistency of the methodology, and to enhance regulatory reporting.

7.57 Our proposals are at an early stage of development. We propose to continue to develop our proposals in coordination with DNOs and other stakeholders through the SRRWG on the run up to the Sector Methodology Decision.

Consultation Question

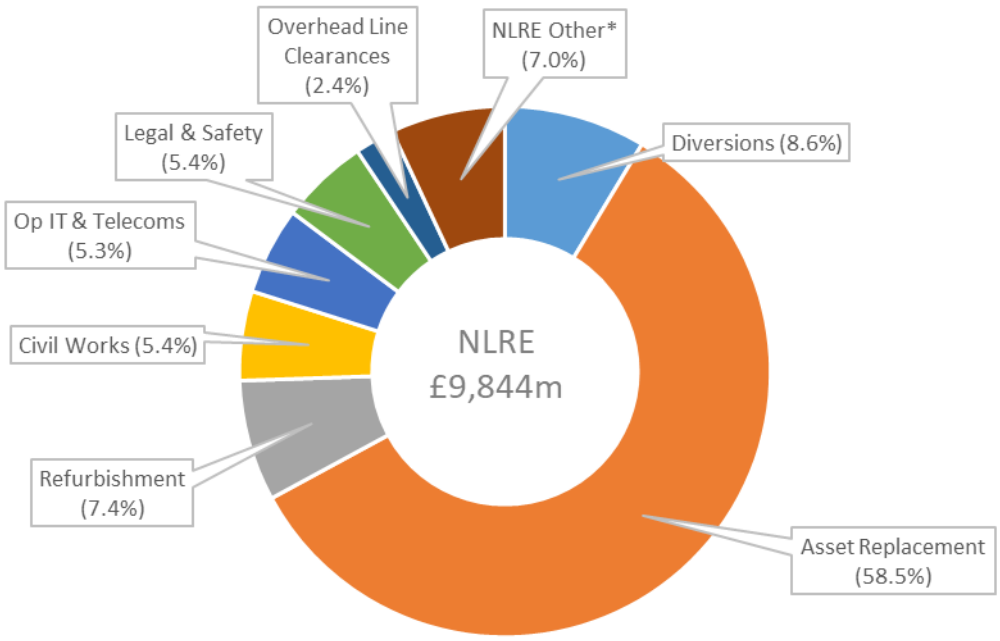
COQ25: What are you views on the use of LIs as outputs in RIIO-ED2?

Non-load related expenditure

Overview

7.58 Non-Load Related Expenditure (NLRE) covers all capital investment associated with maintaining the health of the existing asset base and rectifying the likelihood and consequences of asset failure. Collectively these activities comprised £9,844m or 34 per cent of total RIIO-ED1 allowances.

Figure 6: Breakdown of RIIO-ED1 NLRE cost areas[31,32]



7.59 In the following section, we discuss some developments specific to NLRE. This includes:

- Network Asset Risk Metric (NARM) reporting
- Treatment of incremental costs.

Network Asset Risk Metric (NARM) reporting

7.60 NLRE, specifically Asset Replacement and Refurbishment, contribute to a significant proportion of the DNOs' totex allowances. As detailed in Annex 1, one of the key tools that we will use to assess investment decisions in this area and set outputs in RIIO-ED2 is the NARM.

7.61 In RIIO-ED1, DNOs were required to submit forecasts of their Network Asset Indices, which represent network asset risk, with and without their proposed interventions. We used this information in our Monetised Risk Workbook, to calculate the Network Asset Secondary Deliverables (NASDs), the outputs that DNOs were required to deliver during the price control period.

[31] NLRE Other consists of Black Start, BT21CN, QoS, Physical Security, Rising and Lateral Mains, Worst Served Customers, Technical Losses and Environment.
[32] Note that Asset Replacement costs in this Figure include civil costs, where the works are driven by Asset Replacement.

7.62 In addition, in order to monitor in-period performance, DNOs were required to report annually on their delivery against their NASDs outputs.

7.63 For RIIO-ED2, we want to simplify this process and the workbook structure, incorporate all of the proposed developments to the NARM framework as detailed in Annex 1, and enhance the reporting to deliver additional insights and granularity of risk movements.

7.64 In our cost assessment, we propose to use DNOs' submitted NARM data, alongside supporting EJPs and CBAs, where appropriate, and our existing Asset Replacement modelling in setting allowances.

Treatment of incremental costs

Background

7.65 As discussed in the SMC Overview Document, we recognise the role of strategic investment in achieving Net Zero and facilitating low carbon connections, and the potential need for a different approach to strategic investment in RIIO-ED2.

7.66 Through the CAWG, we have discussed the role of incremental investment, specifically in relation to Asset Replacement, in helping to achieve positive consumer outcomes.

7.67 The total cost of an activity can be considered as the sum of the core costs and the incremental costs. Core costs being those intervention costs associated with the primary driver for investment, such as the 'like for like' replacement of an asset. Incremental costs are those costs over and above the core costs, not associated with the primary driver for investment, but instead secondary drivers such as losses reduction or interruption incentives.

7.68 DNOs are encouraged to combine multiple drivers into single interventions, where supported by a CBA as the most efficient approach, as this will deliver long-term benefit to consumers. The challenge for our cost assessment though relates to circumstances where an incremental cost is incurred to efficiently achieve an additional outcome, but where the total costs fall on the original driver and risk being viewed as inefficient. If our cost assessment is not able to appropriately identify the incremental costs and secondary benefits then we risk discouraging this otherwise efficient behaviour.

7.69 In RIIO-ED1, the only place where incremental costs were explicitly identified was in the Environment and Innovation tables, where DNOs reported the estimated incremental component of the unit cost, justified by their Distribution Losses benefits.

7.70 For RIIO-ED2, we believe that there is an opportunity, when other work is being planned, to deliver additional benefits by, for example, upsizing an asset to deliver a reinforcement capacity benefit, either to solve a current capacity constraint or to deliver proactive reinforcement in preparation for LCT uptake. Opportunities for delivering secondary benefits exist in a number of other areas throughout the programme including losses, environmental, quality of supply and black start.

Our proposed approach

7.71 We have identified a number of options for the reporting of incremental costs in RIIO-ED2 to enable our assessment of these costs and of the secondary benefits of the additional works. This includes:

- Option 1 - Report the core costs against the primary investment driver and report the additional incremental costs in a memo table or secondary table together with any benefit volumes as reportable
- Option 2 – Report total costs against the primary investment driver, with a supporting memo table(s) setting out the incremental costs
- Option 3 – Report total costs only, ignoring the requirements incremental cost reporting.

7.72 A potential drawback of Option 1, splitting out core and incremental costs, is that it would require significant resource. In addition, some stakeholders believe that the reporting of total costs best reflects the work that DNOs are forecasting to undertake in the period and is most consistent with the other reporting.

7.73 Some stakeholders argue that Option 3, the 'do nothing approach', which doesn't require the reporting of incremental costs, under the assumption that all DNOs will be doing similar activities, will only be known upon receipt of Business Plans and does not address the risks identified above.

7.74 Option 2, the use of memo table(s) alongside total cost reporting, has the advantage of not having total costs split across the two elements, core and

incremental, in the main part of the reporting packs, whilst maintaining the ability to assess both elements appropriately.

7.75 While we believe that this issue is most closely associated with Asset Replacement expenditure, there may be other opportunities across the price control for incremental investment.

7.76 We are yet to reach a clear proposal for this area. We will continue to develop our thinking on the proposed options for the treatment of incremental costs in RIIO-ED2 in the run up to our Sector Methodology Decision. This specifically includes the interaction with the BPDTs, reporting, CBAs and EJPs.

Consultation Question

COQ26: What are you views on the treatment of incremental costs in RIIO-ED2?

Non-operational capital expenditure

Overview

7.77 Non-operational capital expenditure (non-op capex) relates to the capital costs incurred from activities that are unrelated to core activities, but essential to DNOs in being able to carry out these activities.

7.78 In RIIO-ED1, the allowance for non-operational capital expenditure (non-op capex) accounted for £1,104m or 4 per cent of total RIIO-ED1 allowances. Non-operational capex costs comprise the following four activities:

- Property
- Small tools, equipment, plant and machinery (STEPM)
- IT&T
- Vehicles and transport.

7.79 We are not proposing any material developments to the cost reporting or assessment of this area in RIIO-ED2.

Consultation Question

COQ27: Do you agree with our proposal to maintain the RIIO-ED1 approach to assessing Non-op capex costs in RIIO-ED2?

COQ28: Do you agree with our proposal to maintain the RIIO-ED1 approach to assessing NLRE in RIIO-ED2?

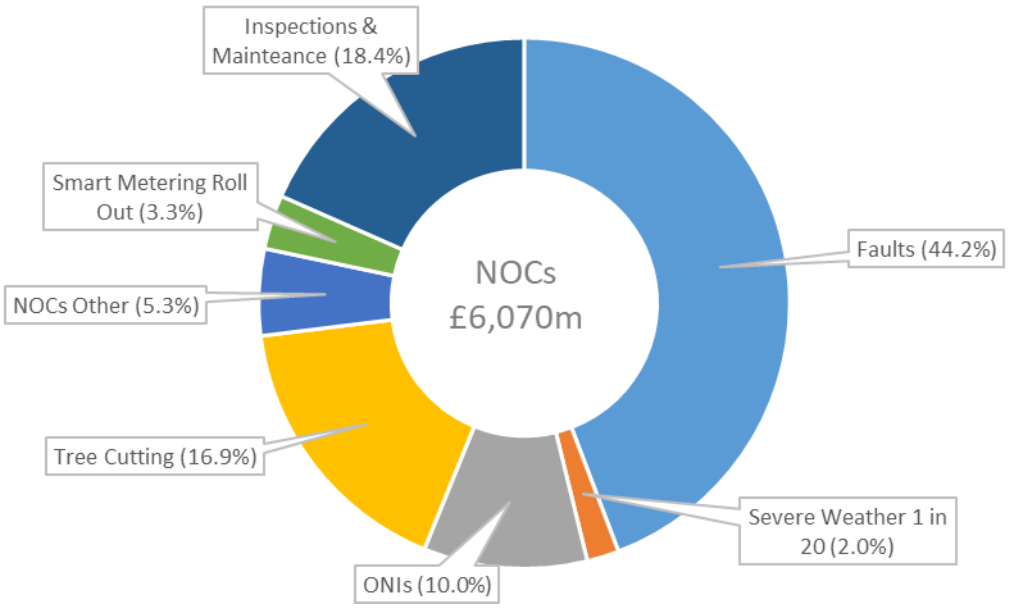
Network operating costs

Overview

7.80 Network Operating Costs (NOCs) are the day-to-day costs incurred by DNOs as part of the work required to maintain and operate the distribution networks, such as tree cutting, rectifying faults, inspecting assets and other maintenance activities. These activities accounted for £6,070m or 21 per cent of the cost baselines for RIIO-ED1.

7.81 The activities reported under NOCs are as outlined below in Figure 7.

Figure 7: Breakdown of NOCs allowances in RIIO-ED1



7.82 Following assessment of RIIO-ED1 and through the RIGs working groups we decided to split Inspections and Repair and Maintenance. Inspections costs are any costs incurred relating to the visual checking of the external condition of system assets from Repairs and Maintenance work resulting from these

inspections or otherwise. This was incorporated into the work carried out to align the tables better with the activities being completed through the task allocation exercise implemented in RIIO-ED1 RIGs.

7.83 We are currently proposing to use the same approach applied under RIIO-ED1 to assessing NOCs in RIIO-ED2.

Consultation Question

COQ29: Do you agree with our proposal to maintain the RIIO-ED1 approach to assessing NOCs in RIIO-ED2?

Closely associated indirect costs (CAI)

Overview

7.84 CAIs include the back office functions directly involved in the construction and operation of the network assets, such as project managements and network design. In RIIO-ED1 CAIs accounted for £5,723m, which is 19 per cent of the total ex ante allowances so it is a significant area of expenditure.

7.85 In our assessment at RIIO-ED1 CAI activities were grouped into the following five categories:

- Network design and engineering, project management, system mapping, Engineering Management & Clerical Support (excluding wayleaves), stores, network policy, control centre and call centre
- Wayleaves
- Vehicles and transport
- Operational training including workforce renewal
- Streetworks.

Distribution System Operation (DSO)

7.86 We believe that to reflect DSO in the BPDTs, we will require changes to the CAIs. With input from the ENA we are rationalising the DSO roles into common functions and activities and mapping them to the historical reporting in the RIGs, which we do not believe currently reflect the maturing role of the DSO.

7.87 This may result in new reporting categories that better align with how DNOs organise their business. We believe that identifying and understanding these costs more will inform debate around and ultimately delivery of any future alternative institutional arrangements.

7.88 We will be working with the DNOs and ENA over the next few months to develop the reporting of DSO related costs.

Consultation Question

COQ30: Do you agree with our proposal to maintain the RIIO-ED1 approach for assessing CAIs in RIIO-ED2?

Business support costs

7.89 Business Support Costs (BSCs) are the indirect operating costs that are required to support the DNOs overall business, such as corporate governance arrangements. The allowance for BSCs in RIIO-ED1 was £3,020m, approximately 11 per cent of the total cost allowances for the industry.

7.90 In RIIO-ED1, those costs falling into the BSCs were:

- Human Resources and Non-Operational Training
- Finance and Regulation
- Chief Executive Officer (CEO) and Other Corporate Functions
- IT&T
- Property Management.

7.91 The combined spend on BSC across RIIO-ED1 is forecast to be £2.81 billion; an underspend of approximately 7%. As this activity is applicable across multiple companies, we may seek to compare, at a cross-sector level, some BSCs that are common across DNOs and other network companies. Examples include: Human Resources, Chief Executive Officer (CEO) and other corporate functions.

7.92 In our assessment for RIIO-ED1 we aggregated four of the BSC categories (finance and regulation including insurance, HR and non-operational training, property management, and CEO and group management), and subjected them to ratio benchmarking using 13 years of data and MEAV as a cost driver. A separate

assessment for IT and Telecoms expenditure was made using a combination of ratio analysis and consultant's qualitative views.

7.93 Other drivers such as direct employees and revenue were rejected due to their lack of economic rationale, their endogenous nature, or differences between fast-track and slow-track DNO submissions which lowered our confidence in the submitted data. The RIIO-ED1 assessment did not include fixed cost normalisation. We conducted the analysis at an ownership group level as it accounted DNOs sharing costs within a group.

7.94 In our RIIO-ET2 Sector Draft Determination, BSCs showed similar trends for both RIIO-GT and ET and across both the RIIO-1 and RIIO-2 periods, therefore, this provided the confidence in pooling both sectors for BSC benchmarking. NGGT (SO) was excluded due to its different business nature.

7.95 DNO data was excluded in the RIIO-T2 assessment of BSCs due to the amount of data normalisations required to ensure costs were being compared on a like-for-like basis. In RIIO-ED2, we will be analysing the case of pooling costs with other sectors, in particular gas distribution.

7.96 A number of cost drivers were considered to assess BSCs in RIIO-T2 and the broad options included MEAV, which reflects the scale, complexity, characteristics and composition to the network asset base. It also includes Composite Scape Variables (CSV) which incorporates other cost drivers such as Full Time Employees for Human Resources Costs and Total Spend / Totex for Procurement costs.

7.97 Table 6 below summarises the approaches taken in RIIO-GD2 and RIIO-T2 in assessing BSCs:

Table 6: RIIO-2 approaches to BSCs

RIIO-GD2 Approach	RIIO-T2 Approach
BSCs were included in totex econometric model and MEAV as the cost driver. **Note:** We considered BSC costs are stable over time and therefore was included in the totex model.	Combination of both CSV and statistical adjustments. **Note:** To pool both the GT and ET BSCs, statistical adjustments were made to ensure compatibility. This adjustment was found to give a stronger model fit than a MEAV-only regression.

7.98 In determining our approach to assessing BSCs in RIIO-ED2, we will consider the approaches in RIIO-GD2 and RIIO-T2.

Consultation Question

COQ31: What are your views on the different approaches presented for the treatment of BSCs in RIIO-ED2?

8. Cost Benefit Analysis

Chapter summary

In this Chapter, we set out our requirements for the application of cost benefit analysis (CBA) in the appraisal of potential investment decisions.

Introduction

8.1 Any major investment decisions brought forward by the DNOs in their RIIO-ED2 Business Plan must be supported by a clear needs case which demonstrates the company's decision making process. This should highlight the rationale for the proposed investment, functionally equivalent alternatives that have been considered and the determining factors that led to the final option selection. This must be underpinned by a cost benefit analysis (CBA) to demonstrate the value to consumers of making the investment(s).

Where we expect to see a CBA submission

8.2 The use of CBAs should be proportionate to expenditure areas within RIIO-ED2 forecasts. We expect a DNO might chose to submit CBA where an approach is adopted that is either significantly higher cost than a previous strategy or likely to appear to be higher cost when compared to other companies because an alternative approach has been adopted.

8.3 The benefit of submitting a CBA model for significant areas of investment are that it assists Ofgem in the understanding of a particular strategy or proposal, along with other alternative options that have been considered and also an understanding of the key assumptions that have been made which support a proposal.

8.4 In RIIO-ED1 we required mandatory CBA submissions to support low loss equipment expenditure and other proposed actions to reduce losses. We currently do not propose to mandate CBAs for any particular investment type.

Scope of CBA

8.5 DNOs may choose to carry out CBA at the following levels:

- Asset category/class
- Project level

8.6 At the asset category/class level it may be useful to group CBA analysis where the same/similar characteristics are displayed. Where projects within expenditure categories are homogenous in terms of the costs and benefits involved, we expect these projects to be considered as part of one CBA decision. Schemes where costs and benefits are specific to the scheme or project being proposed may require consideration under a separate CBA model.

8.7 We expect there may be some large investment projects which require CBA in order to support investment justification and demonstrate value for money. Companies should submit CBA to support these decisions.

Identification of options

8.8 Consistent with the HM Treasury Green Book, DNOs should clearly identify the range of options that were considered to meet the stated aim. This list should, where feasible, include an option that requires a minimal initial investment (the "do minimum option") against which other options can be compared.

8.9 The "do minimum option" or "reference scenario" may represent do nothing or business as usual e.g. ongoing maintenance. This detail should be completed within the "Baseline" tab. This is our minded to position however, in RIIO-ED1 the 'do nothing' option was dropped and considered as 'what you'd do normally' which led to confusion. This is an are we will develop through the CAWG.

8.10 We will include a section in the CBA spreadsheet model for DNOs to identify and clearly the list of options they have considered for each investment decision.

8.11 This list of options should include those that have been considered and rejected before full costing, and the short list of those options that have been considered and costed, with a clear rationale for including/excluding them.

Valuing the costs and benefits of options

8.12 The financial costs and benefits should correspond to the financial/market values set out in the DNO's Business Plan (where applicable). For example, the expected reduction in any cost of repairs (a financial benefit) arising from an investment should be consistent with the assumptions on repair costs set out in the plan.

8.13 The financial costs and benefits should be in 2018/19 prices, exclude real price effects (RPEs) and should be net of expected productivity improvements i.e. consistent with the data set out in the DNO's BPDT. Where CBA outcomes are marginal the DNO should run sensitivities on productivity improvements beyond RIIO-ED2.

Applying the Spackman approach to electricity distribution network Investment

8.14 The Spackman approach involves the following two-step approach :

- Convert capital costs into annual costs using the company's cost of capital
- Use the Social Time Preference Rate (STPR) of 3.5% (less than & equal to 30 years); 3% (greater than 30 years) to discount all costs and benefits, except safety where the Health Discount Rate (HDR) of 1.5% (less than/equal to 30 years); 1.2857% (greater than 30 years) should be used.

8.15 The capital costs should be converted to equivalent annual costs that are recovered through customers' bills. The CBA spreadsheet model assumes straight line deprecation in line with our RIIO-ED2 regulatory depreciation policies. The annual capital costs should also be calculated over the assumed economic life of the asset.

8.16 To convert capital costs into annual cost recovered through customers' bills, we require companies to use a pre-tax weighted average cost of capital (WACC) figure, which is consistent with their own individual Business Plan submissions.

8.17 Costs and benefits should be extended to cover a 45-year period, from the start of investment, which represents the useful economic life of the asset and is consistent with asset life assumptions used in the RIIO-ED2 finance model. This is a working assumption subject to any decision on regulatory depreciation we take for RIIO-

ED2. Due to future uncertainties, we will limit the CBA template to 45 years (from the final year of investment during the RIIO-ED2 period).

Society benefits and the treatment of non-marketed goods

8.18 DNOs should consider societal benefits (i.e. indirect avoided costs) associated with each option. The societal costs section of the CBA template is to value the key environmental, safety and other drivers that support many investment decisions. For consistency we standardise the assumptions and calculations for the valuation of society benefits safety benefits. We enter default parameters in the CBA model for these non-marketed items, where DNOs amend these assumptions full justification should be supplied to support the move from the default parameters. For the benefits associated with preventing fatalities and injuries, we require DNOs to draw on guidance set out in HM Treasury Green Book and the HSE.

8.19 When including benefits within the CBA, we expect there to be a clear link between the assumptions used in the CBA template and those used in the Electricity Distribution Network Asset Risk Metric (NARM) methodology, where applicable.

8.20 There may be further non-marketed items where a fixed assumption or calculation methodology has not been provided in the CBA model. DNOs can include these benefits in the rows provided but should clearly set out in the workings section of the model the assumptions and valuation methodology used.

8.21 Any non-marketed impacts or factors that cannot easily be monetised should be identified by the DNOs in the supporting commentary boxes or in the wider Business Plan.

Decision Rule

8.22 The purpose of CBA is to enable companies to demonstrate the proposals included in their Business Plan provide the optimum solution and best value for customers.

8.23 We do not expect DNOs to use CBAs mechanistically ie including all schemes with positive NPV and excluding all those with negative NPV. Where a scheme has a marginally positive or negative NPV the DNOs should consider the inclusion/exclusion of such a scheme drawing on sensitivity analysis and the

identification of any non-monetised benefits or costs. As an example, such non-monetised costs/benefits might include (non-monetised) engineering judgement on what constitutes an efficient project. We envisage that DNOs would clearly set out such judgements as part of their submission.

Uncertainty and sensitivity analysis

8.24 We expect companies to undertake sensitivity analysis consistent with the HM Treasury Green Book guidance:

> "Sensitivity analysis is fundamental to appraisal. It is used to test the vulnerability of options to unavoidable future uncertainties. Spurious accuracy should be avoided, and it is essential to consider how conclusions may alter, given the likely range of values that key variables may take. Therefore, the need for sensitivity analysis should always be considered, and, in practice, dispensed with only in exceptional cases.

8.25 The calculation of switching values shows by how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking an option. This should be considered a crucial input into the decision as to whether a proposal should proceed. It therefore needs to be a prominent part of an appraisal."

8.26 We expect companies to consider sensitivity analysis with respect to key parameters, for example:

- Asset performance / health deterioration rates
- Ongoing efficiency assumptions
- Future demand growth / reduction
- Future energy scenarios
- Future utilisation of assets.

8.27 Sensitivity analyses should primarily focus on the preferred option, demonstrating that it is viable under a range of different potential scenarios. However, companies may also need to undertake sensitivities on other options, to provide comparators under different assumptions. For example, when testing the sensitivity of a key input assumption (eg capacity utilisation) it is appropriate to only consider the impact on the preferred option, however, when evaluating the impact of higher

carbon prices it is important to consider this impact on each of the options identified in the CBA.

Future pathways – Net Zero

8.28 It is crucial that companies demonstrate that the investments being proposed are consistent with Net Zero targets legislated by government. Companies must consider how the investments they are proposing align with different future pathways. Where there is a high risk of asset stranding relating to a specific pathway, for example in relation to the electrification of heat and/or transport, companies are required through the Business Plan guidance to propose how uncertainty mechanisms could be used to de-risk the investment. Further details on these requirements are provided in Chapter 11.

8.29 When considering the compatibility of proposed investments with Net Zero, companies should take into account factors such as:

- **Primary economic driver** – does the economic justification of the proposed investment rely strongly on environmental benefits? If so, how does this change when key parameters (i.e. carbon prices or utilisation) are adjusted?
- **Payback periods** – when does the investment payback? Does the investment primarily benefit existing or future consumers? What is the payback period in relation to the economic and technical life of the intervention? What is the benefit/cost ratio of the investment over the RIIO-ED2 period?
- **Pathways and end-points** - what assumptions have been made regarding the transition to net zero, in particular, companies should set out where these differ from the Climate Change Committee's Net Zero report. Of particular importance are the role and timing of the electrification of heating, transport, carbon capture and storage (CCS), hydrogen and biogas. Where the assumptions about the pathway are relevant to the investment, these should be identified.
- **Asset stranding risks** – is the asset at a heightened risk of being stranded? Is the proposed intervention compatible with different technologies (eg hydrogen) and pathways (eg electrification of heat)
- **Sensitivity to carbon prices** – would a higher carbon price assumption change the preferred option?

- **Future asset utilisation** – how would the needs case and economic justification for the asset be impacted should the number of customers on the gas network or the demand for gas fall significantly in the future?
- **Whole systems** benefits – are there wider benefits to the proposed investment that enable whole systems solutions or support other investments compatible with Net Zero targets?

8.30 Where companies identify a preferred option as potentially being highly sensitive to these types of factors, they are encouraged to undertake further sensitivity analysis to demonstrate their proposed investment is broadly compatible with Net Zero. Given the broad range of inputs that companies may choose to flex, we do not intend to be prescriptive about how companies undertake sensitivity analyses. In RIIO-ET2 we included a template containing high case CO2 price calculations for ease of use and consistency in this area and propose further development for RIIO-ED2.

Links to Business Plan

8.31 Companies should clearly show the links between their CBA, EJP, Business Plan and BPDTs. For example, the companies should show how the workload and cost forecasts underpinning the CBA feed through into the overall Business Plan proposals and BPDTs. We have included an area within the template for companies to reference which BPDT/Regulatory Reporting Pack table the CBA would fall under for the preferred option.

8.32 In the commentary document which will accompany the BPDT submission, DNOs should clearly state those cost activity areas which have been justified and supported by a CBA submission.

Consultation Question

COQ32: Do you agree with our proposed application of CBA in the appraisal of investment options for RIIO-ED2?

9. Engineering Justification Papers

Chapter summary

Engineering justifications are an important decision support tool as part of the justification in investment needs in RIIO-ED2. In this Chapter, we set out our requirements for their preparation within DNO Business Plans.

9.1 As part of their RIIO-2 Business Plan submissions, gas distribution and electrical transmission companies were required to provide EJPs, which set out the need, options, scope, costs and benefits for major projects or aggregated investment programmes aimed at improving asset health of existing equipment or providing increased capacity on the network. These EJPs underpinned the high-level outputs contained in the Business Plans by detailing the investments required to meet the proposed outputs and summarising the needs case and supporting evidence. We propose to retain the requirement for distribution network companies to produce Engineering Justification Papers.

9.2 In our Business Plan guidance we state that the EJPs should act as a robust decision support tool, open to scrutiny and challenge in conjunction with other appropriate means of justification for investment decisions. They should be transparent about options scope, and which risks, costs and benefits were considered by the network companies as part of the analysis to inform the need for intervention and their proposed solutions. In support of these aims, Ofgem published EJP templates and Guidance, issued as part of the overall RIIO-2 Business Plan Guidance. The EJP Guidance set out the expected content and format of the EJPs.

9.3 We propose to adopt a series of principles to guide the production of EJPs and focus the engineering submission. In developing our proposals for RIIO-ED2, we recognise that there are lessons to be learned from the transmission and gas distribution RIIO-2 price controls. In order to improve the focus of the engineering submission, to make best use of NARMs process data, and to reduce the burden on distribution network companies we propose that EJP's are governed by the following principles:

- EJPs will be part of the toolbox approach to justifying and assessing proposed investments and preferences for chosen strategies. This toolbox will include econometric assessment, NARM and assessment of the narrative presented in the overall Business Plan
- EJPs will be required for high materiality investment programs. They are required to allow scrutiny and challenge of Business Plan proposals. They are essential where investment proposals and volumes are significantly different from RIIO-ED1
- EJPs should not duplicate existing information and can cover a portfolio of assets or CBAs. The EJP submissions should be concise with EJPs providing additional information, to support the needs cases, costs & project timings where this may not be immediately apparent from consulting the Business Plan, BPDTs, CBA or NARM documentation alone
- EJPs should provide clarity on the decision making process. The EJPs should have a supporting narrative on data. This should detail what data is held, how it has been used and how the data and supporting analysis supports the investment decision.

9.4 We propose to retain the assessment framework for EJPs developed as part of the RIIO-2 process. In support of the assessment of the RIIO-2 T2 and GD Business Plans, Ofgem developed an EJP assessment framework in order to ensure that the EJPs meet the published guidance and provided sufficient evidence for the proposed investments. The assessment framework[33] considered the following:

9.5 The needs case for the investment: as per the EJP Guidance, this is demonstrated by the provision of an explanatory narrative and evidence to support the need for investment. Supporting evidence includes: asset condition and performance data; degradation projections; boundary power flow assessments; and, references to the outputs of other industry standard process or assessment methodologies.

9.6 The options development and assessment process: whether all credible options to meet the needs case have been identified, including do nothing or minimum intervention; whether the reasons for the rejection of options are presented and the rationale for rejection is clear. This ensures that the most relevant options are progressed to the Cost Benefit Analysis (CBA).

[33] Not all the engineering considerations will be applicable to all proposed investment programs.

9.7 Efficiency of engineering solutions: whether the chosen/preferred option is a proportionate solution to the identified needs case and the scope of the solution has not expanded beyond meeting the identified need without further justification. This process confirms that the associated CBA supports the solution proposed.

9.8 Investment delivery timings and volumes: whether the volumes proposed as part of a proposed solution can be delivered in the RIIO-2 period, and for asset replacement projects, whether they deliver a net risk reduction as measured by NARM.

9.9 Maturity of submitted costs: how well developed the project costings are - for example, whether they are supported by market tested tenders, or whether they are still just at desktop study/cost book stage.

9.10 We propose to update the EJP Guidance in line with the principles set out in the document and agree materiality thresholds ahead of the of the Business Plan submission.

Consultation Questions

COQ33: Do agree with our proposals to retain the requirement for DNOs to produce Engineering Justification Papers?

COQ34: Do agree with our proposal retain the assessment framework for EJPS developed as part of the RIIO2 process?

COQ35: Do agree with our proposal to adopt the principals outlined above to guide the production of EJPS and focus the engineering submission?

10. Data Assurance and Compliance

Chapter summary

In this Chapter, we set out our proposals on data assurance and compliance for RIIO-ED2.

Introduction

10.1 Data Assurance and Compliance is important for assessing Licensees price control forecasts and in monitoring performance within the price control. To enable DNOs to meet these requirements within RIIO-ED2, we expect that each DNO has appropriate systems, processes, and procedures in place. This includes ensuring that an appropriate data assurance activity for each submission is followed. The Data Assurance Guidance (DAG) overarching aim is to reduce the risk to customers and other stakeholders of any inaccurate reporting and misreporting by Licensees.

Background

10.2 It is incumbent upon DNOs to provide Ofgem with data that is complete, accurate and on time. The DAG places the onus firmly on Licensees to ensure the integrity of the Data submitted. Such activities include, for example, external audit, internal audit, director sign off and management review.

10.3 The level of the data assurance activity should be proportionate to the type of submission. Unless a data assurance activity is specified within the Electricity Distribution Licence for a particular submission, we would expect DNOs to undertake a data assurance activity that is based on an informed risk assessment.

Quality and timeliness of data

10.4 We are mindful of that fact that there are occasions where inaccurate or incomplete data may be submitted to us, despite the DNOs following appropriate data assurance activities. While it is prudent for Ofgem to give DNOs the opportunity to amend minor errors (that may have a material impact), in our view this should of necessity be time limited. Consistent and/or significant errors in the

data submitted to Ofgem will be taken into consideration when we assess the Business Plans.

10.5 We expect that where DNOs identify errors in their submissions that they inform us immediately. This applies to both recently submitted data and historical data.

10.6 As in RIIO-ED1, in RIIO-ED2 we intend to record for each submission if it was received on time and if it was complete and accurate. We will also record the number and timing of resubmissions. This record will be used to the take the appropriate action against poorly performing DNO, which may range from a warning letter to full enforcement action.

RIIO-ED2 and ongoing work

10.7 For RIIO-ED2 we propose to bring together all data assurance requirements under the one licence condition (rather than being throughout the licence). In doing so, this places greater focus on the importance of data assurance. Its overarching purpose is to reduce the risk, and subsequent impact of, inaccurate reporting and misreporting on all stakeholders, for example customers, Ofgem and the DNOs. The rationale is that each DNO will be able to determine a data assurance plan that is bespoke to their needs/issues (although Ofgem is likely to specify a minimum data assurance activity for particular submissions).

10.8 The current version of the DAG was published in January 2016. We intend to review the current guidance for RIIO-ED2 and for RIIO-2 in general. We are minded that any changes to the DAG should align to, and take advantage of, Data Best Practice as set out in the Modernising Energy Data section of the SMC Overview Document. Due both to the fact that data requirements and needs continually evolve, and because the people, practice and technology opportunities to make better use of data are also evolving, our ambition is to make these processes as flexible and adaptable to change as possible. We welcome any views on changes to the current guidance and proposals for RIIO-ED2.

Modernising Energy Data

10.9 We have set out our expectations for DNOs to modernise energy data in Chapter 5 of the SMC Overview Document. As our Data Best Practice guidance develops, it should create opportunities to improve the way the Data Assurance and Compliance processes are carried out.

10.10 How we use and exchange data with DNOs will also present opportunities to accelerate our progress in those areas and improve the data services we offer to our external stakeholders. That is because we regulate how DNOs use information but also benefit, as an end user, from the data produced by DNOs. For example, one of the main ways in which we use DNO data is to inform and evidence the decisions we make as part of the RIIO-ED2 price control. Together, our dual roles provide a clear opportunity for Ofgem to gain direct user insights about the performance of the data services DNOs offer and which we regulate.

10.11 In addition, we are also working to modernise the data services that Ofgem offer to external stakeholders; DNO network companies are one of the stakeholders who use data we have collected, processed and made available. We are keen to bring these activities together and work with the DNOs to ensure that, collectively, we take full advantage of our common effort to invest in and modernise the data services we offer to our stakeholders in order to benefit consumers.

10.12 In designing and operating the RIIO-ED2 price control, we will look at opportunities to modernise and improve the way data is processed and exchanged between Ofgem and DNOs. Achieving this goal will provide benefits to DNOs, Ofgem and stakeholders.

Our Proposal

10.13 We will continue to work with DNOs on data exchanges and processes can be improved. One example of a data use case is to improve data processing exchanges in RIIO-ED2 such as the Regulatory Instructions and Guidance (RIGs).

10.14 We, specific activities that we anticipate will be beneficial to include in those discussions and to improve the efficiency of regulatory processes, such as the RIGs are:

- creating robust metadata to ensure data are well described and understandable
- using better data management practices, for example, data dictionaries
- improving data standardisation and portability, such as with modern file formats as JavaScript Object Notation (JSON) and data processing tools like Python
- creating shared data models to unambiguously relate data to one another

- improving the practical aspects of data exchanges between Ofgem and DNOs, for example by delivering greater automation, seeking opportunities to self-service needs and potentially using Application Programming Interfaces (APIs)
- modernising data validation practices, such as by codifying data quality requirements into clear rules defined by open-source software scripts
- applying the Data Best Practice expectations to our shared processes, to achieve needs such as improving the openness of our work to other stakeholders

determining the most effective method of collaboration and sharing of responsibilities relating to these themes to ensure our collective use of data maximises cost efficiency and provides robustness of decisions for the benefit of consumers.

Consultation Question

COQ36: What specific activities and methods should be adopted to ensure the Data, Data Assurance and Compliance processes of the RIIO-ED2 price control are run as effectively as possible?

11. Uncertainty Mechanisms

Chapter summary

In this Chapter, we set out our proposals on managing uncertainty in RIIO-ED2 and allowing the price control to adapt to a range of different future scenarios.

Introduction

11.1 Forecasting costs and outputs with confidence for the duration of a price control is challenging. Uncertainty around the investment needed in the networks to facilitate net zero (or other decarbonisation) targets adds to this challenge, particularly for RIIO-ED2.

11.2 This uncertainty can arise for numerous reasons. The rapidly changing energy system and various potential decarbonisation pathways, particularly in relation to heat and transport, generate uncertainty around the future demand for electricity and the level of investment that will be required in the distribution networks. In turn, this affects whether and when a DNO needs to undertake an activity or make an investment, the amount of a specific activity they need to undertake, as well as the cost of that activity. Uncertainty over outputs that the DNO is required to deliver can also arise, for example, from changes in legislation or government policy.

11.3 Accordingly, forecasting future requirements brings with it a degree of risk that we provide expenditure allowances that are higher or lower than they actually need to be. There may also be a potential risk of stranding assets; this would occur where the demand for a network asset falls away after the original investment has been made, but consumers (both current and future) still need to pay for the original investment.

11.4 The move to a five-year price control for RIIO-ED2 reduces the period over which we need to make forecasts. However, even within a five-year period it is possible for there to be significant variation from baseline planning assumptions.

11.5 Uncertainty mechanisms allow us to make adjustments to a network company's allowance in response to changing developments during the price control period. There are four main types of uncertainty mechanism that we are using RIIO-2:

- **volume drivers** to adjust allowances in line with the actual volume of work delivered, where the volume of certain types of work that will be required over the price control is uncertain (but where the cost of each unit is stable)
- **re-opener mechanisms** to decide, within a price control period, on additional allowances to deliver a project or activity once there is more certainty on the needs case, project scope or quantities, or cost
- **pass-through mechanisms** to adjust allowances for costs incurred by the DNO over which they have limited control and that, in general, we consider the full cost should be recoverable (eg business rates)
- **indexation** to adjust allowances for costs that network companies have very limited control over, such as general price inflation or interest rates.

11.6 Using uncertainty mechanisms is important so that we do not damage incentives on the DNOs to be efficient, do not unnecessarily expose DNOs to risks outside of their control, or expose consumers to material forecasting risks at price control review.

11.7 In this chapter, we outline our proposed approach for dealing with forecasting risk during the RIIO-ED2 price control and the range of uncertainty mechanisms we are proposing. These cover several areas of uncertainty:

- uncertainty mechanisms to support substantive changes in external policy
- uncertainty mechanisms to align allowances with delivery
- uncertainty mechanisms for risks outside of the DNOs' control.

11.8 The background to some mechanisms are outlined in other parts of the Sector Specific Methodology Consultation. This includes the potential models for strategic investment and the Net Zero reopener (see Chapter 4 of the SMC Overview Document), which are driven by changes in government policy, and RPEs (see Chapter 6 of this document), which are managing risks outside of the DNOs' control.

Uncertainty mechanisms proposed for RIIO-ED2

11.9 Table 7 sets out a summary of the uncertainty mechanisms currently proposed for RIIO-ED2. Some of these are cross-sector in nature, applying to some or all of the other RIIO-2 price controls, while others are specific to RIIO-ED2

11.10 At this stage we may not have identified every potential mechanism that might be in the interests of consumers for inclusion. For example, we will need to consider the need for any additional uncertainty mechanisms that may arise as a result of the Access Significant Code Review (Access SCR).

11.11 The DNOs may also suggest additional uncertainty mechanisms as part of their Business Plans. Any additional uncertainty mechanisms proposed by the DNOs in Business Plans must be clear on the mechanism being proposed, the area of uncertainty it is expected to address, and must be justified in terms of their ability to better manage risk and deliver benefits to consumers.

Table 7: Summary of the uncertainty mechanisms proposed for RIIO-ED2

Name	Type of mechanism	Comparison to RIIO-1	Reference
Cross-sector mechanisms			
Ofgem licence fee	Pass-through	No change proposed	Chapter 11
Business rates	Pass-through	No change proposed	Chapter 11
Inflation indexation of RAV and allowed return	Indexation	Revised for RIIO-ED2	Finance Annex
Cost of debt indexation	Indexation	Options for change proposed	Finance Annex
Cost of equity indexation	Indexation	New for RIIO-ED2	Finance Annex
Real Price Effects	Indexation	Revised for RIIO-ED2	Chapter 6
Tax review	Re-opener	New for RIIO-ED2	Finance Annex
Pensions adjustment	Pass-through	Revised for RIIO-ED2	Chapter 11
Enhanced Physical Site security	Baseline allowance and/or re-opener	No change proposed	Annex 1, Chapter 8
Cyber resilience	Baseline allowance and/or re-opener	New for RIIO-ED2	Annex 1, Chapter 8
Net Zero	Re-opener	New for RIIO-ED2	Overview, Chapter 4

Name	Type of mechanism	Comparison to RIIO-1	Reference
Coordinated Adjustment Mechanism (CAM)	Re-opener	New for RIIO-ED2	Overview, Chapter 7
Specific to RIIO-ED2			
Strategic investment/Load related expenditure	Dependent on Model for strategic investment: could include volume drivers and/or reopener	New/reformed for RIIO-ED2	Overview, Chapter 4
Street works costs	Re-opener	No change	Chapter 11
Rail Electrification	Re-opener	Reform for RIIO-ED2	Chapter 11
Black start	Re-opener	New for RIIO-ED2	Annex 1, Chapter 8 and Chapter 11
Miscellaneous pass-through	Pass-through	No change	Chapter 11
Smart Meter interventions	Volume driver	No change	Chapter 11
Environmental legislation	Re-opener	New for RIIO-ED2	Annex 1, Chapter 9

11.12 Supporting information and questions around our proposed inclusion of the Net Zero reopener, CAM, options for strategic investment are presented in the SMC Overview Document. Proposals regarding environmental legislation and cyber and physical site security are provided in Annex 1 while key regulatory finance proposals, including debt, equity and indexation are set out in Annex 2.

Uncertainty mechanisms to support substantial changes in external policy

11.13 The following proposed uncertainty mechanisms are to support material changes in government policy which may lead to large changes in the level of DNO allowed revenues during the RIIO-ED2 period.

Net Zero re-opener

Net Zero	
Purpose	To provide a means to amend the price control in response to changes connected to the meeting of the Net Zero carbon targets that have an effect on the costs and outputs of network licensees. This would introduce an increased level of adaptability into the RIIO-2 price control.
Benefits	To enable us to reset allowances and other elements of RIIO-ED2 in order to align the price control with Net Zero targets.

11.14 We are proposing the introduction of a Net Zero re-opener mechanism into each of the RIIO-2 price controls, including RIIO-ED2. Further detail on our proposal and rationale are provided in Chapter 4 of the SMC Overview Document. We do not expect the Net Zero re-opener to be used where other mechanisms are applicable.

Coordinated Adjustment Mechanism (CAM) re-opener

Coordinated Adjustment Mechanism	
Purpose	To reallocate activity and associated allowances from one licensee's price control to another.
Benefits	To protect consumer interests by enabling the reallocation of responsibility for, and revenue associated with, an output/project from one licensee to another licensee who can deliver that project/output with greater benefits for the consumer.

11.15 We propose the CAM re-opener to introduce more fluidity between individual networks' price controls by enabling activities to be removed from one licensee's price control an an alternative added to another licensee's price control, where doing so will result in a benefit to the consumer. This should enable the party best placed to deliver greater benefits for consumers to undertake the work, wherever the original responsibility lay in the system. Further detail on our proposal and rationale are provided in Chapter 7 of the Overview document.

Cyber Resilience

Cyber Resilience	
Purpose	A mid-period re-opener to allow DNOs to recover costs associated with new risks/threats and statutory/regulatory requirements.
Benefits	To ensure that DNOs are funded efficiently to implement potential new safety requirements.

11.16 All network companies are increasingly dependent on information and operation technology, and this will only increase as the networks become smarter, more automated and more digitised. It is, therefore, crucial that the DNOs ensure their systems and processes are protected and can withstand the ever-evolving landscape associated with cyber risk.

11.17 As set out in Chapter 8 of Annex 1, we propose to align the approach to cyber security in RIIO-ED2 with the approach taken in the transmission and gas distribution RIIO-2 price controls (we do not currently propose to have a re-opener in year one of the price control). For both Cyber Resilience Information Technology and Cyber Resilience Operational Technology (OT), we propose to include a mid-period re-opener mechanism to deal with uncertainty covering new cyber resilience activities, new risks or threats, as well as new statutory or regulatory requirements that are not subject to baseline allowances. We will consult on any materiality threshold for these re-openers as part of the Draft Determinations.

Tax Review

Tax Review	
Purpose	To introduce a tax review mechanism that would enable us to formally review and, if necessary, to adjust the companies' tax allowance during the course of RIIO-ED2.
Benefits	This review mechanism would enable us to establish whether the notional tax allowance remains appropriate, if any information comes to light during RIIO-ED2, which could indicate otherwise

11.18 In our RIIO-2 draft determinations for gas distribution and transmission, we introduced a new Tax review uncertainty mechanism that would enable us to formally review and, if necessary, to adjust the companies' tax allowance during the course of RIIO-2. We propose to introduce the same uncertainty mechanism for RIIO-ED2.

Blackstart

Black start	
Purpose	A re-opener to recover the costs of workload changes in response to changes in the mandatory resilience period.
Benefits	To ensure that DNOs are funded to implement potential new resilience requirements.

11.19 Black start refers to the series of actions necessary to restore electricity supplies to customers following a total, widespread or partial shutdown of the GB electricity system. It requires distribution substations to be re-energised and reconnected to each other in a controlled way to re-establish a fully interconnected system.

11.20 There have been delays in the publication of the black start guidance which is to be provided by the Secretary of State. The mandatory resilience period, which is currently set to three days, is being reviewed with the potential extension of the extension of the resilience period to seven days. Changes to the requirements could lead to significant variation in costs. The extension of the resilience period would increase the level of fuel required for generators and also the volumes of batteries required at substations that need to be made resilient. Ofgem, BEIS and the ESO are also currently working to develop the policy around what are the right Black Start capabilities and resilience.

11.21 We propose a re-opener to cover the costs of workload changes in response to changes in the mandatory resilience period or additional activities that may arise from new obligations once the Black Start standard is in place, since this uncertainty is faced by all DNOs. Should guidance be released in a timeframe that allows for costs to be included in baseline allowances we expect to remove this uncertainty mechanism.

Enhanced Physical Site Security

Enhanced Physical Site Security	
Purpose	A re-opener to recover costs associated with compliance with physical site security requirements.
Benefits	To ensure that DNOs are funded efficiently in line with requirements.

11.22 RIIO-ED1 included the Enhanced Physical Site Security reopener. This relates to sites which have been designated by the Centre for the Protection of National

Infrastructure (CPNI) as requiring enhanced security. Working with the responsible government department, ie the Department for Business, Energy and Industrial Strategy (BEIS), DNOs agree and implement the Physical Security Upgrade programme (PSUP), which involves measures required to enhance physical security at Critical National Infrastructure (CNI) sites.

11.23 Given likely uncertainty around the list of sites that require security upgrades, and the associated scope of works required at each site, we propose to retain this reopener for RIIO-ED2. This will allow DNO revenues to adjust in response to any government mandated changes to the scope of work required during RIIO-ED2. We currently propose to have two windows for this reopener: one within the price control (around the mid-point), and one at the end.

Environmental legislation

Environmental legislation	
Purpose	A re-opener to recover costs associated with compliance with environmental legislation
Benefits	To ensure that DNOs are funded efficiently in line with changes to environmental policy and legislation

11.24 During the RIIO-ED1 period, significant environmental developments have occurred which are reflected in the need for proposed changes for RIIO-ED2. In addition to Net Zero targets, there were new requirements on persistent organic pollutants, accelerated Polychlorinated Biphenyls (PCB) removal and the introduction of Ultra Low Emissions Zone. There has also been increasing awareness of the impact of business activity on the environment, and the climate, in public discourse. This is evident in many local authorities declaring 'climate emergencies' through the course of 2019.

11.25 Chapter 9 of Annex 1 sets out our proposed approach to environmental outputs and incentives during RIIO-ED2. Given the likelihood of further changes in environmental policy and legislation, we propose to include a reopener in RIIO-ED2 to respond to areas that may require a material change in the approach to DNOs' Environmental Action Plans (EAPs). We consider that the proposed environmental framework proposed in Annex 1, combined with the environmental legislation re-opener, should provide DNOs with sufficient flexibility to develop and deliver ambitious initiatives in a way that delivers benefits to the environment and provides value for money for consumers.

Uncertainty mechanisms to align allowances with delivery

Rail electrification

Rail electrification	
Purpose	A re-opener that allows DNOs to recover costs, where appropriate, of diverting lines associated with the GB rail electrification programme.
Benefits	To ensure that DNOs are funded efficiently for additional efficient costs in line with delivery of rail electrification projects.

11.26 RIIO-ED1 includes a reopener, which allows the DNOs to recover costs (other than those recoverable from a third party) of diverting electricity lines as a result of Network Rail's electrification programme.

11.27 There remains a strong policy commitment from Government to rail electrification through the existing railway control period (Control Period 6) to 2024 and this is expected to continue in the subsequent control period from 2024 to 2029. Given the uncertainty on the detailed implementation of these projects, we propose retaining this reopener for RIIO-ED2 and revise it to expand its current limitation to costs associated with Network Rail electrification projects to include projects from companies that may not have a connection with Network Rail.

Uncertainty mechanisms for areas outside of DNOs' control

DNO pass through mechanisms	
Purpose	Where DNOs have costs that are substantially outside their control we use pass-through mechanisms. For these items, any change in the DNOs' costs is recovered fully from customers.
Benefits	Protect the companies from costs that are outside their control

11.28 Where DNOs have costs that are fully outside their control we use pass-through mechanisms. For these specific areas, any change in the DNOs' costs are recovered fully from consumers.

11.29 For RIIO-ED2 we are proposing to retain the pass-through items listed below in line with the RIIO-ED1 arrangements:

- **Ofgem licence fee** - To recover the actual cost of Ofgem licence fees
- **Business rates** - An adjustment of the up-front allowance to the actual costs incurred, subject to the relevant valuation agency revaluing any of the

licensee's assets for the purposes of setting business rates and the DNO demonstrating that it has taken appropriate actions to minimise the valuations

- **Transmission connection point charges** - Charges from a transmission licensee for the connections between the DNO's network and the transmission system for assets installed prior to the RIIO-ED2 price control, refurbishment or any work not resulting from a DNO requirement
- **Smart Meter IT costs** - Efficient information technology costs to enable the DNO to use smart meter data on its network
- **Pension deficit repair mechanism** – to reset allowances for the established pension deficit following a reasonableness review
- **Ring fence costs** - Costs incurred directly from complying with additional regulatory requirements relating to modifications to the ring fence conditions in network operator licences
- **Data Communications Company (DCC) fixed costs** - Costs/fees that will be charged to the DNOs for use of the DCC services. These are called Smart Meter Communications Licensee costs in the licence.

Consultation Questions

COQ37: Do you agree with our proposed uncertainty mechanisms and their design?

COQ38: Are there any other uncertainty mechanisms that we should consider? If so, how should these be designed?

RIIO-ED1 Uncertainty Mechanism Proposed for Removal in RIIO-ED2

11.30 This section sets out the RIIO-ED1 uncertainty mechanisms that we are proposing to remove for RIIO-ED2.

Uncertainty mechanisms we propose to remove for RIIO-ED2

Name	Type of mechanism at ED1	Proposed treatment of costs for ED2
Load Related Expenditure	Re-opener	Dependent on model for strategic investment
High Value Projects	Re-opener	Dependent on model for strategic investment
Link Boxes	Re-opener	NA
Subsea Cables	Re-opener	NA
Innovation Rollout Mechanism	Re-opener	NA

Load-Related Expenditure (LRE) and High Value Projects

11.31 A reopener was included in RIIO-ED1 to help manage the uncertainty associated with load related expenditure. A separate High Value Projects reopener to cover schemes of works that could not be included baselines allowances due to uncertainty in their delivery.

11.32 As set out in Chapter 4 of the Overview document, there is significant uncertainty over the likely investment requirements during the RIIO-ED2 period to meet new sources of demand, particularly for transport and heat purposes. We are consulting on a range of potential approaches to strategic investment, some of which may include the use of uncertainty mechanisms.

11.33 At this stage we do not expect to retain either of these mechanisms in their current form. Our approach will be dependent on the wider strategic approach to investment and supporting pathways to Net Zero in RIIO-ED2.

Link Boxes

11.34 This re-opener mechanism purpose was to provide network companies with additional funding to mitigate the risk of link boxes exploding under pavements. Link boxes are switching points used by the distribution networks. Link box safety became a high profile issue due to a small number of incidents involving explosions under pavements due to water ingress. We recognised that this was an

important issue and implemented a re-opener. The risk has been addressed in RIIO-ED1 and we propose the removal of this mechanism.

Subsea cables

11.35 This re-opener mechanism purpose was to provide Scottish Hydro Electric Power Distribution (SSEH) with additional funding to protect subsea cables should it be required to do so following the publication of the National Marine Plan inn 2015. We recognised that this was an important issue and implemented a re-opener. The risk has been addressed in RIIO-ED1 and we propose that future protection costs are included in Business Plans as ex ante costs. We propose the removal of this mechanism.

Innovation Rollout Mechanism

11.36 This re-opener mechanism purpose was to provide network companies with additional funding to rollout proven innovation, if we approve the innovation. Our Framework Decision for RIIO-ED2 confirmed that this was to be removed from the innovation programme. Further information is provided in Chapter 4 of the Overview Document.

Consultation Question

COQ39: Do you agree with our proposed removal of the above uncertainty mechanisms for RIIO-ED2?

Approach to common design parameters for re-openers

11.37 When deciding whether to accept any uncertainty mechanisms proposed by companies' in their Business Plans we propose to build on our approach to assessment from RIIO-ED1, and the recent Draft Determination proposals for the RIIO-2 price controls for transmission and gas distribution. We set out our proposed approach below, including our consideration of consumer interests and how they might be designed to mitigate potential downside risk. We also set out whether the need for a mechanism is sufficient to justify its inclusion within the price control.

11.38 In the RIIO-2 Draft Determinations for transmission and gas distribution, we proposed that, should we decide that the use of re-opener mechanisms is

appropriate to deal with specified uncertainties, we would apply a set of common design parameters. We consider these parameters should also apply to RIIO-ED2, since the framework for re-openers (and the nature of the uncertainties they are designed to address) is broadly comparable.

Common design parameters for re-openers	
Purpose	To provide clarity on the parameters and process relating to re-openers. Re-openers provide the opportunity for network companies to request amendments in allowances, outputs, or delivery dates during the price control, when there is more certainty.
Benefits	Protects both consumers and network companies from uncertainty around requirements, unknown and emerging risks/threats, new regulatory requirements and technology changes.

Background

11.39 In line with the RIIO-2 proposals for the transmission and gas distribution sectors, we propose to use re-opener mechanisms, where appropriate, to set or adjust allowances once there is more certainty on price and quantity. We are proposing a set of common design parameters for re-openers. There may be circumstances where this approach may not be suitable and, where this is the case, we will explain why it may be more appropriate to take a different approach.

11.40 We propose that the Authority may make changes to outputs or expenditure allowances using re-openers. For the avoidance of doubt, allowances may be increased or decreased.

Consultation position

Re-opener parameters	Consultation position
Re-opener application windows	Bring forward re-opener application windows from May to January. Reduce re-opener application window from one month to one week (ie last week of January).
Application requirements	Provide additional detail and guidance where possible in licence conditions and guidance.
Authority triggered re-opener	Authority can trigger a re-opener at any time during price control.

Re-opener parameters	Consultation position
Materiality threshold	For each individual re-opener application, set a materiality threshold such that we will only adjust allowances if the changes to allowances resulting from our assessment, multiplied by the TIM incentive rate applicable to that licensee, exceeds a threshold of 1% of annual average base revenues (as set out in Final Determinations). Allow for aggregation of some re-openers subject to specific criteria.

Rationale for consultation position

Application Windows

11.41 Consistent with RIIO-ED1, we are proposing that licensees may only submit a re-opener application during specified periods during RIIO-ED2. Specified application windows provide more certainty for both network companies and Ofgem to prepare for application submissions.

11.42 We propose that the relevant Regulatory Year(s), in which the re-opener application window is open, is decided for each individual re-opener mechanism.

11.43 We propose to reduce the application window from one month to one week. We consider that a shorter window will provide further certainty on when applications will be submitted, allowing relevant parties to better plan their resources. We do not think a shorter application window will significantly affect the ability of licensees to make applications, and we propose to ensure the parameters of application window are clearly defined.[34]

11.44 We propose to bring the re-opener application windows forward, from May, to January. Based on experience in RIIO-ED1, we consider this will allow a longer lead-time to clarify questions or gather further information from licensees. It will also ensure that Ofgem is more likely to be able to make informed and robust decisions in time for that year's Annual Iteration Process (AIP), which is our aim.

11.45 We may reject any re-opener application that does not contain all the information necessary for us to make an informed decision on the contents of the application.

[34] In RIIO-ED1, the parameters of application window(s) are set out in the Special Licence Conditions. We expect to continue this approach in RIIO-ED2, specifying the relevant windows in the RIIO-ED2 licence.

Application Requirements

11.46 We propose to provide additional information in licence conditions and in guidance on:

- the level of detail and evidence required in re-opener applications
- any requirements or obligations on network companies when submitting re-opener applications (eg requirement to publish their re-opener application publicly, provide assurance of completeness)
- any other considerations when making re-opener applications
    - We propose to consult on guidance we produce and any subsequent amendments, before it comes into effect, through licence drafting working groups.

Authority Triggered Re-openers

11.47 We propose a provision for the Authority to trigger a re-opener subject to the same scope and materiality thresholds as are applied to applications made by a licensee.[35]

11.48 For RIIO-2, we propose that the Authority would be able to trigger a re-opener at any time during the price control. We consider that the Authority being able to trigger this re-opener at any point gives greater flexibility when compared with having a fixed window, meaning the Authority can react to significant changes caused by external factors (such as government policy changes in relation to heat) and re-assess the necessary outputs, expenditure, and deliverability. A flexible window may also act as a 'fail safe' if other re-openers are unable to be triggered.[36]

11.49 The alternative to having a flexible window for the Authority to trigger such a re-opener would be a fixed window. While this gives certainty of when the re-opener can be triggered and outputs and/or expenditure adjusted, it introduces a risk that material changes affect the requirements on DNOs after the window has passed, without the ability to adjust DNOs' allowances. We also believe that, having learned lessons from the Mid-Period Review (MPR) process in the RIIO-1 price

[35] We note that this was the case for GT, GD, and ET sectors during RIIO-1. However, for ED-1, we recognise that a provision for the Authority to trigger a re-opener was not always available.
[36] Though the scope and materiality threshold of any given re-opener would be the same, irrespective of who triggers it.

controls, it is important not to restrict the scope of such a reopener to ensure material changes to DNOs' activities and revenues can be made where appropriate.

11.50 We set out below the proposed process we would follow when implementing an Authority triggered re-opener:

- The Authority will become aware of information or events that lead to it considering triggering a re-opener
- If there is not yet sufficient information to trigger a re-opener, the Authority may use its existing information gathering powers[37] to obtain more information.

11.51 The Authority will follow the proposed process, which will be set out in the licence:

- publish a draft direction adjusting allowances and/or outputs as appropriate
- consult for no less than 28 days.

11.52 After considering all relevant information, make a decision including a direction if any changes are being made to outputs or allowances.

11.53 When we request information, we will be transparent and clear in setting out the evidence we expect from licensees. We will also be considerate of the proportionality in the level of data and other evidence requested, and the timeframe within which this must be submitted.

11.54 When we are considering, or decide to trigger a re-opener, we will be transparent as to our reasons. We will only trigger a re-opener if we consider that one of the triggers (set out in the licence condition) has materialised.

Materiality Threshold

11.55 For each re-opener, we propose to set a materiality threshold such that we will only adjust allowances if the changes to allowances resulting from our assessment, multiplied by the TIM incentive rate applicable to that licensee, exceeds a threshold of 1% of annual average base revenues (as set out in Final

[37] The Authority may gather information under powers set out in section 47A Electricity Act 1989 and Condition 6 of the Electricity Distribution Standard Licence Conditions.

Determinations). We propose to apply the same threshold to individual re-openers triggered by the Authority.

11.56 Our proposed materiality threshold level provides a balance to ensure network companies and consumers are protected from significant variations in expenditure over the price control, while also ensuring network companies manage non-material variations in expenditure, mitigating the regulatory burden associated with assessing myriad small cost claims from the network companies.

11.57 As in RIIO-1, we propose an aggregation process is available for some re-openers, subject to specific criteria, to meet the materiality threshold. We recognise that there may be circumstances in which a number of individual re-openers may fail to meet the proposed common materiality threshold,[38] but cumulatively may have a material impact.

11.58 We propose that a re-opener can be considered for an aggregation process if all of the following criteria are met:

- each individual re-opener application must exceed a minimum individual materiality threshold, once the changes to allowances resulting from our assessment are multiplied by the TIM incentive rate (this would be lower than the 1% of annual average base revenues threshold referred to in paragraph 11.55 - eg 0.5% of annual average base revenue)

- when re-opener applications are aggregated, the changes to allowances resulting from our assessment, multiplied by the TIM incentive rate exceeds a higher threshold (eg 3% annual average base revenue)

- any re-opener that exceeds the proposed common materiality threshold (1% of annual average base revenues) for individual re-opener applications by itself,[39] is excluded from the aggregation process.

Consultation Question

COQ40: Do you agree with our proposed common approach for re-openers being applied to RIIO-ED2?

[38] 1% of annual average base revenue as set in Final Determinations.
[39] 1% of annual average base revenue as set in Final Determinations.

12. Increasing competition

Chapter summary

Competition in the design and delivery of energy networks is a central aspect of RIIO-ED2. It has a key role to play in driving innovative solutions and efficient delivery that can help us meet decarbonisation targets at the lowest possible cost to consumers.

In our RIIO-ED2 Framework Decision, we confirmed our intention to increase the use of competition where it is in the interests of consumers. This chapter sets out our proposals for how "native", "early" and "late" competition can feature in the RIIO-ED2 price control.

Introduction

12.1 Ofgem's duties and regulatory stances include promoting effective competition where this will provide better value for consumers.[40] In addition to driving cost efficiencies on specific projects, introducing new forms of competition to RIIO-ED2 could facilitate new entrants, drive innovation and introduce new technologies, create access to new sources of finance, and reveal new information to allow more accurate benchmarking in future.

12.2 The proposals in this chapter concern the introduction of two forms of competition: early competition and late competition. Early competition can be used to facilitate system planning, ie run prior to the project design process to reveal the best idea to meet a system need. Alternatively, once an idea for meeting a system need is specified and sufficiently developed (eg secured planning consent), there can be competition for the delivery of that project (late competition), to optimise financing, construction and operations costs.

12.3 There can be benefits to consumers from different forms of competition being present throughout the electricity distribution sector. This can be delivered through the market by individual DNO's procurement practices (we refer to this as 'native competition'), DSO functionality and flexibility services, or competition between DNOs and Independent DNOs (IDNOs). However, for projects that ultimately meet our criteria for early and late competition, we consider that

[40] You can see more detail on Ofgem's regulatory stances here; https://www.ofgem.gov.uk/publications-and-updates/ofgems-regulatory-stances

greater intervention from Ofgem in designing and requiring competitions can help lead to increased consumer benefit.

Summary of RIIO-ED2 Framework decisions

12.4 In our RIIO-ED2 Framework Decision, we indicated that we would seek to ensure there is effective native competition in the RIIO-ED2 price control and expressed the intention to extend the role of early and late competition where it is appropriate and provides better value for consumers.

12.5 We stated that we would consult, and if required carry out further work, on how we might identify projects suitable for competition within the electricity distribution sector, in addition to deciding on the most appropriate models for late and early stage competition. In particular, we noted that there could be major benefits from developing earlier forms of competition, especially in how these might drive flexibility-led solutions that do not require new network infrastructure to be built.

12.6 We also previously stated in our RIIO-2 Sector Specific Methodology Consultation[41] in the Transmission and Gas Distribution sectors that we expect the new, separable and high-value criteria we have developed for identifying projects for late competition in Electricity Transmission are likely to be applicable across other sectors, including electricity distribution. We noted that we would continue to keep the criteria under review.

Native competition

12.7 The status quo model for competition is native competition, incentivised by the totex incentive mechanism. Here, the regulator sets a cost allowance to meet an identified system need (e.g. a network constraint). A network operator then faces incentives to minimise the costs associated with meeting that system need, including using competitive processes and procurement where appropriate to find the most efficient solution. Any savings are ultimately shared with the consumer under the totex incentive mechanism.

[41] https://www.ofgem.gov.uk/publications-and-updates/riio-2-sector-specific-methodology-consultation

12.8 We believe there is scope for network companies to go beyond procurement regulations to which they are subject to operate their network efficiently and share savings with consumers.

12.9 For the other RIIO-2 sectors, we have incentivised companies to produce competition plans that demonstrated they would undertake native competition in line with a set of best practice principles. We assessed this as a minimum requirement within the Business Plan Incentive.

12.10 With the changing electricity distribution sector, flexibility offers an alternative to traditional network reinforcement and it is therefore increasingly important for DNOs to consider a wide range of solutions via a competitive process. As detailed within Chapter 6 of the Overview document, we are proposing to introduce additional requirements for companies to procure flexibility in the system and a DSO incentive.

12.11 We believe flexibility and a DSO incentive work to incentivise companies' native competition. We do not believe there would be additional benefit in replicating the approach to native competition adopted in the other sectors by assessing native competition within the Business Plan Incentive.

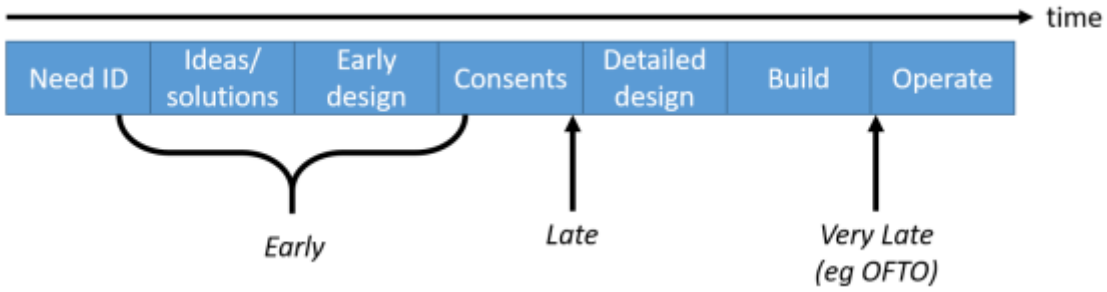
Proposals to introduce further competition through early and late competition

12.12 As we decided in our RIIO-ED2 Framework Decision, we intend to utilise early and late competition that goes beyond the native competition arrangements taken forward by DNOs, to deliver benefits for consumers in the design and delivery of projects to meet certain system needs. This would most likely be the case where projects meet certain criteria, depending on the competition model to be used. Where these criteria are met, we consider that there are likely to be benefits to consumers from using competitions to determine parties to design, build, finance and operate such projects. This includes using competition to provide an opportunity for providers of flexibility solutions to demonstrate their value against more traditional network solutions on a longer-term basis.

12.13 Network competitions can be run at different stages of a typical project development cycle. The below figure presents the competition models mapped against the development process of typical projects, from identification of the

need to the eventual operation of the asset. Where we discuss early competition below, this can include competitions being run up until the consenting phase.

Figure 8: Competition model mapped against typical project development process



12.14 We consider that the approach to early and late model competition in RIIO-ED2 should at this stage include, amongst other things, a consideration of how projects are identified and selected to undergo competitive processes; and where relevant the form of competition model to be used, and when and who would run the competition.

Early competition

12.15 We consider that early competitions could produce benefits for consumers by revealing new or innovative ways of solving network problems (such as network constraints) and avoiding expensive reinforcement costs (for instance, by using flexibility providers or utilising other non-network solutions). Even where traditional 'build' solutions are the only realistic option, early competitions can play a role in revealing the best ways of designing, constructing, financing, operating or maintaining network assets.

12.16 We note that there are some similarities with the activities that might be included in DSO functions within the ED sector, and we would welcome views on these. However, our initial view is that the form of early model competition described above could potentially enable additional benefits over and above those which may be possible with increased DSO functionality by ring-fencing an entire project to undergo a single, joined-up competition, allowing innovation and competition at all stages of project development.

12.17 Additionally, the value and/or time horizon of projects considered by the DSO may not be suitable for early competition. The DSO is likely to consider projects related

to the everyday operation of the network, whereas early competition is more likely to be applicable to high value projects and/or projects that are needed to address a longer-term need on the electricity system.

12.18 In our Methodology Decision for the gas and electricity transmission sectors in RIIO-2, we requested the Electricity System Operator (ESO) to produce an Early Competition Plan (ECP) by February 2021. We later formalised our request and set out our minimum expectations for what the plan should include in our September 2019 letter.[42]

12.19 The ECP will need to set out how competition could be introduced into the design, build and ownership of network assets during the early stages of project development – i.e. prior to the detailed design, surveying and consenting phases. The ECP will also consider what role, if any, the ESO might have in facilitating early competition in the electricity distribution sector.

12.20 Due to the technology- and sector-agnosticism inherent to early competition (that is to say, a potential multiplicity of solution types would usually be a prerequisite for running an early competition) we might expect that at least part of the ECP might be applicable to the electricity distribution sector. To that end, we note that the ESO is engaging with a wide variety of stakeholders across all sectors through workshops, updates, and a current consultation.[43]

12.21 Ofgem will consider the ECP once finalised. This would be expected to include consideration of roles and responsibilities of key parties and the extent to which the proposals in the ECP may be relevant beyond electricity transmission. An impact assessment on early competition for the electricity distribution sector will be carried out after the completion of the early competition plan.

Identifying projects for early competition

12.22 We expect the ECP to consider the criteria used for selecting projects suitable for early competition. The ESO has set out within its current consultation on the ECP[44] further details on the sorts of projects that it considers might be suitable for early model competition.

[42] https://www.ofgem.gov.uk/system/files/docs/2019/09/electricity_system_operators_early_competition_plan_letter_0.pdf
[43] https://www.nationalgrideso.com/document/172476/download
[44] https://www.nationalgrideso.com/document/172476/download

12.23 Our thinking as set out in our Sector Specific Methodology Decision (SSMD) for RIIO-GD2, GT2 and ET2 was that such criteria might include value (our initial placeholder value was £50m expected capital expenditure), and might also include the contestability of solutions (ie whether or not there are different potential solutions to a network problem). We think these criteria may also be broadly applicable for electricity distribution. For example, there could be non-traditional flexibility alternatives that may be able to defer or replace network reinforcement.

12.24 Our thinking in the SSMD for RIIO-GD2, GT2 and ET2 was that additional criteria could also be considered, for example time-criticality (running competitions takes time which must be factored in); and certainty of system need (running competitions too early may mean system requirements change by the time a solution is found).

12.25 Along with consultation responses, we also propose to consider our ongoing engagement with the ESO as they continue to develop the ECP, as additional criteria for identifying suitable projects for early competition may emerge.

Late model competition

12.26 We consider that late model competitions can produce benefits for consumers by reducing the costs of project construction and operation and introducing innovation into project delivery, as well as new sources of labour and capital. From a cost reduction perspective, this includes reducing financing costs as well as capital and operational costs. Running competitions at this stage of a project's development can allow efficiencies through:

- Establishing and locking in long-term debt and equity rates, as well as gearing, that reflect current market rates for financing a project
- Establishing economic and efficient capital and operational costs that reflect current market rates; and
- Enabling efficient costs for a project through a project-specific risk allocation.

12.27 There are costs of introducing late model competition, from designing the regulatory model and commercial framework in general; and the pre-tender and tender costs for the entity running the competition and for each bidder per competition ran. However, we consider that these costs are likely to be lower than the benefits described above if the late model competitions are only applied to

projects that meet certain criteria. We set out further detail on this in our draft RIIO-ED2 Late Competition Impact Assessment[45] where we also set out why we do not currently consider that late model competition introduces any material additional costs associated with managing interfaces or project delay or non-delivery, relative to the current status quo arrangements.

Models of late competition

12.28 We are proposing to consider for RIIO-ED2 the same three late competition models as we decided could apply in the other sectors.[46] These three models are:

- Competitively Appointed Distribution Owner (CADO) model: a competition, run by Ofgem or another independent party, to determine the entity to be awarded a distribution license[47] by Ofgem to finance, construct and operate the distribution assets/project subject to the tender exercise. The CADO model would be expected to be closely based on the CATO model being developed in electricity transmission. The tender revenue stream determined through the competition (ie the cost allowances for delivering the project) would be reflected in the licence and cover an extended period of operation of the assets (for example 25 years). The licence would also set out the relevant obligations and incentives on the licensee.
- Special Purpose Vehicle (SPV) model: an SPV would be appointed to finance, construct and operate the distribution asset, following a competitive tender run by the incumbent DNO (ie the DNO responsible for the assets/project). Unlike in the CADO model, the incumbent DNO would retain the regulatory responsibility under its licence for delivering the project, but the DNO would enter into a long-term contract with the SPV for delivering the project. The cost allowances for delivering the project would be reflected in the contract and cover an extended period of operation of the assets (for example 25 years) - these terms would also be reflected in the incumbent DNO's licence. Entering into a contractual partnership to deliver such projects efficiently may benefit the incumbent network companies (for example where the project might constitute a significant portion of their overall RAB), as well as offering value to consumers. The SPV model is similar to the 'Direct Procurement for

[45] This will be published shortly after July 30 2020
[46] See Appendix 2 with fuller details regarding these competition models
[47] In the case of an incumbent DNO winning the competition, this could result in an amendment to the incumbent's current licence.

Customers' model being implemented by several licensees in the water sector, in collaboration with Ofwat.[48]

- Competition Proxy Model (CPM): Ofgem would set allowed revenues for the project that they consider would have resulted from an efficient competition for construction, financing and operation of the distribution assets/project, to cover an extended period of operation of the assets (for example 25 years). Benchmarks would be used to set financing costs, and an Ofgem-run cost assessment process would be used to determine capital and operational cost allowances.

12.29 While we consider the above models, developed in the context of the electricity transmission sector, are likely to be broadly applicable to electricity distribution, we will continue to work to finalise the details of the models to reflect any specific additional or different requirements in electricity distribution. Please see Appendix 2 for some of our early thoughts on the applicability of the above late competition models to the electricity distribution sector.

12.30 Whilst we recognise there are differences in the work undertaken by DNOs relative to TOs, we see no reason why, in principle, these models cannot be applied to the electricity distribution sector and deliver equivalent benefits to consumers. We will continue to work with stakeholders to ensure that these models can be applied to electricity distribution in a manner that maximises the likely benefits for consumers.

Identifying projects for late competition

12.31 We consider that late model competitions are likely to deliver benefits to consumers for projects that meet certain criteria. In electricity transmission, where we originally developed the criteria for which projects would be suitable for late model competition, we decided that projects should be new, separable and high value, as defined below:

- New – a completely new asset or a complete replacement of an existing asset.

- Separable – the boundaries of ownership between these assets and other (existing) assets can be clearly delineated. Assets do not need to be

[48] https://www.ofwat.gov.uk/wp-content/uploads/2020/02/DPC-Con_Appendix-2_DPC-Briefing-Note.pdf

electrically contiguous or electrically separable from other assets to be considered separable.

- High value – a threshold set at £100m of expected capital expenditure of a project, at the point of our initial assessment of whether the project meets the criteria for competition. The £100m threshold will be a fixed nominal value and not indexed to a reference year, and project value will be assessed in the price base of the year of the assessment.

12.32 While we originally developed the criteria in the context of electricity transmission, the underlying principles behind the criteria also apply for identifying projects for late model competition in electricity distribution. This position is consistent with our view, as set out in paragraph 12.30, that the late competition models developed in the context of electricity transmission are also likely to be applicable to electricity distribution. However, a final decision on these criteria in the context of electricity distribution has not yet been made.

12.33 In addition to the definitions of the criteria set out above, it is also necessary to consider how the criteria could be applied in order to identify projects suitable for late model competition. This requires consideration of how projects come forward to be considered for late model competition (ie how the potential project pipeline is identified) and the arrangements for applying the criteria to any such projects in order to determine whether they are suitable for late model competition.

12.34 In terms of identifying the possible project pipeline, there are several potential ways to identify projects to be considered against the criteria in electricity distribution:

- In electricity transmission, the Network Options Assessment (NOA) is one way in which projects that may be suitable for competition are identified (the ESO gives its view on whether the projects meet the competition criteria). It may be possible for the NOA to be extended to cover some distribution projects, such as 132kV cables.

- We could assess whether a project meets the criteria for competition at the same time as considering the needs case for the project.[49]

[49] This is the approach taken in electricity transmission to 'Strategic Wider Works' projects in RIIO-T1 and a similar approach is proposed for 'Large Onshore Transmission Investment' projects in RIIO-T2.

- Existing processes such as DNOs' Distribution Future Energy Scenarios (DFES) that outline the range of credible futures for the growth of the distribution network could be enhanced to help identify suitable projects.

12.35 In line with what we did for transmission and gas sectors, we propose to ask DNOs to flag in their RIIO-ED2 Business Plans any projects that are above £100m and to set out any reasons why such projects do not meet the other criteria for late competition.

12.36 In terms of the arrangements for applying the criteria to projects in order to determine whether they are suitable for late competition, in electricity transmission, we developed approaches for 'packaging' projects. Although we expect that electricity distribution projects will be packaged naturally through their relevant identification routes, we consider that we may need to occasionally vary the packaging of projects where appropriate to ensure that projects are scoped in such a way to ensure the best outcomes for consumers and an efficient competitive process. The key principles we developed in the context of electricity transmission for project packaging are:

- Bundling – combining smaller projects: We may consider combining one or more projects with a common driver into a single project for competition where this makes technical or commercial sense and is in the interests of consumers.

- Splitting – separating larger projects: We will consider if some projects should be split into separate packages, with separate competitions, to achieve better outcomes for consumers. We will consider this if a project is particularly high value which could limit the pool of potential bidders, if there is a clear technology split requiring different skills and procurement approaches, or if a multi-phase construction is planned over a long period in discrete and separate locations.

- Re-scoping – re-specifying scope of projects: We will consider whether a project could be re-scoped where certain elements of a project do not meet the criteria, for example if:

    - the vast majority of a project proposed is brand new or a complete replacement, but a small proportion involves updating/renovating existing assets

- a project as proposed would not be considered separable, but could be re-packaged through minor re-scoping to make ownership boundaries easier to define.

12.37 We think the above principles would provide sufficient flexibility to ensure that projects subject to late competition in electricity distribution can be packaged in a manner that maximises the scope for consumer benefit. We can see no basis for concluding that any of the approaches identified would not be relevant to electricity distribution, or that additional options specific to electricity distribution are required. We therefore propose that these packaging options developed for electricity transmission should be applicable during RIIO-ED2.

12.38 Having said this, we recognise that due to differences in the nature of the work carried out by DNOs, these principles may need to be applied in a different manner. For example, generally new build projects cost significantly less in distribution than transmission. However, the volume of projects is significantly higher and there may also be greater uniformity in the types of assets covered by different projects. We expect that if significant similarities exist between such projects in electricity distribution, such that the resulting bundle is coherent - containing a selection of projects that would make sense to take forward in competition together, that third parties may be interested in bidding. It may therefore be appropriate to allow bundling together of a coherent group of two or more new and separable projects in electricity distribution, so long as the overall value of the bundled project was above £100m.

Consultation Questions

COQ41: Do you agree that our flexibility proposals are sufficient to incentivise DNOs' native competition?

COQ42: Do you believe there are similarities between DNOs running early competitions and the roles and activities that may be related to electricity DSO functions?

COQ43: Do you agree with our proposed approach on early competition?

COQ44: Do you have any views on our draft RIIO-ED2 Late Competition Impact Assessment?

COQ45: What are your initial views on the three models of late competition (CATO/CADO, SPV and CPM) in the context of electricity distribution? If there would need to be differences from the other sectors, can you please explain what these should be, and why.

COQ46: Do you agree that the late competition models proposed could deliver benefits in RIIO-ED2?

COQ47: Do you agree that our proposed criteria for identifying projects suitable for late model competition are applicable in the context of electricity distribution?

COQ48: What are your views on the best ways to identify a suitable project pipeline for late competition in electricity distribution (eg our proposal to require flagging of projects that meet the high-value, new, and separable criteria)?

COQ49: Do you agree with the proposed range of options available for repackaging projects in RIIO-ED2 in order to maximise consumer benefit?

COQ50: What relevant factors do you think we should consider in deciding how these repackaging proposals are specifically applied in electricity distribution?

13. Incentivising ambitious Business Plans and their delivery

Chapter summary

In this chapter, we describe our proposals to help incentivise the submission of high-quality and ambitious Business Plans from the DNOs for RIIO-ED2 and the delivery of efficient expenditure.

Introduction

13.1 The Totex Incentive Mechanism (TIM) is designed to encourage companies to improve efficiency in the delivery of Business Plans. It is intended to ensure that the benefits of these efficiencies are shared with consumers while providing some protection to companies arising from overspending, as these overspends are also shared with consumers. We set an incentive rate, which determines the proportion of underspend that can be retained, and the proportion of overspend that is borne by the company. In the Framework Decision, we said that we intended to set the TIM incentive rate in RIIO-ED2 using the confidence-dependent incentive rate (CDIR) approach.

13.2 We also need to ensure that companies are encouraged to prepare high-quality, ambitious Business Plans for RIIO-ED2. In the Framework Decision, we said that we would consult on and implement the Business Plan Incentive (BPI) for this purpose.

13.3 The rest of this chapter details our proposals in these two areas.

Confidence dependent incentive rate (CDIR)

Proposal

13.4 For RIIO-ED2 we propose that the TIM incentive rate will be determined using the CDIR approach that has been developed for use in the transmission and gas distribution sectors.

13.5 Under this approach, the TIM incentive rate would be based on a metric of confidence, calculated as the ratio of high-confidence baseline costs to totex,

where our independent baseline for high-confidence baseline costs is the numerator and the company's overall totex allowance is the denominator. High-confidence baseline costs are those costs where we have a high level of confidence in our ability to independently set a cost allowance.

13.6 Our baseline for setting cost allowances should be constructed from information that is substantially independent of company forecasts. Where either we already have this information, or companies can provide such independent baseline information, they will receive a higher incentive rate. Therefore, if companies wish to do so, they will be able to submit information in support of a view that certain costs should be classified as high-confidence baseline costs and Ofgem will assess this information. We consider that the following types of information may be relevant to Ofgem's consideration of whether certain costs should be classified as high-confidence baseline costs:

- Realised actual costs in RIIO-ED1
- Evidence that cost forecasts have been arrived at via a competitive process or other market testing
- Other independent benchmarking (eg industry or international benchmarks)
- Costs where we are able to determine a unit cost allowance with a high degree of confidence and where an appropriate volume driver or other uncertainty mechanism will be implemented and applied to a volume drawn from a baseline scenario volume

13.7 This is not an exhaustive list and we will take into account other evidence that companies may propose that meet the test of serving as an independent benchmark. We will therefore not determine which costs are high-confidence until after we have received Business Plans.

13.8 Our working assumption at this time is that we will assign high-confidence baseline costs with a 50% incentive rate and other costs with a 15% incentive rate.[50]

[50] The TIM efficiency incentive rates referred to in this section are the effective incentive rates (after paying tax) faced by network companies.

13.9 For the upper end of the range, we believe 50% is appropriate. There is regulatory precedent for setting an incentive rate of 50%. For example, several companies in RIIO-1 have been assigned incentive rates at or around this level and Ofwat's cost sharing mechanism is centred on a rate of 50% (ie where Ofwat's view and the company view of totex are 100% aligned). In addition, the CMA determined in regulatory appeals made by Bristol Water plc[51] and Northern Ireland Electricity Limited[52] that the relevant efficiency incentive rate should be 50%.

13.10 For the lower end of the range, our analysis indicates that, in RIIO-1, a company would need a combination of a 10-15% incentive rate and perceive its 'true' cost of equity to be significantly lower than the allowed cost of equity in order to marginally prefer not to underspend. The lower cost of equity that will apply in RIIO-2 further reduces the likelihood of this risk materialising, as there is less scope for significant divergences between the allowed cost of equity and companies' perceived 'true' cost of equity. In reality, our expectation is that the totex incentive rates that will apply in the RIIO-2 price controls will be higher than the minimum of 15%. This is because a weighted average incentive rate of 15% would only be achievable if a Business Plan contained no costs assessed to be high-confidence baseline costs. We consider this to be an unlikely outcome.

13.11 The 15-50% range is also the range that we have used in the calculation of rates in the gas distribution and transmission sectors at the Draft Determinations stage.

13.12 A single incentive rate will be calculated based on the balance of high-confidence and lower-confidence baseline costs included in final totex allowances. The rate will remain the same for the whole RIIO-ED2 period.

13.13 We expect that our assessment of Business Plans for the purpose of the BPI will be carried out and rewards or penalties applied at the level of the company, rather than the level of the licensee.

[51] Bristol Water plc A reference under section 12(3)(a) of the Water Industry Act 1991 Report, Competition and Markets Authority Final Determination, 6 October 2015, paragraph 3.54(c)
[52] Northern Ireland Electricity Limited Price Determination. A reference under Article 15 of the Electricity (Northern Ireland) Order 1992, Final Determination, 26 March 2014, Paragraph 5.93.

Rationale for use of CDIR in setting the TIM incentive rate

13.14 A TIM incentive rate determined by Ofgem via CDIR approach would reflect our level of confidence in our ability to set cost allowances for different types of activity, without being influenced by companies' submissions.

13.15 If we have lower confidence in our ability to set costs independently, then subsequent variations in actual expenditure against budgets may only be partly attributable to improvements or deterioration in efficiency. Errors in setting allowances, along with inflated cost submissions may also be factors. The greater the proportion of such lower-confidence baseline costs contained in a company's Business Plan, the lower the proportion of cost overruns or saving the company will be exposed to. We believe that this way of treating uncertain costs is fair to both companies and consumers.

13.16 The inverse is true in relation to high-confidence baseline costs, where Ofgem is more likely to be able to set cost allowances nearer to the outturn level of cost. Equally, if companies are able to underspend against allowances in these areas, it is more likely that such underspends will arise from improved efficiency, rather than inaccuracies in the setting of allowances at the price control.

13.17 Alongside the use of the CDIR approach in RIIO-ED2 we will also undertake a rigorous cost-assessment process. We will use all of the tools at our disposal in order to set realistic and challenging cost allowances. However, it is correct for us to acknowledge that this is a more difficult task in some cost areas than in others. Under the approach we propose to use in RIIO-ED2, we actively seek to address this issue and to mitigate the negative effects that may arise from the information asymmetry that exists between Ofgem and the companies.

Business plan incentive

13.18 In the RIIO-ED2 Framework Decision, we said that we would use the BPI to encourage companies to prepare high-quality and ambitious Business Plans.

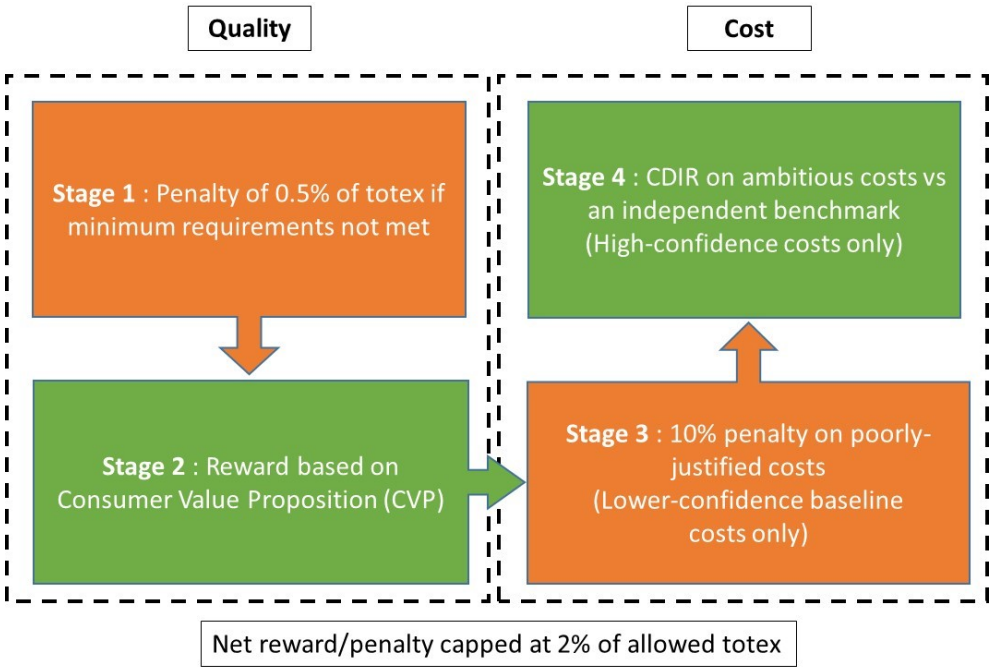
13.19 We describe below the proposed design of the BPI in RIIO-ED2. We propose to give a greater focus to the Consumer Value Proposition (CVP) element of the BPI by specifying the areas within which proposals should fall and by using information revealed through the CVP in setting standards for the whole sector in certain key areas, as we describe in more detail below.

13.20 Under the BPI, we propose that Business Plans would be assessed in the following way:

- **Stage 1**: We would carry out a qualitative assessment of Business Plans in order to ensure that they meet a set of minimum requirements. The proposed minimum requirements are set out in the draft Business Plan Guidance and seek to ensure that Business Plans are sufficiently complete and of sufficiently high quality to enable Ofgem to set the price control effectively. If Ofgem were to find that a plan has failed to meet the minimum requirements and this failure is material, an upfront penalty of 0.5% of allowed baseline totex may be levied on the company. Where this is the case, the company would not be eligible for any reward under the BPI but could still be penalised under Stage 3.
- **Stage 2**: We would carry out an assessment of what additional value the Business Plan offers to consumers, beyond the minimum requirements the plan offers and beyond the functions typically undertaken by an energy network company as business as usual. Our proposal is that in their CVPs, a company should demonstrate the additional value its plan will generate for consumers. The reward will be reflective of this additional value. The reward may be linked to delivery where relevant.[53]
- **Stage 3**: We would review the forecasts for costs assessed by Ofgem to be lower-confidence baseline costs included in companies' plans. Any such costs deemed to be poorly justified and removed by Ofgem from the companies' forecasts through this cost assessment process would be subject to a penalty. The size of the penalty would be 10% of the value of those poorly justified costs removed by Ofgem from the companies' forecasts.
- **Stage 4**: We would review the cost forecasts for costs assessed to be high-confidence baseline costs included in companies' plans. An upfront reward would be available to companies that submit forecasts lower than a benchmark that Ofgem would otherwise have used in setting the allowance.[54]

[53] Where the CVP proposal relates to something that is to be delivered within RIIO-2, it may be appropriate to put in place arrangements to claw back rewards under stage 2 in the event of non-delivery or partial delivery.
[54] This benchmark could be derived from an econometric model. Where this is the case, the model is likely to include historical or forecast costs submitted by network companies. Such a benchmark would not be wholly independent of information provided by the network companies. However, Ofgem may still regard costs derived from a robust econometric model as high-confidence baseline costs. Notwithstanding this caveat, we refer to such benchmarks as 'independent benchmarks' in this chapter.

Figure 9: The Business Plan Incentive



Stage 1

13.21 In relation to Stage 1 of the BPI assessment, we believe that it is appropriate to put in place a penalty to ensure that companies are discouraged from submitting incomplete or poorly justified Business Plans. As the Stage 1 minimum requirements assessment would result in either a pass or a fail rating, we propose that a fixed penalty should apply for material failures.

13.22 We believe that the imposition of a penalty of 0.5% of allowed baseline totex for failing Stage 1 of the assessment would provide a sufficient incentive for companies to apply the necessary effort to provide us with a Business Plan that is of an acceptable standard. We believe that all companies should be able to meet the minimum requirements, thereby avoiding a penalty for failing Stage 1 and becoming eligible for a potential reward under other elements of the BPI.

13.23 We propose that any decision that a Business Plan has failed Stage 1 would be taken after we have carried out an assessment of the materiality of any failures of individual minimum requirements. We propose that this materiality assessment would take into account:

- The number of minimum requirements that have been failed

- The extent to which our setting of the RIIO-ED2 price control has been impacted by the failure(s) in question (for example, due to missing or incomplete information)

- Any consumer detriment that may be expected as a result of the failure(s) in question

- Any other information relevant to the materiality of the failure(s) in question

Stage 2

13.24 In the Stage 2 assessment, Ofgem would consider how and to what extent Business Plans have demonstrated additional value to consumers and any reward determined by Ofgem will be commensurate with the level of additional value offered. Rewards would therefore not be fixed but would scale to the level of additional consumer value that the plans offer.

13.25 We believe that the CVP can be a powerful tool for driving and demonstrating ambition in companies' Business Plans and that by aligning the areas in which companies develop CVP proposals with specific priority areas for RIIO-ED2, the service offered to consumers in these areas of activity can be enhanced.

13.26 In some areas, though we may see a clear benefit in incentivising DNO activity in RIIO-ED2, we may currently be less able to set incentive targets or define best practice. For example, this may be because these areas are not currently measured or incentivised in RIIO-ED1 or because they relate to relatively new areas of activity, where DNOs do not have a long track record. We believe that the CVP could be used to help establish the standards against which performance would be assessed within these areas.

13.27 We propose that each CVP proposal should fall into one of the following categories:

a) Proposals that demonstrate approaches to DSO activities that clearly go beyond the baseline standards set out in our roles and principles for DSO (these are set out in draft in Appendix 5 to the Overview Document).
b) Proposals that demonstrate approaches to providing services to vulnerable consumers that clearly go beyond the baseline standards set out in Appendix 5 of Annex 1 (Delivering value for money services for consumers).

c) Proposals that demonstrate approaches to providing services to large connection customers that clearly go beyond the baseline standards set out in Appendix 4 of Annex 1 (Delivering value for money services for consumers).
d) Proposals that exceed the baseline standards that we have set out for EAPs in the EAPs section of the RIIO-ED2 Business Plan Guidance.
e) Proposals that exceed the minimum requirements that we have set out for whole system approaches in the whole systems section of the RIIO-ED2 Business Plan Guidance.

13.28 In relation to items i) – iii) in the list above, we intend to establish a set of baseline standards against which DNO performance would be assessed in RIIO-ED2, as part of separate ODIs relating to DSO, vulnerability and major connections respectively. We are consulting on these standards as a part of this consultation.[55] These baseline standards will then be set out in the SSMD for use in the development of Business Plans. We may incorporate stakeholder proposals into baseline standards where we consider this will drive better consumer outcomes. Where companies CVP proposals subsequently lead us to enhance these standards, these proposals may be rewarded via Stage 2 of the BPI.

13.29 DNOs will submit draft Business Plans to Ofgem and to the Challenge Group on 1st July 2021. In our view, there may be value in using these draft plans in the establishment of the final set of baseline standards in RIIO-ED2. Specifically, we believe there may be merit in reviewing the CVP proposals contained in draft plans and, where appropriate, incorporating proposals into an enhanced set of baseline standards for the sector. DNOs would then be able to ensure that these enhanced standards are incorporated into their final Business Plans.

13.30 Alternatively, we could assess the CVP proposals contained in DNOs' final Business Plans. However, in this case, other companies would not be able to reflect in those plans any enhancements to the baseline standards we choose to make following one company's CVP; alternative arrangements may need to be put in place to achieve these enhancements (for example, DNOs may be required to resubmit affected sections of plans).

13.31 We want to help ensure that DNOs' CVPs include high-quality proposals that can evidence clear additional value to consumers and as such may be rewarded as a part of the BPI. For this reason, we propose to set upper and lower limits on the

[55] See Annex 1 – Delivering value for money services for consumers

value of each CVP proposal as well as a limit on the number of proposals that are brought forward. The rationale for this is that a lower limit would ensure that proposals are sufficiently material and an upper limit would ensure that DNOs' focus remains clearly on the core, common areas of activity. We indicatively suggest a lower limit of £3m per proposal and an upper limit of £10m.[56] We propose that the aggregate value of proposals should not exceed £50m and that the total number of proposals would not exceed ten per business plan.

Stages 3 & 4

13.32 We believe that it would be appropriate to treat lower-confidence and high-confidence baseline costs differently from each other under the BPI for the reasons set out below. In relation to high-confidence baseline costs, in the absence of compelling evidence to the contrary, we are proposing to set allowances at the level of the relevant independent benchmark. Therefore, if a company expects these costs to decrease in RIIO-2, it may choose not to reveal this in its Business Plan forecast, and instead reveal the lower cost in-period, enjoying any benefit accrued under the Totex Incentive Mechanism. As the information would not have been revealed at the time of the price control, Ofgem would be unable to use it in other parts of the RIIO-2 price control, such as the setting of allowances for other companies.

13.33 Conversely, if forecasts in such high-confidence categories are higher than the independent benchmark, it is not likely that Ofgem would both (a) accept that allowances should be higher than the independent benchmark and (b) deem that those costs should be high-confidence baseline costs. Therefore, our proposal is that that it would not be necessary to apply a penalty to forecasts in high-confidence areas that are in excess of the relevant independent benchmark.

13.34 It may be the case, for example in areas of significant change, that historical costs are not a good predictor of future costs. In circumstances where Ofgem believes it has a good benchmark on which to base an allowance but where a company includes a forecast above this level, likely outcomes would be:

- Ofgem would set the allowance at the level of the benchmark and would deem the costs to be high-confidence baseline costs; or

[56] That is, the value to consumers of the proposal should fall within this range.

- Ofgem would deem the costs to be lower-confidence baseline costs and would set the allowance at our view of efficient cost. For example, this could be the case where, having reviewed the Business Plan, Ofgem reaches the view that the company's proposed cost is reasonable.

13.35 In relation to lower-confidence baseline costs, due to the absence of an independent benchmark, we are, by definition, more reliant on companies' forecasts in setting allowances than is the case for high-confidence baseline costs. We think it is appropriate to encourage companies to ensure that their forecasts of lower-confidence baseline costs clearly represent value-for-money to consumers, and are thoroughly justified. To achieve this, companies will be subject to a penalty in proportion to the amount we deem to be poorly justified and that will be removed from the Business Plan in the setting of allowances for Final Determination.[57]

13.36 This should not discourage companies from being ambitious, or from including innovative and new approaches to improve network services. We fully realise that it is possible for companies to generate value for consumers by including such approaches (for example, by increasing automation to reduce operating costs), and through our cost assessment process we will not disadvantage companies that propose to make such trade-offs, provided they are well-justified. Indeed, these aspects of the plan may be considered in our assessment of the overall Consumer Value Proposition at Stage 2 and could warrant a reward.

13.37 The provision of the Stage 4 reward would be dependent on Ofgem using the information provided by the company to set allowances. In order to be eligible for a Stage 4 reward, the cost information must be useful to Ofgem in setting allowances. If it is not useful, it would not generate any benefit and therefore should not be rewarded.

13.38 We would set the Stage 4 reward rate at the same level as the totex incentive rate. As this would be an upfront reward, companies would receive a time value of money benefit for revealing cost savings at the time of setting the price control, and these rewards would also be excluded from return adjustment mechanisms (RAMs).[58]

[57] In some instances, cost forecasts may be made up of proposed unit costs and proposed volumes of activity. Ofgem would expect to consider both the justification for the unit cost and the volumes of activity in determining whether a penalty should apply.
[58] See Section 10 of Annex 3 for further detail on RAMs.

13.39 Additionally, as stated above, the metric of confidence for determining the confidence-dependent incentive rate is calculated as the ratio of high-confidence baseline costs to allowed baseline totex, where our independent baseline for high-confidence baseline costs is the numerator and the company's overall allowed baseline totex is the denominator. Where we use a company's forecast in the cost assessment process and the forecast is lower than the independent benchmark, we would set allowances at the level of the company's forecast. This means that a company that forecasts below the benchmark level will receive a higher confidence-dependent incentive rate than if it had forecast at the benchmark level.

13.40 We would set the reward rate for high-confidence costs that beat an independent benchmark at the same level as the totex incentive rate. As this would be an upfront reward, companies would receive a time value of money benefit for revealing cost savings at the time of setting the price control and these rewards would also be excluded from RAMs. These additional benefits reflect the added value we may get from information revealed in setting more accurate price controls for other companies.

13.41 One additional incentive to reveal ambition upfront (in addition to time value of money and exclusion from RAMs) is that this would reduce the company bid for totex relative to the independent benchmark, and therefore is likely to result in a higher incentive rate (compared to a company that bids at the level of the independent baseline).

13.42 The penalty rate for poorly justified lower-confidence costs would be 10%. Whereas rewards under the BPI are calculated with reference to the company's totex incentive rate, we do not think there is a good rationale for calculating penalties under the BPI at the same rate. To an extent, the harm these disallowed costs could lead to has been corrected by their exclusion from allowances and companies will be subject to a penalty through the incentive rate if they overspend this allowance. An equivalent penalty on costs removed from the Business Plan may serve as a double-penalty. We do however want to discourage poorly justified costs where we have little independent information available to set allowances. We therefore consider a lower rate of 10% will provide a sufficient penalty for this purpose.

Capping net rewards/penalties

13.43 We propose to incorporate a net cap on rewards and penalties under the BPI. We believe that by having a cap on net rewards and penalties under the BPI set at a level of ±2% of allowed baseline totex would be reasonable and would provide a sufficiently powerful incentive, while not outweighing incentives on the core DNO role of delivering efficient costs within the RIIO-ED2 period.

13.44 However, where a company fails to pass Stage 1 of the BPI assessment, meaning that its Business Plan has omitted what we consider to be essential information, we think it would be appropriate to ensure that no reward can be earned by the company under any part of the BPI.

Business Plan Guidance

13.45 Alongside this Consultation, we are publishing a draft Business Plan Guidance document.[59] The purpose of the Business Plan Guidance is to set out the information that we propose should be included in companies' Business Plans and how we propose to assess those plans. We welcome views from stakeholders on the draft Business Plan Guidance.

Consultation Questions

COQ51: Do you agree with our proposed approach to implementing the CDIR method in setting the TIM efficiency incentive rate?

COQ52: Do you agree with our proposed design of the BPI for RIIO-ED2?

COQ53: What are your views on our suggestion to use proposals contained in draft Business Plans in the setting of baseline standards in a number of areas (as discussed in paragraphs 13.28 and 13.29)?

COQ54: Do you agree with our proposal to cap the number and value of CVP proposals that can be included within business plans?

COQ55: Is there any further detail on the proposed content of the Business Plans that you think should be set out in the Business Plan Guidance?

COQ56: Is there other information that we should be requesting in the Business Plan Guidance in order to assess a network company's Business Plan?

[59] This will be published shortly after July 30 2020

COQ57: Do you agree with the proposed set of minimum requirements for Stage 1 of the BPI that are set out in the draft Business Plan Guidance?

COQ58: Do you agree with the approach for assessing companies' CVP proposals that is set out in the draft Business Plan Guidance?

COQ59: We anticipate that DNOs are investing in improving / creating data dictionaries and business information models that describe the data-driven aspects of DNOs' overall business architecture. We anticipate there may be opportunities to take advantage of these investments to support the process of cross-referencing data used within RIIO-ED2 Business Plans. What are your views on this?

Appendices

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Appendix 1 – Proposed RPE input price indices, RIIO-2 gas distribution and transmission

Proposed RPE input prices and weightings for RIIO-2 gas distribution and transmission

Index		Weightings					
		GD	NGGT	NGGT	NGET	SHET	SPT
Labour costs (general and specialist)		100%	100%	100%	100%	100%	100%
Office for National Statistics (ONS) Average Weekly Earnings (AWE) private sector		25%	25%	25%	20%	20%	20%
ONS AWE construction		25%	25%	25%	20%	20%	20%
ONS AWE transport & storage		25%	25%	25%	20%	20%	20%
Price Adjustment Formulae Indices (PAFI) civil engineering		25%	25%	25%	20%	20%	20%
British Electrical Allied Manufacturers Association (BEAMA) electrical engineering (ET only)		0%	0%	0%	20%	20%	20%
Materials costs		100%	100%	100%	100%	100%	100%
Opex	FOCOS Resource Cost Index (RCI) of infrastructure (materials)	25%	25%	25%	25%	25%	35%
Capex/Repex	PAFI steelwork	25%	75%	75%	0%	0%	0%
	PAFI plastic pipes	25%	0%	0%	0%	0%	0%
	PAFI copper piping	25%	0%	0%	75%	75%	65%
Plant & equipment costs		NA	NA	NA	NA	100%	NA

Index		Weightings					
PAFI plant and road vehicles		NA	NA	NA	NA	33%	NA
ONS machinery and equipment output Produce Price Inflation (PPI)		NA	NA	NA	NA	33%	NA
ONS machinery and equipment input PPI		NA	NA	NA	NA	33%	NA

Note: only SHET had a proposed RPE adjustment for plant and equipment, as other company cost submissions did not pass the materiality test for this cost category.

Appendix 2 – Late competition models applicability to electricity distribution – early thinking

CATO-specific arrangements

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
Project identification	Asset transfer	• Non-physical assets necessary for the development of competed transmission assets such as preliminary works, property rights, or access agreements should be transferred to the CATO. • Transfer of existing (physical) transmission assets - standard industry arrangements will be sufficient to manage the necessary access to existing transmission assets, but in limited cases some asset transfer may be required • We do not expect that any physical transfer of third party (eg a party other than the incumbent or the successful bidder) assets would be needed, however we will consider on a project–by-project basis whether any transfer would be beneficial for consumers. We will do this through discussion with the third party in the first instance.	In our view this should apply to ED
Decision making processes	Process for deciding whether to apply competition	Generic process applies, but some specific stages associated with CATO, for example Final Tender Checkpoint. See figure 2 on page 25 of this for diagrammatic representation.	In our view this should apply to ED
Roles and obligations	Role of incumbent	From the point that we make an initial tender decision, the TO will be responsible for the following pre-tender activities: • Undertaking the preliminary works • Producing the tender specification outputs • Providing updates to us on the progress of the preliminary works and the tender specification outputs. We will scrutinise the contents and suitability of the tender specification outputs during the FTC to assess their suitability for the purpose of commencing and running an efficient tender process. Where we decide to commence a tender, the TO will provide tender support, including responding to bidder clarifications and maintaining the data room with up-to-date information.	In our view this should apply to ED

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Role of CATO	The CATO will be responsible for construction and operation of the project. The terms under which CATOs will be expected to do this will be set out through a combination of the electricity transmission licence granted to them by us, as well as contractual agreements with the ESO, linked to industry codes and standards. CATOs will be subject to the same basic regulatory framework as all other TOs. Each CATO will: 1. hold a licence granted by us – this will say how much CATOs get paid, including any performance adjustment, but also means they have obligations to us (e.g. reporting) and to the ESO 2. need to comply with the industry codes and standards as all TOs do. We will make sure these codes and standards are updated to reflect CATO policy.	In our view this should apply to ED
Pre-tender arrangements	Funding for licencees	1. We will fund the TO for any additional works required to deliver the tender specification outputs that would not already have been funded via the pre-construction works component of the SWW framework, as part of the RIIO-T1 settlement. The CATO will pay the TO for these works under the TO-CATO transfer agreement. 2. The value of the preliminary works that are transferred to the CATO on appointment should be set to £0. This is because the delivery of these works is covered by the relevant TO's baseline RIIO-T1 funding for pre-construction engineering outputs for prospective SWW projects. In advance of appointing a CATO for a project, we expect the TO to fulfil its obligations associated with that funding.	In our view this will apply to ED, however, would need to be tailored to the mechanism used in ED to fund pre-construction works carried out by the DNO

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
Conflicts of interest	Arrangements for incumbent TOs that may bid	We will require the TO to develop a conflicts methodology, which will cover how the TO will implement all the below conflict mitigation arrangements. The obligations will form part of a new special condition in each TO licence: • Obligations on the TO's conduct in undertaking tender support activities. • The degree of business separation required between the TO and any bidding unit. • Requirements that the TO protect the information it holds relating to its tender support activities. • Compliance approval and monitoring obligations. Details on these requirements, as well as on process/timing requirements, provided within Nov 2016 decision document. The above do not apply where a TO expects to bid on a project developed by another TO.	May be directly applicable to ED (other than other than changing references to 'TO'). However, there could feasibly be differences here. This area needs further consideration for ED.
	Other bidders	1. We will require mitigation measures for all 'other bidders' with potential conflicts of interest, proportionate to the role that the bidder has played and information it has had access to in relation to the project to be tendered. 2. All bidders will be required to submit a signed confidentiality agreement and a conflicts of interest declaration for our approval no later than the pre-qualification stage of the tender.	In our view this should apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
Tender process	Tender structure	We have proposed: • A three stage tender process comprising an enhanced pre-qualification stage, an outline proposals stage and invitation to tender stage. There will then be a preferred bidder stage before licence grant and financial close. • CATO bidders will undertake detailed design work and supply chain engagement during the tender process to enable them to provide robust, fixed price bids at the ITT stage. • the ITT stage evaluation will focus on a combination of price and robustness/deliverability of proposals, potentially weighted equally. Evaluation will focus on areas such as design, approach to construction, management of risk, and overall project management, as well as cost. • We will typically start the ITT stage once project certainty is established through planning consent being in place. • All preliminary works for the project, including planning consents and land rights, will transfer to the CATO on appointment (i.e. at licence grant/financial close).	In our view this should apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
CATO obligations / incentives	CATO revenue	Proposed revenue arrangements: • Revenue to be paid through an annual Tender Revenue stream (TRS) bid during the tender process. • 25 year revenue term, usually commencing from completion of construction. Revenue stream should be largely fixed, with a limited number of reopeners. • Asset depreciation period aligned with the revenue term. Assets would remain the property of the CATO at the end of the revenue term and will most likely be subject to ongoing price control. • Gains made by CATO through debt refinancing should be subject to some sharing mechanism with consumers. • The proportion of annual revenue indexed to inflation should be proposed by bidders.	In our view this should apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	CATO performance obligations / incentives	3. Safety: Compliance with existing law. • Reliability: Availability based financial incentive with penalties for poor performance and bonuses for outperformance to ensure CATOs' assets will be available when they are needed. This would complement a range of technical requirements and operational processes in the wider regulatory framework. • Availability: Availability based incentive and obligation to develop a Network Access Policy (NAP). • Connections: Financial penalty worth up to 0.5% of annual base revenue for failure to meet obligations to connect additional users to the CATO's network. • Asset delivery: 'Payment on completion' – CATO revenue stream typically starts once construction is complete. • Environmental outcomes: i) SF_6 incentive (to minimise leakage) – financial incentive based on performance against a target leakage rate. ii) CATOs to report annually on transmission losses, business carbon footprint and work on visual amenity (where relevant, e.g. for new asset investment). • Asset management: Asset management incentive – periodic reporting on asset condition alongside a performance bond on asset condition at the end of the revenue term.	In our view this will apply to ED, although some of the performance incentives (eg environmental outcomes) may need to be different to align better with other DNOs .

SPV model specific arrangements

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
SPV model	Overview	In summary, the features of the SPV model are:[60] • The incumbent TO would run a competition for the construction, financing, and operation of a new, separable and high value project through a project-specific Special Purpose Vehicle (SPV). In general, we consider that a 25-year operational period would be appropriate. • The SPV competition would determine an annual revenue stream for the project, reflecting the underlying capital and operational costs and weighted average cost of capital (WACC), which would be paid to the SPV by the TO on behalf of consumers. The TO would recover these costs from users of the system (and ultimately from consumers) through its transmission licence. • The SPV would deliver the project under the terms of a contractual arrangement (the "Delivery Agreement" (DA)) with the TO. • The TO would retain regulatory responsibility (under the terms of its transmission licence) for, and operational control of, the project. • The capital invested by the SPV in the project would be fully recovered over the revenue period, ie the equivalent of the "regulatory asset value" would be zero at the end of the revenue term.	In our view this should apply to ED.

[60] https://www.ofgem.gov.uk/system/files/docs/2018/09/spv_consultation_2018_final.pdf

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
Roles and responsibilities	Ofgem role	1. Pre-tender: Review, provide comment on, and where satisfied, approve the TO's DA and Tender Documentation. Decide on the needs case for the project. 2. Tender: Review, provide comment on, and where satisfied, approve material changes to the TO's DA or Tender Documentation. Approve the appointment of the Preferred Bidder. Approve the award of the DA to the Preferred Bidder. 3. Post-tender: Review reporting by the TO on the SPV. Review, and where satisfied, approve, changes to the TO's SPV-related cost allowances.	In our view this should apply to ED.
	Incumbent licensee role	1. Pre-tender: Continue to undertake relevant pre-construction activities. Develop the project's output specification. Develop DA and Tender Documentation in line with the DA guidance and Procurement guidance documents. 2. Tender: Continue to undertake relevant pre-construction activities. Commence and conclude an SPV tender in accordance with the documentation approved by Ofgem. Seek approval from Ofgem for material changes to the DA or Tender Documentation. 3. Post-tender: Overall regulatory responsibility and operational control of the transmission assets. Monitor the activities and reporting of the SPV. Report to Ofgem on certain items. Review, and where appropriate, approve changes to the SPV's TRS or costs. Apply to Ofgem for revenue stream or cost adjustments under the relevant licence mechanism, as appropriate.	In our view this should apply to ED.
Commercial framework	Consents	To help manage risk and schedule, the TO will obtain the Development Consent Order (DCO)/Section 37 consent and other specified key consents. The SPV will be obliged to comply with those consents and will be responsible for obtaining any other consents required to deliver the project.	In our view this will apply to ED, even if nature of consents required, or process for securing them, may be different.
	Land	The TO will identify the parcels of land required to construct and operate the transmission assets, by reference to the preliminary design and will acquire the necessary land for the project (however it is recognised that there may some flexibility required here depending on overall timing).	In our view this should apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Design	The TO will carry out preliminary design, which the SPV will adopt with no recourse to the TO (but potentially with warranties from the designer, subject to insurance and liability). The TO will also prepare the project's output specification. The SPV will be responsible for carrying out detailed design and then implementing that design to meet the output specification	In our view this should apply to ED.
	Construction risks	The SPV will carry out the construction and operation for a fixed price (in general) which will be modelled within the profiled project-specific revenue stream. The actual construction and operations costs are accordingly an SPV risk. The SPV will be responsible for managing all aspects of the construction and will report regularly to the TO on the status of the works. In some circumstances, for particular types of construction or operational period risk and/or longer or more complex construction periods, an alternative to a fixed price model may be suitable where pricing may be on a capped or target cost basis. This is likely to be applicable where elements of construction or operational period risks would not be value for money under fixed cost pricing, and where cost-reopeners are in themselves too uncertain. In such circumstances the alignment options and certain cost/risk elements would need to be tailored to ensure the SPV remains incentivised to preserve affordability and value for money for consumers.	In our view this should apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Payments	The SPV's full revenue entitlement commences on completion of asset commissioning and continues to expiry of the term of the DA. The revenue will be paid in full subject only to payment deductions and incentives as set out within the terms of the DA. Delays to commissioning may result in a shorter revenue period, as the operational period does not extend with a later start. The SPV will be subject to an appropriately sized availability-type incentive. Additional project specific incentives may apply. In limited circumstances, eg long and/or complex construction periods, a limited quantum of revenue may be paid during the construction period, likely tied to delivery of key milestones. Similarly, depending on the nature of the construction and commissioning of the transmission asset(s), it may be beneficial to consider staged revenue (eg where the assets are commissioned in multiple stages over time).	In our view this will apply to ED, although some of the performance incentives (eg environmental outcomes) may need to be different to align better with other DNOs.
	Refinancing	Benefits of refinancing senior debt will be shared between the SPV and consumers.	In our view this should apply to ED.
	Price Adjustments (covering change in law, compensation events etc.)	The general principle of the price model is that the SPV should take all, or defined, risks associated with the financing, construction and maintenance of the transmission asset and should price the assumption of these risks accordingly. There are four sets of events which are proposed as exceptions to the above principle: 1. specified cost and output adjusting events (uncontrollable events, which are not the fault of the SPV, that are not foreseeable and are low probability but high impact); 2. events that are treated as pass through costs (e.g. changes in business rates will be passed through fully, without deduction); 3. certain changes in law (e.g. (i) increases in costs which apply specifically to the project or to the contractor or to electricity transmission construction or maintenance; and (ii) operational period general changes in law requiring capital expenditure); and 4. certain breaches of the DA by the TO. Other events may be considered where a clear cost benefit can be demonstrated.	In our view this should apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Handback	The DA will clearly set out the handback condition for the transmission assets and will provide for a robust process and criteria with a high degree of certainty for determining compliance with the handback conditions. This provides clarity to the SPV concerning its obligations and to ensure the TO is able to carry on operations for the remainder of the transmission asset's life (and to price them in advance).	In our view this should apply to ED.
	Termination	Termination rights will be developed in line with equivalent established contracting approaches so that the SPV and financiers have certainty as to the precise nature of the termination events, with appropriate opportunities to engage with the TO to resolve issues to prevent termination.	In our view this should apply to ED.
	Compensation on termination	This will broadly follow the following principles: • On SPV default (including insolvency), a re-tendering (to a liquid market) will establish the value of the DA, with the valuation paid by the successful bidder to the SPV • On no-fault termination (e.g. Force Majeure) the debt and breakage costs, plus equity investment (absent future returns) will be paid. One key difference to PF2, is that it is envisaged that TO payment default issues will be addressed via: (i) the credit standing requirement in the TO licence, and (ii) the enforcement of the requirement to comply with the DA (set out in the TO licence). In cases of TO insolvency, energy administration (involving transfer to a new TO) is the likely outcome and the DA would therefore continue.	In our view this should apply to ED.
	Independent Technical Advisor	The TO and the SPV would jointly appoint an 'Independent Technical Advisor' (ITA) to provide various functions under the DA for a particular project. The ITA would need to be suitably skilled to provide those functions, and the appointment should take into account the particular nature of the assets delivered under the DA. The full range of functions of the ITA would be similar between projects, but with some differences allowed to reflect the nature of particular projects.	In our view this should apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
Regulatory framework	Overview	The SPV model will be underpinned by licence conditions in the TOs' transmission licences, including a project-specific ring-fenced revenue stream where an SPV is appointed. The licence conditions will set out obligations on the TO before the appointment of the SPV, including the design and implementation of the SPV competition. The licence conditions will reflect the provisions within the DA as appropriate, so that for certain obligations and mechanisms there is a link between the commercial and regulatory treatment. This is to provide clarity to all parties as to how our regulatory treatment of the TO will relate to the contractual arrangements within the DA between SPV and TO.	In our view this will apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Conflict mitigation - TO or related entity bidding in 'own area' SPV tender	Where a TO Bidder is allowed to participate in an 'own area' SPV tender, we would need to place a suite of conflict mitigation conditions on the TO running the SPV tender to provide sufficient reassurance to the market that the competition will be fair. We propose the following suite of mitigations: 1. Obligations on the conduct of the licensee. The TO will be required to act transparently, in a way that does not give the TO Bidder, or any other party, an unfair commercial advantage over any other participants in the entire tender process (both before, during, and after the SPV tender). 2. Business separation between the TO and bidding unit. The TO Bidder must be fully legally separate, with strong restrictions on managerial, financial, physical, IT separation, and employee transfer between the TO Bidder and the TO Parent. 3. Restrictions on the use of information. The TO must treat information related to the tender, any other information it comes into possession of during a tender (for example information about the content of bids or bidder strategies), and information received during the management of the SPV, confidentially. The TO must not disclose such information to any bidding unit or other participant in a tender, outside of what is required as part of the tender process. Any future TO bidder should not have access to information provided by any other bidder into an SPV Tender. As such, information systems should be separate between the TO and any TO bidder. We acknowledge that people involved in a TO Tender team may move, and we would expect appropriate restrictions on their movement to minimise information transfer. 4. Compliance approval and monitoring. The TO would be required to submit a compliance methodology statement with its needs case submission. The TO would need to confirm its intention to bid and begin to implement conflict mitigation arrangements within eight weeks of us making an initial tender decision. The TO would be required to appoint a compliance officer to monitor and report on compliance with the agreed methodology statement.	May be directly applicable to ED. However, may also be a case in ED for not allowing DNOs to bid on assets in their own area, due to the breadth of competition available from other DNOs and third parties. This area needs further consideration for ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
Procurement framework	Overview	Under the SPV model, the TO would be responsible for designing the tender processes and documentation for the SPV tender. We intend to develop and publish Procurement Guidance (PG) setting out the procurement principles that the TO must take into account when developing its SPV tender documentation and running the competitive tender to appoint the SPV. We would consider the TO's proposed tender processes and documentation against this guidance to determine whether to approve the tender documentation and allow the tender to take place. We consider that the PG is likely to include a combination of strict requirements and broader guidance around potential options for tender design to ensure that each tender will produce beneficial outcomes for consumers, and be reasonably similar and reproducible across tenders for the benefit of SPV market participants.	In our view this should apply to ED.

CPM specific arrangements

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
Licencee revenue allowance	Overall approach to determining revenue allowance	1. CPM involves setting a largely project-specific set of regulatory arrangements to cover the construction period and a 25-year operational period (rather than for a portfolio of assets under a price control settlement). 2. The CPM assumes that the full construction debt is raised upfront and then drawn down upon as expenditure is incurred on the project. The allowed cost of capital (as determined through the Ofgem cost of capital methodology set out separately in the Finance Annex) is applied to the annual allowed expenditure during construction. This allowed expenditure is determined through our detailed assessment of the project costs, which is referred to as the Project Assessment (PA) process. By the end of the construction period, the full construction period capital costs allowance will be uplifted by the annual construction cost of capital to determine a total capital cost value at the end of construction. This capital cost value, minus any allowed revenue recovered during construction, will be recovered by the TO over the following 25-year operational period with the operational cost of capital applied. 3. An annual operating cost allowance will apply during the operational period. We intend to add this annual allowance to the annual recovery of the construction capital cost value across the full 25-year revenue term. The annual revenue allowance during the operational period will be based on this total amount including returns distributed evenly on an NPV neutral basis across the full revenue term.	High-level approach appears appropriate for ED. The Ofgem cost of capital methodology would need to be reviewed in the context of ED projects to determine whether any amendments would be appropriate.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Setting cost of capital	1. The cost of capital for both the construction and operational period will be set using the cost of capital methodology developed with Cambridge Economics Policy Associates (CEPA). This methodology covers the full range of new asset electricity transmission networks projects regulated by Ofgem. 2. We consider that it is most appropriate to fix the allowed construction cost of capital at the Project Assessment stage, but only set an indicative cost of capital for the operational period at that time. We will then fix the cost of capital for the operational period at the completion of construction. 3. We determine the level of cost of capital that TOs are able to recover from consumers during the construction and operational phases of the project. However, we do not mandate that the assumed capital structure within that methodology is followed in the delivery of the project. For example, if a TO wishes to implement a higher project gearing during construction, and allow for a higher return on equity, this would be permitted, as long as it does not result in any consumer detriment relative to the structure assumed within our cost of capital methodology.	High-level approach appears appropriate for ED. The Ofgem cost of capital methodology would need to be reviewed in the context of ED projects to determine whether any amendments would be appropriate.
	Adjustments to arrangements if Project finance used	The cost of equity benchmarks from the OFTO regime reflect the project finance approach that is generally followed under that regime. Whilst we do not consider that the cost of capital ranges for either the construction or operational periods under the CPM specifically require a project finance approach being taken, we are open to funding the efficient costs of securing a project finance approach. Specifically, our Project Assessment will consider any costs associated with setting up a special purpose vehicle (SPV) for the project, and any necessary reserve accounts or other guarantees required to implement such an approach. Efficient, evidenced costs will be allowed for in the project revenue allowance rather than through the project's cost of capital. Any such decision will be on a project-by-project basis and will only be considered where the developing TO specifically confirms its intention to pursue a project finance approach.	In our view this will apply to ED

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Allowed revenue during the construction period	Evidence from our previous work developing the CATO regime suggested that there can be consumer benefits in allowing revenue during construction for larger projects with extended construction periods. These benefits come from reducing the cost of capital by reducing the cash-flow limitations on the developer. For this reason, for projects under the CPM that we consider require a construction period of over 4 years (excluding pre-construction activities), the CPM will allow for revenue during construction. The revenue provided during construction will cover only the allowed cost of debt, based on the upfront costs set at our Project Assessment. This allows debt to be serviced during construction, but retains the appropriate delivery incentives that would be in place under a typical project finance approach.	In our view this will apply to ED.
	Cost assessment	1. The cost assessment process under the CPM will have three stages. It will consist of: 4. a Project Assessment before construction begins, where we will determine initial cost allowances and the sharing factor, annual reporting during the construction period, and 5. b Post-Construction Review (PCR) when construction is completed, where we will finalise capital and operational cost allowances. 2. Other key elements of the cost assessment: • As part of annual reporting and the PCR, we will assess the actual spend in relation to firm costs to ensure that actual spend is in line with the cost allowances set at PA. • At PA we will also identify risk costs which we do not consider should be funded up front. This could include risks that are unlikely to occur, but that would be likely to have a large impact, if they did occur. It could also include other risks that are difficult or inefficient to quantify up front. These "qualifying risks" will be treated as part of the PCR. As part of annual reporting and the PCR, we will assess the actual spend in relation to these costs and update the allowances accordingly.	In our view this will apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Cost reopeners	Similar to OFTOs and Interconnectors, the CPM will include a cost reopener mechanism to compensate TOs for low probability, high impact events that they cannot control (eg force majeure events) that trigger a sufficient increase in opex costs. The exact threshold we set for reopening the opex costs will depend upon the quantum and nature of the opex costs identified at PA, and will likely be proportionate to the threshold set under the OFTO regime. The developing TO would be able to make a claim for any efficiently incurred additional costs beyond the relevant threshold where a qualifying event occurs during the operational period. In addition, and similarly to the OFTO regime, the CPM will provide protection against certain unanticipated changes in law. Under these arrangements the TO would be able to claim for material increases in costs associated with specific changes in law that impact directly on the cost it incurs on a CPM project.	In our view this will apply to ED.
Incentives / obligations	Late delivery	For each project funded through the CPM, a specified project output and date will be inserted into the TO's licence. This will indicate what needs to be delivered by the project and by when. In line with our usual processes, we would consider whether any late delivery against this date constituted a breach of the licence condition and whether to consider enforcement action. In considering whether this is the case or not, we would follow our usual processes and policies for enforcement. Irrespective of whether any delay is treated as a breach of licence requirements, we propose that additional costs incurred during a delay will not be reflected in the revenue allowance during construction. Subject to the arrangements set out in the preceding section on the PCR, only unavoidable costs incurred during delays will be reflected in the revenue stream and recovered over the 25-year operational period. Where it can be evidenced by a TO that a construction delay was unavoidable and outside of its control, it would be able to earn the allowed construction cost of capital during the length of the delay.	In our view this will apply to ED.

Theme	Area	Position and high level rationale	Thoughts on applicability to ED
	Performance incentives	Of the current incentives in place under RIIO, we expect that the following would be applicable to the operational period of projects under the CPM: • Reliability incentive (Energy Not Supplied) • Stakeholder satisfaction output • Incentive in respect of SF6 • Network Innovation Allowance • Network Innovation Competition	Need to consider this in the context of ED and arrangements for other DNOs – some differences may be required in order to align with general ED2 approach on incentives.
	Additional capex requirements during the operational period	During the revenue term it is possible that the assets delivered through the CPM will need to be upgraded to accommodate additional capacity or connections. Where any upgrade is demonstrated to be needed, and the upgrade is forecast to meet the competition criteria (ie the upgrade is new, separable and high value), we expect the regulatory treatment will mirror the prevailing arrangements in place at the time. This could mean the CATO, SPV model or the CPM are implemented to deliver the upgrade. Where such a network upgrade is demonstrated to be needed but does not meet the criteria for competition, we propose setting a cost allowance for the work based on prevailing RIIO arrangements and market conditions at the time the cost allowance is set.	In our view this will apply to ED.

Appendix 3 – RIIO-ED1 Disaggregated Cost Assessment

Building Block	Activity	Cost Assessment Method	RIIO-ED1 Allowance
Load-related expenditure (LRE)	Primary network reinforcement (n-2)	The DNO submitted volumes were accepted. We applied the asset replacement unit costs (median unit cost analysis and expert review).	£2,631m or 9% of totex for reinforcements
	Primary network reinforcement (n-1)	For volumes, the ratio of forecast capacity was added, relative to the increase in demand above firm capacity was benchmarked at the industry average. Unit costs were adjusted by the average percentage adjustment of the difference between: - DNO and expert view unit cost - DNO and industry median unit cost of 1 MVA capacity increase and - median ratio of DNO forecast to historic unit costs of 1 MVA of capacity increase. There was a small volume qualitative adjustment for SPMW	
	LCT reinforcement	For volumes, we applied the industry median 8 year RIIO-ED1 forecast of network interventions per MW of LCTs connected. We applied the industry median unit costs using 8 year RIIO-ED1 data. We excluded the unbundling of shared service cables from our modelling and subjected them to a separate technical review.	
	Secondary reinforcement		
	Fault level reinforcement	The DNO submitted volumes were accepted. We applied an adjustment factor based on the network characteristics to the median DNO forecast unit costs. We made a qualitative adjustment for NPgN.	
	Transmission connection points	We carried out a qualitative review.	£186m or 1% of totex
	Connections	DNO submitted volumes were generally accepted. We applied the average of the industry's RIIO-ED1 median and the company's own or	£288m or 1% of totex

Building Block	Activity	Cost Assessment Method	RIIO-ED1 Allowance
		industry DPCR5 median unit cost. Qualitative adjustments were made where appropriate.	
Non load-related expenditure	Asset Replacement	We used an asset age-based model to inform the assessment of DNO's replacement volumes. We also introduced regression analysis to consider the efficiency of unit costs and expenditure not covered by age-based modelling. For areas not amenable to such modelling, we analysed unit costs and expenditure trends, and used expert review for specific asset types.	£5,755m or 20% of totex
	Refurbishment	For volumes, we applied run rate analysis and a qualitative assessment. For unit costs, we used median unit cost analysis and a technical review.	£725m or 2% of totex
	Civil works	For each detailed cost area, we used the median run rate as a percentage of the asset base. We applied the industry median unit costs using 8 years of RIIO-ED1 data.	£536m or 2% of totex
	Operational IT and Telecoms	Subject to expert review, with 25% weight given to quantitative assessment and 75% to qualitative expert review. For the quantitative assessment, costs were assessed with non-op capex. Industry median unit costs were applied, and calculated using MEAV as a cost driver and 13 years of data.	£525m or 2% of totex
	Diversions	We set the ex ante allowance based on historical cost data and forecast developments in the number of claims over the RIIO-ED1 period.	£734m or 3% of totex
	Diversions: rail electrification	At fast track, we provided ex ante allowances, with a licence condition to allow costs to be claimed back if they were not incurred. At slow track, we provided no ex ante allowance and dealt with expenditure through an UM.	£115m or 0.4% of totex

Building Block	Activity	Cost Assessment Method	RIIO-ED1 Allowance
	ESQCR	DNO submitted volumes were accepted. We applied industry median unit costs at each voltage using 13 years of data. The calculation excluded the completed scope of works.	£236m or 1% of totex
	Legal & safety	We applied industry median unit costs at each voltage using 13 years of data. Asbestos management was excluded from benchmarking.	£530m or 2% of totex
	QoS & North of Scotland resilience	No ex ante allowances were set, but under the methodology for the Information Quality Incentive (IQI) some QoS costs were included in the baselines. We provided an upfront allowance for SSEH in RIIO-ED1 for the improved resilience for worst served customers (WSC).	£58m or 0.2% of totex
	Flood resilience	A risk-based approach was employed. Risk point delta was calculated for each substation before and after intervention. The unit cost of each risk point reduced/maintained the lower of the DNO's own and the industry LQ. The unit cost applied that to the delta.	£120m or 0.4% of totex
	BT21C	We set allowances for the fading out of this activity. We applied industry median unit costs using 13 years of data.	£88m or 0.3% of totex
	Losses and environment	DNO submitted volumes were accepted. Unit costs were bespoke to each category, but we applied industry median unit costs using 13 years of data where there were sufficient data points	£138m or 0.5% of totex
	HILP	No costs were submitted	
	CNI	Costs were accepted as submitted	£8m or 0.03% of totex
	Black start	We applied industry median unit costs using forecast data for each sub-category. The volumes of batteries were based on the number of unprotected primary substations multiplied by the industry average number of batteries per substation. The submitted	£66m or 0.2% of totex

Building Block	Activity	Cost Assessment Method	RIIO-ED1 Allowance
		volumes for the internal telephony, mobile and voice communications and SCADA infrastructure were accepted.	
	Rising and lateral mains (RLM)	We accepted volumes following a qualitative assessment and a review of DNO run rates. We accepted that the volumes do not lend themselves to benchmarking. We calculated the unit costs based on RIIO-ED1 data using customer numbers as a cost driver using all 13 years of data.	£211m or 0.7% of totex
	Improved resilience	Technical review	
Network Operating Costs (NOCs)	Faults	We used bespoke ratio benchmarking for each voltage level and fault category. DNOs were awarded their submitted unit cost for submarine cables.	£2,685m or 9% of totex
	Occurrences not incentivised (ONIs)	Ratio benchmarking analysis was used for both volumes and unit costs at a disaggregated level. Efficient volumes were assessed taking the lower of DPCR5 actual or RIIO-ED1 volumes submitted.	£605m or 2% of totex
	Severe weather – 1-in-20	We estimated an industry wide view of required expenditure. This was based on 50% of the DPCR5 UQ per annum cost of SW 1-20 events multiplied by the probability of a SW 1-20 event occurring, plus 50% of the DNOs' forecast expenditure. We allocated this expenditure based on the overhead line (OHL) MEAV.	£118m or 0.4% of totex
	Inspections and maintenance (I&M)	We assessed volumes based on MEAV (with a different MEAV used for LPN to reflect its lack of overhead lines). Our unit cost assessment was calculated using the industry median as a benchmark.	£1,116 or 4% of totex
	Tree cutting	At slow track, we applied regression analysis to the	£1,025 or 4% of totex

Building Block	Activity	Cost Assessment Method	RIIO-ED1 Allowance
		ENATs 43-8 activity,[61] with ETR 132 activity[62] subject to a separate assessment. We used spans cut as the driver for the regression. We applied a scaling adjustment but did not apply a workload adjustment. For Tree Cutting ETR 132, we applied a unit cost assessment using the industry median as the benchmark. NPg were excluded due to a different approach (qualitative assessment)	
	NOCs other	For substation electricity, we applied the industry median unit costs using 8 years of RIIO-ED1 data for each substation. For dismantlement, we applied the industry median percentage annual increase in costs between DPCR5 to RIIO-ED1 to each DNO's DPCR5 costs. For remote location generation fuel costs and remote location generation operation and maintenance costs, we applied the DPCR5 actual (4 years) annual costs to the 8 years of RIIO-ED1.	£321m or 1% of totex
	Ex-ante smart meter call out costs	A 2% call out rate was applied to volumes. We applied the industry Lower Quartile unit costs.	£201m or 1% of totex
Closely Associated Indirects (CAI)	Network design and engineering, project management, system mapping, EMCS, stores, network policy, control centre, call centre	Eight activities were aggregated and regressed using 8 years of forecast data and MEAV and asset additions as the explanatory variable. We made a qualitative adjustment to UKPN allowances based on scale.	£5,723m or 20% of totex for CAI
	Wayleaves	We applied industry median unit costs calculated using 13 years of data and the number of supports as a cost driver.	
	Vehicles and transport	We assessed this together with non-	

[61] Energy Networks Association (ENA) Technical Specification 43-8 on overhead line clearances.
[62] ENA Engineering Technical Report (ETR) 132 "Vegetation management near electric overhead lines for the purpose of improving network performance under abnormal weather conditions"

Building Block	Activity	Cost Assessment Method	RIIO-ED1 Allowance
		operational capex vehicles. We applied the industry median unit cost using 13 years of data and MEAV as a cost driver.	
	Operational training and workforce renewal	For operational training, we applied industry median unit costs based on DNO submitted employee numbers. For workforce renewal, we applied industry median unit costs based on DNO submitted leaver numbers.	
	Streetworks	Traditional streetworks costs were embedded in the relevant activity. For permits, volumes and unit costs were taken as the lower of actual annual average costs of each DNO actuals and its RIIO-ED1 forecasts. For lane rentals, volumes and unit costs were taken as the lower of actual annual average costs of each DNO and its RIIO-ED1 forecasts. Permit condition costs were subject to a qualitative assessment following the submission of further evidence.	
Business Support Costs (BSCs)	Finance & regulation, HR & non-operational training, property management and CEO & group functions	We applied the industry median unit costs using 13 years of data and MEAV as a cost driver.	£3,098m or 11% of totex for BSCs
	IT&T	Subject to expert review, with 50% weight given to quantitative assessment and 50% to qualitative expert review. For the quantitative assessment, we applied industry median unit costs using MEAV as a cost driver and 13 years of data. The analysis was carried out at DNO group level.	
Non-operational capex	IT&T	Subject to expert review, with 25% weight given to quantitative assessment and 75% to qualitative expert review. For the quantitative assessment, this was assessed with operational IT&T. We applied the industry median unit costs using MEAV as a cost driver and 13 years of data.	£1,104m or 4% of totex for Non-op capex

Building Block	Activity	Cost Assessment Method	RIIO-ED1 Allowance
	Vehicles and transport	As per CAI vehicles and transport.	
	Property	We applied the industry median unit costs using 13 years of data and MEAV as a cost driver.	
	Small tools, equipment, plant and machinery	We conducted a qualitative review of each of the DNO costs. We applied the industry median unit costs using 13 years of data and MEAV as a cost driver.	

Appendix 4 – LI Bandings

LI Logic

Ranking	Loading (percentage)		Duration Factor (hours)	
	Lower bound	Upper bound	Lower bound	Upper bound
LI1	0%	<80%	n/a	n/a
LI2	80%	<95%	n/a	n/a
LI3	95%	<99%	n/a	n/a
LI4	99%	n/a	0	<9
LI5	99%	n/a	9	n/a

Risk weighting

Ranking	Weighting
LI1	1
LI2	1
LI3	1
LI4	20
LI5	100

Appendix 5 – Statistical Tests

Test	Description
Statistical significance of the coefficients (elasticities)	This test is asking whether we can be confident that there is a relationship between the explanatory variable and cost – or more formally can we (statistically) reject the proposition that there is no relationship (ie that the coefficient is zero). Establishing that the coefficient is different to zero may be a low hurdle to overcome for a composite scale measure, which will surely have a positive coefficient. What may be more important is whether the coefficient is plausible in terms of its size, which is also related to whether we think we have constant, increasing or decreasing returns to scale.
The RESET test	This test considers whether there is some non-linear relationship in the model that has not been captured. In the cost modelling literature this is normally dealt with by considering a translog specification which captures these non-linearities directly. A translog model explicitly seeks to incorporate squared and interaction terms for the purpose of approximating complex technologies where, for example, the degree of returns to scale may vary with firm size.
Normality of errors	Violations of this assumption does not affect the properties of OLS estimators themselves. They remain the best linear unbiased estimators. The impact of non-normality only has implications for the ability to use finite sample inference – that is, making judgements about the statistical significance of the parameters in small samples.
Correlation/ heteroscedasticity	Violations of the assumptions in OLS impact only on the standard errors and do not cause the estimates themselves to be biased. The standard response to this potential issue is therefore to use robust standard errors when making an assessment of statistical significance.
Testing for panel effects	Given that our dataset comprises observations on multiple GDNs over several years, it is a valid question to consider whether models that explicitly recognise the panel structure of the data might be valid alternatives to OLS (which pools the data and treats all observations as independent).
Endogeneity	In regression analysis the explanatory variables are assumed to be exogenously given and not under the control of the firm. However, this assumption may not hold for some variables, such as measures of quality. This introduces a possible source of bias since, for example, factors that are omitted from the model (and which are therefore part of the error term) may be correlated with both costs and quality. This issue is complex and should be considered on a case by case basis.

Appendix 6 – Consultation Questions

Annex 2: Keeping bills low for consumers	
Approach to Aggregated Econometric Analysis	
COQ1:	Do you agree with our proposal to include totex benchmarking in our toolbox for cost assessment in RIIO-ED2?
COQ2:	What cost drivers do you consider appropriate for our proposed totex benchmarking? Why?
COQ3:	What are your views on the use of both historical and forecast data in our modelling?
COQ4:	At what level should we set the efficiency benchmark?
COQ5:	Do you agree with the proposed criteria for developing cost pools for a middle-up approach?
COQ6:	What cost drivers would be appropriate in a middle-up approach?
COQ7:	What are your views on the CEPA developed totex and opex plus approach? What opex activities are there trade-offs that support the rationale for testing 'totex and opex plus' modelling?
COQ8:	Do you believe it is appropriate to use bottom-up, activity-level, disaggregated modelling in RIIO-ED2?
COQ9:	If we use a combination of aggregated and disaggregated modelling approaches, how should we determine the weight we apply to each, in combining our analysis?
COQ10:	If we did not use disaggregated modelling approaches, what approach should we consider for disaggregating totex allowances for the setting of PCDs?
Model Specification	
COQ11:	What model estimation options should be considered for our cost assessment and why?
COQ12:	Do you agree with our proposal to continue using Cobb-Douglas functional form? Why?
COQ13:	Do you have any views on our proposed model selection criteria?
Regional and Company Specific Factors	
COQ14:	Do you agree with the proposed criteria for assessing regional and company specific cost factors that we have outlined?
COQ15:	What are your views on our approaches to account for regional and company specific cost factors in our modelling?
Real Price Effects and Ongoing Efficiency	
COQ16:	Do you agree with our proposed approach to index RPEs, rather than setting an ex-ante allowance based on forecasts?
COQ17:	Do you agree with our proposal to have a high materiality threshold for RPEs? What are your views on the materiality level for RPE submissions, and the criteria we use to select input price indices?
COQ18:	Do you agree with the suggested common input and expenditure categories for structuring RPEs in ED2?
COQ19:	Do you agree with our proposed approach, and its scope, to set an ongoing efficiency assumption for RIIO-ED2?
COQ20:	Do you agree with our proposal to use a growth accounting approach as our primary source of evidence to set an ongoing efficiency assumption? What parameters would best support this approach?

Annex 2: Keeping bills low for consumers	
Disaggregated Cost Assessment	
COQ21:	Do you agree with our proposed approach on forecasting options for RIIO-ED2
COQ22:	What are your views on our proposal for establishing network impacts and assessing LRE requirements for RIIO-ED2?
COQ23:	Do you agree with our proposal to compare flexibility solutions and network based solutions evenly in our cost assessment?
COQ24:	How should we treat the fixed costs of procuring flexibility when considering flexibility solutions as an alternative to reinforcement?
COQ25:	What are you views on the use of LIs as outputs in RIIO-ED2?
COQ26:	What are you views on the treatment of incremental costs in RIIO-ED2?
COQ27:	Do you agree with our proposal to maintain the RIIO-ED1 approach to assessing Non-op capex costs in RIIO-ED2?
COQ28:	Do you agree with our proposal to maintain the RIIO-ED1 approach to assessing NLRE in RIIO-ED2?
COQ29:	Do you agree with our proposal to maintain the RIIO-ED1 approach to assessing NOCs in RIIO-ED2?
COQ30:	Do you agree with our proposal to maintain the RIIO-ED1 approach for assessing CAIs in RIIO-ED2?
COQ31:	What are your views on the different approaches presented for the treatment of BSCs in RIIO-ED2?
Cost Benefit Analysis	
COQ32:	Do you agree with our proposed application of CBA in the appraisal of investment options for RIIO-ED2?
Engineering Justification Papers	
COQ33:	Do agree with our proposals to retain the requirement for DNOs to produce Engineering Justification Papers?
COQ34:	Do agree with our proposal retain the assessment framework for EJPS developed as part of the RIIO2 process?
COQ35:	Do agree with our proposal to adopt the principals outlined above to guide the production of EJPS and focus the engineering submission?
Data Assurance and Compliance	
COQ36:	What specific activities and methods should be adopted to ensure the Data, Data Assurance and Compliance processes of the RIIO-ED2 price control are run as effectively as possible?
Uncertainty Mechanisms	
COQ37:	Do you agree with our proposed uncertainty mechanisms and their design?
COQ38:	Are there any other uncertainty mechanisms that we should consider? If so, how should these be designed?
COQ39:	Do you agree with our proposed removal of the above uncertainty mechanisms for RIIO-ED2?
COQ40:	Do you agree with our proposed common approach for re-openers being applied to RIIO-ED2?
Increasing Competition	
COQ41:	Do you agree that our flexibility proposals are sufficient to incentivise DNOs' native competition?

Annex 2: Keeping bills low for consumers	
COQ42:	Do you believe there are similarities between DNOs running early competitions and the roles and activities that may be related to electricity DSO functions?
COQ43:	Do you agree with our proposed approach on early competition?
COQ44:	Do you have any views on our draft RIIO-ED2 Late Competition Impact Assessment?
COQ45:	What are your initial views on the three models of late competition (CATO/CADO, SPV and CPM) in the context of electricity distribution? If there would need to be differences from the other sectors, can you please explain what these should be, and why.
COQ46:	Do you agree that the late competition models proposed could deliver benefits in RIIO-ED2?
COQ47:	Do you agree that our proposed criteria for identifying projects suitable for late model competition are applicable in the context of electricity distribution?
COQ48:	What are your views on the best ways to identify a suitable project pipeline for late competition in electricity distribution (eg our proposal to require flagging of projects that meet the high-value, new, and separable criteria)?
COQ49:	Do you agree with the proposed range of options available for repackaging projects in RIIO-ED2 in order to maximise consumer benefit?
COQ50:	What relevant factors do you think we should consider in deciding how these repackaging proposals are specifically applied in electricity distribution?
Incentivising Business Plans and their Delivery	
COQ51:	Do you agree with our proposed approach to implementing the CDIR method in setting the TIM efficiency incentive rate?
COQ52:	Do you agree with our proposed design of the BPI for RIIO-ED2?
COQ53	What are your views on our suggestion to use proposals contained in draft business plans in the setting of baseline standards in a number of areas (as discussed in paragraphs 13.28 and 13.29)?
COQ54	Do you agree with our proposal to cap the number and value of CVP proposals that can be included within business plans
COQ55:	Is there any further detail on the proposed content of the Business Plans that you think should be set out in the Business Plan Guidance?
COQ56:	Is there other information that we should be requesting in the Business Plan Guidance in order to assess a network company's Business Plan?
COQ57:	Do you agree with the proposed set of minimum requirements for Stage 1 of the BPI that are set out in the draft Business Plan Guidance?
COQ58:	Do you agree with the approach for assessing companies CVP proposals that is set out in the draft Business Plan Guidance?
COQ59:	We anticipate that DNOs are investing in improving / creating data dictionaries and business information models that describe the data-driven aspects of DNOs overall business architecture. We anticipate there may be opportunities to take advantage of these investments to support the process of cross-referencing data used within RIIO-ED2 Business Plans. What are your views on this?