



Promoting choice and value

for all gas and electricity customers

# Strategy decisions for the RIIO-ED1 electricity distribution price control

## Tools for cost assessment

### Supplementary annex to RIIO-ED1 overview paper

**Reference:** 26e/13  
**Publication date:** 04 March 2013

**Contact:** James Hope  
**Team:** RIIO-ED1  
**Tel:** 020 7901 7029  
**Email:** RIIO.ED1@ofgem.gov.uk

#### Overview:

The next electricity distribution price control, RIIO-ED1, will be the first to reflect the new RIIO model. RIIO is designed to drive real benefits for consumers; providing network companies with strong incentives to step up and meet the challenges of delivering a low carbon, sustainable energy sector at a lower cost than would have been the case under our previous approach. RIIO puts sustainability alongside consumers at the heart of what network companies do. It also provides a transparent and predictable framework, with appropriate rewards for delivery.

In September 2012 we consulted on the key elements of the regulatory framework ("strategy") that the 14 electricity distribution companies (DNOs) will need to understand in order to develop their business plans. We are now setting out our decision on this strategy. This supplementary annex to the main decision document sets out our latest thinking on the tools we will use to assess the costs in the DNOs' business plans. This document is aimed at those who want an in-depth understanding of our decisions. Stakeholders wanting a more accessible overview should refer to the main overview decision document.

## Associated documents

---

### Strategy decision for RIIO-ED1 - Overview

<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1DecOverview.pdf>

### Links to supplementary annexes

- Strategy decision for RIIO-ED1 - Outputs, incentives and innovation  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1DecOutputsIncentives.pdf>
- Strategy decision for RIIO-ED1 - Business plans and proportionate treatment  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1DecBusinessPlans.pdf>
- Strategy decision for RIIO-ED1 - Uncertainty mechanisms  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1DecUncertaintyMechanisms.pdf>
- Strategy decision for RIIO-ED1 - Financial issues  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1DecFinancialIssues.pdf>
- Strategy decision for RIIO-ED1 - Tools for cost assessment  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1DecCostAssessment.pdf>
- Strategy decision for RIIO-ED1 - Reliability and safety  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1DecReliabilitySafety.pdf>
- RIIO-ED1 Glossary of terms  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1SConGlossary.pdf>

### Links to other associated documents

- Strategy consultation for RIIO-ED1 - Overview  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1SConOverview.pdf>
- Open letter consultation on the way forward for RIIO-ED1  
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1LaunchOpenLetter.pdf>
- Handbook for implementing the RIIO model  
<http://www.ofgem.gov.uk/Networks/rpix20/ConsultDocs/Documents1/RIIO%20handbook.pdf>
- Electricity Distribution Price Control Review 5 (DPCR5) Final Proposals  
[http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/DPCR5/Documents1/FP\\_1\\_Core%20document%20SS%20FINAL.pdf](http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/DPCR5/Documents1/FP_1_Core%20document%20SS%20FINAL.pdf)

# Contents

---

<b>1. Overview to cost assessment</b>	<b>5</b>
Introduction	5
Overview to cost assessment	6
Structure of this document	8
<b>2. Our approach to benchmarking</b>	<b>9</b>
Introduction and high-level thinking	9
Totex benchmarking	10
Disaggregated benchmarking	13
<b>3. Regional and company specific factors</b>	<b>17</b>
Our updated thinking	17
Summary of consultation proposals	17
Summary of responses	17
Reasons for our updated thinking	18
<b>4. RPEs and ongoing efficiency</b>	<b>19</b>
Introduction	19
RPEs	19
Ongoing efficiency	23
<b>5. Network investment – load-related expenditure</b>	<b>27</b>
Introduction	27
Our updated thinking	29
Summary of consultation proposals	34
Summary of consultation responses	37
Reasons for our updated thinking	39
<b>6. Network investment – Non-load-related expenditure</b>	<b>44</b>
Introduction	44
Our updated thinking	44
Summary of consultation proposals	51
Summary of consultation responses	55
Reasons for our updated thinking	55
<b>7. Network operating costs</b>	<b>59</b>
Introduction	59
Trouble Call	59
Severe weather 1 in 20 events	63
Inspection and maintenance	63
Tree cutting	65
NOCs other	67
Smart meter roll-out (additional call outs)	69
<b>8. Closely associated indirect costs</b>	<b>70</b>
Introduction	70
Our updated thinking	70
Summary of consultation proposals	71
Summary of responses	72
Reasons for our updated thinking	74



Strategy decisions for the RIIO-ED1 electricity distribution price control  
Tools for cost assessment

<b>9. Business support costs</b>	<b>76</b>
Our updated thinking	76
Summary of consultation proposals	76
Summary of responses	77
Reasons for our updated thinking	79
<b>Appendices</b>	<b>80</b>
<b>Appendix 1 - Summary of consultation responses</b>	<b>81</b>

# 1. Overview to cost assessment

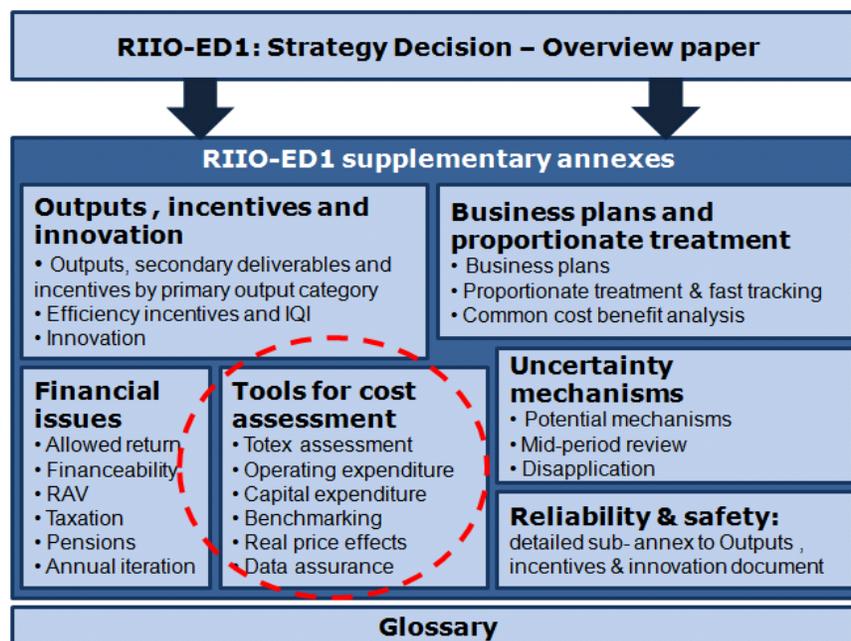
## Chapter Summary

This chapter provides a brief introduction to this supplementary annex on our tools for costs assessment and sets out the document structure.

## Introduction

- 1.1. The electricity distribution price control review, RIIO-ED1, is the first electricity distribution review to be carried out under the new RIIO framework.
- 1.2. In September 2012 we published our strategy consultation for this review through the 'Strategy consultation for the RIIO-ED1 electricity distribution price control'. Following consideration of the responses to our consultation, this document sets out our thinking so far on the tools we will use for cost assessment.
- 1.3. This document is aimed at those who seek an in-depth understanding of our decision. Stakeholders wanting a more accessible overview should refer to the 'RIIO-ED1 Strategy decision – Overview'. Figure 1.1 below provides a map of the RIIO-ED1 documents published as part of this strategy decision.

**Figure 1.1: Map of RIIO-ED1 strategy decision documents**



*Links to these documents can be found in the 'Associated documents' section of this document*

## Overview to cost assessment

- 1.4. This supplementary annex sets out the methods we intend to use to assess the costs proposed by the DNOs for the RIIO-ED1 period, and the quality, robustness and objectivity of their cost justifications. We will apply a proportionate, output focussed approach to cost assessment using a toolkit of techniques such as:
  - a review of the justification for expenditure and evidence on efficiency
  - total expenditure (totex) benchmarking
  - disaggregated benchmarking
  - asset volumes and unit cost analysis
  - historical trend analysis
  - expert review
  - individual project review.
- 1.5. We expect DNOs to demonstrate their costs are efficient. This should include, where relevant, results of DNOs' own benchmarking, cost benefit analysis, results of tendering exercises and any other evidence that looks to demonstrate that the proposed costs are clearly efficient.
- 1.6. We have continued working with the cost assessment working group (CAWG) where DNOs and other stakeholders inform our cost assessment approach to RIIO-ED1. Our thinking on cost assessment set out in this document reflect developments in our own thinking, responses to our consultation and views expressed by stakeholders at the CAWG.
- 1.7. We will continue to develop elements of our toolkit ahead of the July 2013 business plan submissions. In particular, we will look to firm up the driver selection and composition for each of the areas of analysis. We will endeavour to circulate our models ahead of submissions of the business plans, although further analysis/development may be necessary once the plans are submitted. We will set out further detail on our assessment methods in our November 2013 decision on fast-tracking.
- 1.8. The responses to our consultation were predominately from the six DNO groups. The majority of other stakeholders opted to respond to the higher level questions in the 'Strategy consultation – Overview' document, except for two stakeholders who provided detailed responses related to workforce renewal.

## Benchmarking

- 1.9. In our September strategy consultation we outlined our intention to use aggregated or top-down approaches, such as total expenditure (totex) benchmarking, alongside more disaggregated analysis to inform our views on the reasonableness of the overall costs proposed in the DNOs' business plans.

- 1.10. We intend to use two totex benchmarking models, one based on a model developed by our independent external consultants and the other based on the RIIO-GD1 totex approach. Further detail on the totex benchmarking models can be found in Chapter 2. We consider that totex benchmarking provides an important assessment of the overall efficiency of total expenditure relative to a set of drivers, which is relatively immune to differences in cost allocation and takes account of opex-capex trade-offs.
- 1.11. We also intend to use two more disaggregated benchmarking models. The first model will be based on unit cost benchmarking of individual assets and activities. The second model will combine regression and technical/qualitative analysis on defined groups of costs. The model is similar to the disaggregated model used in RIIO-GD1. We consider that disaggregated model allows a less constrained and more intuitive specification of costs and cost drivers.

### **Regional and company specific factors**

- 1.12. The onus is placed firmly on the DNO to justify, through robust and transparent evidence, that a regional or company specific adjustment is warranted.
- 1.13. This position holds true for our view of any 'fixed effects' that a DNO may believe warrant specific consideration. It is up to the DNO to provide sufficient justification, and to show how such effects have been minimised.

### **Real price effects and ongoing efficiency**

- 1.14. We expect the DNOs to reflect assumptions for real price effects (RPEs) and ongoing efficiencies in their business plans. We also expect them to evidence how these assumptions were derived.
- 1.15. We will provide DNOs with an ex ante allowance that reflects these assumptions. In setting ex ante allowances we intend to apply a common assumption for RPEs and ongoing efficiency for all non-fast-tracked DNOs. This common assumption will be based on an analysis of the evidence presented in business plans and our own analysis. We will provide fast-tracked DNOs with the cost allowances which are justified in their business plans.

### **Activity based analysis**

- 1.16. Our approach to activity based analysis, including network investment, network operating costs, closely associated indirect costs and business support is outlined in the individual Chapters 5 to 9.

## **Pensions**

1.17. Under our pension methodology (set out in appendix 6 of the 'Supplementary annex – Financial issues') pension costs attributable to the licensee, but which relate to pensionable service on or after 1 April 2010, are considered as a constituent part of labour costs/totex for price control purposes, which we benchmark. This includes costs relating to any deficit that accrues in relation to such service; this is termed the incremental deficit. We do not set specific allowances for ongoing (defined benefit or defined contribution) pension service costs, pension scheme administration and PPF levy costs; and the annual funding costs of the incremental deficit. We do set a specific allowance to fund the established deficit, ie the deficit relating to pensionable service before 1 April 2010.

## **Structure of this document**

1.18. The remainder of the document provides further detail on our approach to cost assessment. The document is structured as follows:

- Chapter 2: our approach to benchmarking
- Chapter 3: regional and company specific factors
- Chapter 4: real price effects (RPEs) and ongoing efficiency
- Chapter 5: network investment – load-related expenditure
- Chapter 6: network investment – non-load-related expenditure
- Chapter 7: network operating costs
- Chapter 8: closely associated indirect costs
- Chapter 9: business support costs

## 2. Our approach to benchmarking

---

### Chapter Summary

This chapter outlines our intended approach for totex and disaggregated benchmarking in RIIO-ED1. It also sets out our thinking in respect of the use of mid-level 'output based' model.

### Introduction and high-level thinking

- 2.1. Under the RIIO framework, we draw on a variety of evidence, including qualitative analysis of companies' forecasts and our own benchmarking analysis, as a means of informing our assessment of efficient costs.
- 2.2. In this chapter we set out our latest thinking on our approach to benchmarking. In particular, we set out our intention to use a number of benchmarking approaches to inform our assessment of the efficiency of cost forecast within the companies' business plans.
- 2.3. We consider that benchmarking analysis should inform but not determine our assessment of the companies' forecasts. The robustness of the companies' narrative and evidence will be a key factor in deciding whether their forecasts are appropriate or whether we should seek to adjust them.
- 2.4. We do not intend to carry out benchmarking in a mechanistic way. Benchmarked costs may be subject to pre-modelling adjustments based on qualitative analysis (for example regional adjustments, see Chapter 3). Likewise, some costs may be excluded from our benchmarking models (and assessed qualitatively) where we consider that their inclusion may distort the outcome. This includes costs that do not have a suitable driver or costs that are largely not under the company's control. We will also subject our benchmarking results to post-modelling adjustment of volumes and workload based on our technical analysis.
- 2.5. We intend to use totex benchmarking as well as more disaggregated benchmarking supported by technical/qualitative analysis as part of our toolkit for cost assessment. Totex models ensure that we consider DNOs' opex-capex trade-offs in our cost assessment. This means that we can identify the companies that have minimised total costs relative to specified cost drivers. Disaggregated models allow a less constrained and more intuitive specification of cost functions of different cost activities. We consider that using a variety of approaches acknowledges that there is no one correct model for assessing comparative efficiency but a number of plausible ones.

- 2.6. Irrespective of whether totex or disaggregated benchmarking is used, all approaches result in an estimation of efficient total costs. Totex benchmarking refers to models that benchmark totex as a single aggregated cost. Disaggregated benchmarking refers to models that benchmark sub-sections of costs separately and then aggregate them into total costs. Our method of aggregation (described below in this chapter), ensures that we do not create an artificially low benchmark for companies.
- 2.7. We intend to use historical as well as forecast data in our benchmarking models.
- 2.8. We have not yet determined the weight we will assign to different elements of our analysis in our overall cost assessment. We will determine weights at a later stage, taking into consideration a range of factors, including data quality, the statistical properties of the models, and the extent to which the models capture additional information.

## Totex benchmarking

### Our updated thinking

- 2.9. Totex benchmarking is an important component of our toolbox of cost assessment techniques. We will calculate totex as the sum of opex and capex, where opex would exclude costs outside of the DNOs' control (eg license fee) and capex would be measured as capital expenditure (as opposed to capital consumption).
- 2.10. Our latest thinking is to use two totex benchmarking models. In the first model we will specify a cost function which is consistent with the disaggregated models; the cost driver of totex, which will be a weighted composite of the cost drivers of the disaggregated regressions. This is similar to the approach used in RIIO-GD1.
- 2.11. In the second model, the set of cost drivers will be determined independently of the disaggregated regressions, focusing on key higher level explanatory variables. Whilst our consultants are developing a version of this model, we are not committed necessarily to using the same specification of drivers, functional form or estimation technique as proposed by our consultants. Indeed, our decision will be informed by information submitted by the DNOs as part of their business plan submission.
- 2.12. We consider that using the two totex approaches side by side could provide useful validation for the results of each approach.
- 2.13. We are minded to set the benchmark for efficient costs at the upper quartile (UQ) level of performance, allowing for other factors that may influence our results. However, we may vary this if there are particular concerns with

regards to data quality. We will apply ongoing efficiency rates to roll forward our base year costs.

### **Summary of consultation proposals**

- 2.14. In our September strategy consultation we proposed that the totex model would be a critical part of our toolkit to assess the relative efficiency of DNOs' business plans.
- 2.15. We proposed to measure totex as the sum of opex and capital expenditure (as opposed to capital consumption) in line with RIIO-T1 and GD1.
- 2.16. We proposed to draw on learning from RIIO-GD1 related to the use of totex for benchmarking. In particular, we sought views on the application of pre-modelling regional cost adjustments, the use of composite cost drivers, the application of RPEs and ongoing efficiency to base year costs and the application of upper quartile benchmarking.

### **Summary of responses**

- 2.17. Respondents supported the use of totex benchmarking as part of our toolkit, although there were differences of opinion regarding the weight that should be placed on this relative to other models.
- 2.18. Respondents to our consultation were generally supportive of benchmarking techniques, but some DNOs felt that the benchmarking models should be used as a directional tool or starting point for our analysis rather than be applied mechanistically.
- 2.19. Supporters of totex reiterated its advantages; in particular that totex encourages DNOs to adopt the lowest cost interventions to deliver a set of outputs. It was noted that one of the key strengths of the totex benchmarking is that it uses high level drivers (such as customer numbers and peak demand) which they viewed as being stable over time and that evidence suggests they are a good proxy for overall network complexity which drives total costs.
- 2.20. Those more sceptical of the approach reiterated its limitations, with a particular focus on:
  - Cost drivers – some respondents felt that the totex model uses high level cost drivers without direct and clear relation to total costs.
  - Lack of transparency – the totex model as presented in the September strategy consultation does not provide clear indication of why a DNO performs well or poorly.
  - Determination of efficient costs – it was argued that given the simplicity of the model, inefficiency could be due to un-modelled factors. In particular,

it was felt that the model did not account for differences in output delivery.

- 2.21. Respondents were generally supportive of using a similar approach to RIIO-GD1. In particular there was support for using the upper quartile for totex benchmarking as well as for removing costs deferred to an uncertainty mechanism. There was also support for using a composite cost driver with appropriate weighting. One respondent disagreed with the use of composite scale variables because of their lack of transparency.
- 2.22. Some respondents were concerned that the wide range of normalisation adjustments applied to the data in the RIIO-GD1 totex model may distort the results of the model.
- 2.23. There was support for only selective well-justified regional adjustments to be made.
- 2.24. Respondents largely supported the use of capital expenditure as opposed to capital consumption, on practical grounds. While capital consumption measures were seen as theoretically more appropriate, practical issues associated with their use (inconsistent data sets, availability of comparable historical data, etc) were generally viewed as outweighing the potential benefits. One respondent noted that the use of capital expenditure will require some means of normalisation so that a DNO is not penalised for being at a point in its investment cycle where significant expenditure is required.
- 2.25. Respondents thought lumpy expenditure should be smoothed over a time period appropriate to the activity in question. Respondents also argued that a long run model, ie a model that includes 'enough' years in the benchmarking, should be able to deal with the issue.

### **Reasons for our updated thinking**

- 2.26. We consider that totex benchmarking is an important tool for the assessment of relative efficiency. Totex benchmarking offers two main advantages over more disaggregated approaches; (i) it captures cross-activity trade-offs relatively well, and (ii) it is not affected by cost categorisation issues. It provides a good measure of the efficiency for the overall costs of a DNO, relative to a set of explanatory variables. However, there are some weaknesses with a totex approach in that it is only possible to use a small number of factors to explain costs, and therefore it may have a less rich specification than more disaggregated analysis. We therefore intend to adopt a balanced approach using totex together with more disaggregated approaches.
- 2.27. Our intention to use two totex benchmarking models is in part to address concerns related to the use of high level cost drivers in the 'independent'

totex model (the model developed by our external consultants). We consider that examining a totex model which relies primarily on exogenous cost drivers, alongside a model that uses a composite scale variable composed of lower level cost drivers, can provide a useful sensitivity check and add credibility to the models' outcome.

- 2.28. Our intention to use capital expenditure as a measure of capex is motivated by practical considerations, as noted in our strategy consultation and by respondents to our consultation.
- 2.29. Our intention to use the UQ rather than the frontier to benchmark efficient costs acknowledges that a part of the difference in costs across the DNOs relates to factors other than DNOs' relative efficiency (eg statistical errors).
- 2.30. Our intention is that we will make as few normalising adjustments as possible prior to benchmarking. However, our decision will ultimately be guided by the quality of the data submitted by the DNOs and we will carry out normalisation adjustments where necessary.
- 2.31. We are placing the onus firmly on the DNOs to justify, through robust and transparent evidence, that a regional or company specific adjustment is warranted. Further detail on our latest thinking on regional and company specific adjustments can be found in Chapter 3.
- 2.32. We will smooth lumpy expenditure over a time period appropriate to the activity in question.

## Disaggregated benchmarking

### Our updated thinking

- 2.33. We intend to use two disaggregated benchmarking models as part of our toolkit for cost assessment:
  - a "unit cost" model
  - a "regression based" model (similar to that used in RIIO-GD1)
- 2.34. The "unit cost" model was initially developed by one of the DNOs and is now in our ownership. The model is based on unit cost benchmarking at the most disaggregated level of information contained within the annual Regulatory Reporting Packs (RRPs). The model does not use regression analysis.
- 2.35. The model allows us to calculate DNOs' forecast costs on the basis of average or median unit costs, and efficiency scores as the ratio of DNOs' forecast costs to the revised forecast. Key inputs to the model are an assumption on fixed costs for each activity and the availability of a suitable cost driver. We continue to receive feedback on this model and intend to refine the drivers

and assumptions in this model to ones we believe are best suited to each of the activities.

- 2.36. Under the “regression based” disaggregated model, we intend to partition totex into a number of cost groups, or cost activities, where each group is a unit of common analysis. We will identify those groups which are suitable for a regression analysis (eg tree cutting) and those that are not. Our intention is to create suitable cost activities where significant inter-activity trade-offs are internalised within the group and, for regressed activities, that each activity can be explained by a set of common cost drivers.
- 2.37. We note that the disaggregated benchmarking will be combined with non-regression (eg qualitative) assessment of cost activities we deem not suitable for regression in order to arrive at a totex allowance.
- 2.38. For regressed costs, we will set the benchmark at the upper quartile level of performance, measured as the ratio of total regressed costs to total modelled costs for each DNO. This method ensures we avoid cherry picking across regressed activities. We will then add our assessed efficient costs for the non-regressed activities to arrive at a measure of total efficient costs. Where appropriate we will make use of technical consultants, potentially in areas such as large load-related investment schemes and information technology and tele-communications investments.
- 2.39. We are minded not to use the ‘output-based’ mid-level model, as developed by one of the DNOs, as an independent benchmarking model in our toolkit. We do, however, expect to use elements of this model to inform our cost assessment, in particular for costs associated with outputs which are not captured in our benchmarking models.

### **Summary of consultation proposals**

- 2.40. Our initial thinking on disaggregated modelling was to take an approach similar to RIIO-GD1. In RIIO-GD1 totex was split into 11 groups, seven of which were subject to regression, on the basis of feedback and discussions with the GDNs. The rest were subject to non-regression assessment.
- 2.41. We also set out possible activity levels on which a mid-level model could be based which would also inform our overall assessment of the DNOs’ business plans:
  - Network Investment
    - Load-Related Expenditure (LRE) split by primary and secondary network
    - Non-Load-Related Expenditure (NLRE) split by output and non-output related expenditure
  - Network Operating Costs (NOCs)



## Strategy decisions for the RIIO-ED1 electricity distribution price control Tools for cost assessment

- Closely Associated Indirect Costs (CAIs)
  - Business Support Costs (BSCs).
- 2.42. We noted also that some of the DNOs were developing a disaggregated “unit cost” model, which offers an alternative means of carrying out the benchmarking analysis.

### **Summary of responses**

- 2.43. In principle there was support for a disaggregated model to be part of the toolkit, as it provides benefits that totex benchmarking does not. There were mixed views on the weight that should be placed on this model.
- 2.44. The major weakness reiterated by a number of respondents was that unit cost modelling or disaggregated regression modelling may not take sufficient account of efficient volumes of work required to deliver agreed outputs.
- 2.45. Some respondents were wary of aggregating the model as a means of comparing with the totex model as it cannot be applied to the entire cost base.
- 2.46. Some respondents argued that at the disaggregated level benchmarking to upper quartile cost can lead to cherry picking, namely that the level of totex efficiency that the companies are benchmarked to amounts to a frontier shift (before application of ongoing efficiency). These respondents advocated average costs benchmarking.
- 2.47. Concerns were raised with regards to the cost drivers used in the version of the DNO model presented at the time of the September strategy consultation. In particular one respondent sought justification on any deviation from the DPCR5 approach to cost drivers. It was noted that the success of a disaggregated model depends on the ability to identify statistically robust cost drivers across all categories ie cost drivers need to go beyond the intuitive.
- 2.48. Respondents considered our proposed levels of disaggregation to be broadly appropriate. One respondent felt that the groupings should not be predetermined but should be revealed by analysis and verified by peer review. Another recommended that the focus on the model should not be around groupings per se but around the principle that the model should test the efficiency of outputs delivered and investment in volume targeting.

### **Reasons for our updated thinking**

- 2.49. We consider that disaggregated benchmarking as outlined in chapters 5 to 9 provides a useful tool for benchmarking DNOs. It allows a less constrained specification of the relationship between cost and cost drivers. Key to this is that the activity levels for regression are defined in a logical way ensuring a

plausible common driver and targeting activities with clear trade-offs. Disaggregated benchmarking has been used in previous price controls as well as in RIIO-GD1.

- 2.50. We will not benchmark at the UQ for individual activities as this creates a risk of cherry picking, or in other words, an artificially efficient benchmark company. Instead we will sum the actual and the modelled costs to calculate an overall efficiency for each DNO and then calculate the UQ benchmark.
- 2.51. We consider that the mid-level model, as developed by one of the DNOs, is not ready for use as a separate benchmarking model. In particular, the outputs used in this mid-level model are not sufficiently consistent across DNOs to provide a useful benchmarking tool. However, we consider that the approach of this model can provide a very useful benchmarking in the future. We intend to keep developing this model and the outputs it requires as a potential benchmarking model for RIIO-ED2.

## 3. Regional and company specific factors

---

### Chapter Summary

This chapter explains our approach to regional and company specific adjustments. It also outlines some of the issues that we expect the DNOs to take account of in their business plans when justifying their proposals.

### Our updated thinking

- 3.1. The onus is placed firmly on the DNOs to justify, through robust and transparent evidence, that a regional or company specific adjustment is warranted. They must also demonstrate that they have managed these factors appropriately to reduce the impact. Once this criterion has been satisfied, we will incorporate such adjustments into our models which support our benchmarking analysis.

### Summary of consultation proposals

- 3.2. For RIIO-ED1 it was proposed that there should be no regional labour or company specific adjustments unless the DNO can satisfy two requirements:
  1. that such an adjustment is justifiable, demonstrated by robust and transparent evidence
  2. that the DNO has managed those factors appropriately.
- 3.3. In line with the RIIO-GD1 approach, the onus is placed firmly on the licensee to justify any proposed adjustments in the submitted business plans.

### Summary of responses

- 3.4. There was support from respondents to our approach of setting a high bar for regional and company specific allowances, although many accepted that the UK's distribution networks are not homogeneous and as such allowance must be made for this.
- 3.5. One respondent stated that it does not believe that there is evidence of regional salary differences outside of central London. Two believed that regional variations extended beyond labour and contractors costs to include quantifiable impacts on productivity due to the operating environment (ie highly dense or highly sparse areas) and the requirement for assets which are unique to a DNO (eg submarine cables, private mobile radio).

- 3.6. With regards to regional adjustments in our benchmarking analysis, one respondent noted that any such adjustments should be made through the inclusion of the relevant cost drivers in regression analysis so that their robustness can be tested. It believed that this should be possible in the totex and mid-model regressions but not for the disaggregated model. It further considered that these adjustments should be added into the modelling as explanatory variables (where any regional or company specific variables are statistically significant), and consideration should be given where econometric corrections cannot be applied.

### Reasons for our updated thinking

- 3.7. We believe that through the use of a toolkit approach to cost assessment, the impact of regional and company specific factors should diminish. We consider that many of these issues are for the DNOs to manage, by isolating individual factors and making company specific adjustments we would be favouring shareholders over customers. There are also practical considerations in respect of such adjustments. The more adjustments that DNOs propose before undertaking any assessment, the longer the fast-track (and non-fast-track) assessment will take. This runs counter to the proportionate approach envisaged by RIIO. We expect DNOs to pay heed to these points when contemplating any company specific adjustments.

## 4. RPEs and ongoing efficiency

---

### Chapter Summary

This chapter sets out the analysis that we intend to carry out to assess the input price inflation and ongoing efficiency assumptions submitted by the DNOs, and the process we will follow to reach our view of the efficient assumptions. It also outlines what we expect the DNOs to provide in order to justify their assumptions.

### Introduction

- 4.1. We will use our cost assessment analysis to set an efficient level of costs for each DNO. We expect that over the price control period costs will change as a result of input price inflation and a counteracting adjustment for improvements in productivity.
- 4.2. Allowed revenues are indexed by the Retail Prices Index (RPI) as part of the price control framework. It is expected that the price of several inputs, most notably labour, will not change in line with the RPI measure of inflation. To account for this differential we provide an ex ante allowance to account for such changes, based on forecasted differences between economy-wide inflation, as measured by the RPI, and input price inflation. This is known as the real price effect (RPE) assumption.
- 4.3. We also expect even the most efficient DNO to make productivity improvements over the price control period, for example by employing new technologies. These improvements are captured by the ongoing efficiency assumption. This assumption represents the potential reduction in input volumes that can be achieved whilst delivering the same outputs.

### RPEs

#### Our decision

- 4.4. We will provide DNOs with an ex ante allowance for the price control period which includes assumptions for RPEs. DNOs will be required, as part of their business plans, to provide evidence to justify their RPE assumptions. We will use the evidence provided by the DNOs and our own analysis to identify appropriate RPE assumptions.
- 4.5. We intend to set common RPE assumptions for all non-fast-tracked DNOs. For fast-tracked DNOs the ex ante allowance that will be provided will incorporate the RPEs set out by the DNO in its business plan, ie our assessment of the suitability of a DNO for fast-tracking will include an assessment of the justification of its RPE assumptions that are included in its forecast costs.

- 4.6. For non-fast-tracked DNOs the RPE assumptions will be based on common assumptions for the path of input prices weighted together based on the notional structure of a DNO. The notional structure will be based on the average structure of all DNOs as submitted in their business plan.<sup>1</sup> This was the approach taken at DPCR5. The reason to apply a notional structure is to ensure we are not rewarding potentially inefficient company structures.
- 4.7. Our approach to deriving our view of an appropriate RPE assumption will draw on the methodological approach and data sources used for RIIO-T1 and GD1.<sup>2</sup> We will however consider further evidence submitted as part of the DNOs' business plans, both in terms of additional data sources and methodological approach.
- 4.8. Our current view is that we will continue to index revenues with reference to the current measure of RPI. We therefore do not consider that any changes are required to how we incorporate RPE assumptions in ex ante allowances.
- 4.9. We are not minded to provide an uncertainty mechanism in relation to RPEs as we consider it may undermine the incentive on DNOs to control their costs. We also consider that the design of such a mechanism may be complex and that this complexity would not be outweighed by the benefits.<sup>3</sup>

### **Summary of consultation proposals**

- 4.10. Our September strategy consultation outlined how we expect to reflect RPEs within our assessment of the cost forecasts submitted by the DNOs in their business plans. We noted that we expect DNOs to include forecasts for RPEs within their business plans and provide justification for these forecasts.
- 4.11. We proposed that in reaching our view on appropriate RPE assumptions we would base it on a forecast of the change in a DNO's costs, relative to the RPI measure of inflation. To set the RPE assumptions we noted that our preferred approach is to split costs into the four main inputs of labour, materials, equipment and plant and other. We noted that the "other" category would capture all costs that did not fall into one of the other categories. We noted that there were a number of cost indices available that could be used to set the ex ante allowance and sought views on any additional indices that we had not considered. We noted that we would consider both historical indices, and their historical relationship with RPI, and make use of independent forecasts of cost indices where available.

---

<sup>1</sup> By average structure we mean the proportion of a DNO's costs that are labour, materials etc.

<sup>2</sup> See RIIO-GD1: Final Proposals – Real price effects and ongoing efficiency (December 2012):

[http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/5\\_RIIOGD1\\_FP\\_RPE\\_DEC12.pdf](http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/5_RIIOGD1_FP_RPE_DEC12.pdf)

<sup>3</sup> See the 'Supplementary annex - Uncertainty mechanisms' for further information on the costs and benefits of uncertainty mechanisms.

- 4.12. We also stated that we would draw on the work completed in this area for RIIO-T1 and GD1, as well as previous electricity distribution price control reviews.

### **Summary of responses**

- 4.13. There was general agreement that ex ante allowances should incorporate the impact of RPEs. Two responses specifically noted that the analytical techniques used to set RPEs at DPCR5 continue to be appropriate. Some respondents noted that RPEs should cover specialist labour, materials, contractor costs and road fuel. One DNO requested further discussion on inclusion of RPEs in the business plans in order that a consistent approach is taken across DNOs.
- 4.14. A number of responses noted the importance of relying on varied and independent analysis, and also up to date information, when drawing conclusions. Some respondents considered that independent forecasts should be used where available but it was also noted that these may only be available for the short term. One respondent proposed that we also examine the macroeconomic forecasts developed by the Office of Budget Responsibility and the Bank of England.
- 4.15. A respondent considered that the RPE assumption for labour at RIIO-T1 was too low as it did not reflect the specialist nature of the labour required nor the shortage in skills available for such roles.
- 4.16. One DNO suggested that analysis of higher level cost indices should be cross checked against commodity price indices. Another DNO noted that we had used an input producer price index as part of the evidence in setting the RPE assumption for equipment and plant for RIIO-T1 and GD1. It argued that using input producer price indices was contrary to our view that commodity price indices should not be relied on when setting RPE assumptions (as network companies do not purchase raw materials).
- 4.17. One supplier noted its concern that providing an ex ante allowance in relation to RPEs could result in DNOs' cost allowances reflecting higher inflation than that occurring in the rest of the economy. It proposed that consideration be given to establishing an uncertainty mechanism which would change revenues based on actual RPEs, measured in relation to identifiable cost indices.
- 4.18. A number of responses noted the Office for National Statistics (ONS) consultation of October 2012 in relation to a review of the methodology used to derive the RPI.<sup>4</sup> Respondents noted that this may affect how allowances for

---

<sup>4</sup> ONS news release (Oct 2012): <http://www.ons.gov.uk/ons/rel/mro/news-release/national-statistician-consults-on-changes-to-retail-prices-index/nsconsultrpinr1012.html>

RPEs are set. In particular, it was noted that if a new RPI measure were to be used to index revenues going forward it was likely to be lower and therefore a compensatory increase in the RPE allowance may be required. This compensatory increase would be needed if the RPE allowance was set based on an assumed historical relationship between RPI and input price indices.

- 4.19. One response stated that RPEs should not be included in the IQI assessment because different DNOs may have different RPE requirements and DNOs are best placed to understand future real cost movements. Another noted its agreement that RPEs related to reopeners should be assessed separately.

### **Reasons for our decision**

- 4.20. In previous regulatory decisions on the RPE assumption we have considered a range of evidence, where available, to minimise the risk of forecast error which may be more inherent were we to rely on one piece of evidence. We have also sought to capture the particular drivers of changes in costs relevant to the network sector being considered. For example, in deriving our assumption for longer-term wage growth we looked at labour cost indices for more specialist industries as well as the economy as a whole. We will continue to take this approach and expect the DNOs to provide evidence in their business plans on their assumptions for each cost input.
- 4.21. We recognise that input producer price indices represent the materials and operating costs that are used in the manufacturing process. In deriving RPE assumptions for RIIO-T1 and GD1 we considered that it was appropriate to reflect this index in the RPE assumption for equipment and plant to ensure the forecast captured a range of evidence. Our choice of cost indices for RIIO-T1 and GD1 does not preclude the use of different indices for RIIO-ED1 where appropriate. DNOs are expected to justify their RPE assumptions and we expect that part of this justification will be to relate their costs to those represented by available cost indices.
- 4.22. In relation to cost inputs, we do not consider that contractor costs should be an input in their own right. The costs of contractors will themselves be a combination of labour, materials and other costs. We therefore consider it more appropriate for the purposes of the business plan for contractor costs to be broken down into their component parts.
- 4.23. We note that we did not provide an RPE for road fuel in our most recent decision on the RPE assumptions for RIIO-T1 and GD1. The evidence we considered suggested that changes in historical cost indices were not materially different from changes in the RPI. These costs also represented a small element of overall costs for the transmission and gas distribution networks. If a DNO proposes that an RPE for road fuel costs should be provided then it will need to provide evidence to the contrary.

- 4.24. We do not consider that an uncertainty mechanism for RPEs is warranted. Our concern with taking such an approach is the potential for it to reduce the incentive on DNOs to manage their costs. We also have concerns that the additional complexity which may be created is unwarranted in relation to the materiality of the issue the mechanism is trying to resolve. We recognise that there is risk imposed on both consumers and DNOs when setting ex ante allowances. We consider that this risk is partially mitigated by the application of the totex incentive mechanism.<sup>5</sup>
- 4.25. Since the closure of the RIIO-ED1 strategy consultation, the ONS has published its decision on changes to the methodology for deriving the RPI.<sup>6</sup> Its decision was to continue to publish the RPI under the current methodology. It also intends to publish, from March 2013, a measure of inflation based on a different methodology to that used currently.<sup>7</sup> Our current view is that we will continue to use the existing RPI measure of inflation to index revenues going forward and therefore DNOs' business plan forecasts should be based on this assumption. As a result, we do not consider that any additional uplift to the RPE assumption will be required.
- 4.26. We note that the assumed RPEs included in a DNO's business plan will be included in the IQI assessment. We do not consider that RPE allowances should be treated any differently from other cost allowances. We discuss this further in Chapter 9 of the 'Supplementary annex – Outputs, incentives and innovation'.

## Ongoing efficiency

### Our decision

- 4.27. DNOs are expected to include and evidence the cost reductions they expect to make through productivity improvements over the price control period.
- 4.28. We intend to set a common ongoing efficiency assumption for all non-fast-tracked DNOs. For fast-tracked DNOs the ex ante allowances that will be provided will reflect the ongoing efficiency assumptions set out by the DNO in its business plan, ie our assessment of the suitability of a DNO for fast-tracking will include an assessment of the justification of its ongoing efficiency assumptions that are included in its forecast costs.
- 4.29. For non-fast-tracked DNOs our approach to deriving our view of an appropriate ongoing efficiency assumption will draw on the methodological

---

<sup>5</sup> This mechanism ensures that if costs exceed/are lower than forecast then the resulting over-/under-spend is shared between consumers and DNOs.

<sup>6</sup> ONS news release (Jan 2013): <http://www.ons.gov.uk/ons/rel/mro/news-release/rpirecommendations/rpinewsrelease.html>

<sup>7</sup> This will be known as RPIJ.

approach and data sources used for RIIO-T1 and GD1. We will, however, consider further evidence submitted as part of the DNOs' business plans. This will include reference to any data sources we have not yet considered and different methodological approaches proposed.

- 4.30. We intend to use the EU KLEMS dataset to derive trends in productivity for industry sectors in the UK.<sup>8</sup> We will analyse historical trends in sectors comparable to the energy industry, and the industry as a whole, to derive an assumption. We will also consider both total and partial factor productivity measures. We note responses that raised concerns that the EU KLEMS dataset is out of date as it only contains data to 2007. We note that a more recent update means that some data in the EU KLEMS dataset is now available to 2010. We will also investigate further sources of data that may be available. We expect DNOs to do the same in evidencing the ongoing efficiency assumptions they include in their business plans.
- 4.31. We will cross check our separate analysis of RPEs and ongoing efficiency with indices that combine the two effects, for example indices that reflect unit cost trends.

### **Summary of consultation proposals**

- 4.32. Our September strategy consultation outlined how we expect to reflect ongoing efficiencies within our assessment of the cost forecasts submitted by the DNOs as part of their business plans. We proposed that we would come to our view of the appropriate assumption based on analysis of available data.
- 4.33. We considered that one source of data which we would draw on was the EU KLEMS dataset that has been used in recent regulatory decisions. We noted that in using this dataset we would need to consider sectors other than the energy sector, as the data for this sector may be skewed due to the privatisation effect. In addition, we suggested that we would refer to other sources such as:
- the Office for National Statistics (ONS) measures of productivity for the electrical, gas and water industries referenced in the 2010 Bristol Water inquiry by the Competition Commission
  - output/tender price data for capital projects such as the construction output price index (COPI) used by Ofwat as part of its price controls.

### **Summary of responses**

- 4.34. One DNO noted that it is not appropriate to rely on historical trend analysis to set the ongoing efficiency assumption. In its view the pre-recession trend in productivity is broken. It stated that since the recession output per worker is

---

<sup>8</sup> EU KLEMS project website: <http://www.euklems.net/>

14 per cent lower than the pre-recession trend. It noted that the EU KLEMS dataset does not represent the post-recession trend as it ends in 2007, and therefore more recent data should be relied on. This respondent also noted that cluster analysis should be used when choosing relevant comparator industry sectors to ensure assumptions are based on sectors with similar characteristics. It also considered that historical productivity improvements may have been overstated because:

- investment in information technology and communications (ICT) has been driving productivity improvements but are more difficult to measure, therefore ICT inputs have been understated
- changes in the quality of labour is not accurately taken into account
- the output of the UK financial sector may have been overstated in the years leading up to the financial crisis.

- 4.35. One respondent warned against double counting the cost savings from productivity improvements in the wider economy, inherent in the RPE assumption. It also stressed that a clear distinction between catch up efficiency and frontier efficiency must be drawn.
- 4.36. One response considered that the ongoing efficiency assumption for RIIO-ED1 should be lower than that assumed for gas distribution networks (GDNs) because GDNs have more recently adopted separate ownership and are therefore subject to more competitive pressure. Another response suggested we consider the productivity improvements of other regulated sectors in the UK.
- 4.37. One DNO stated that its internal plans target an ongoing efficiency of 0.5 per cent per annum.

### **Reasons for our decision**

- 4.38. We still consider that the EU KLEMS database is a useful source of information on productivity trends in the UK. The use of the EU KLEMS dataset does not however preclude the analysis of other information in relation to productivity. We encourage DNOs to evidence other sources of information if they consider this dataset unsuitable. We expect DNOs to include within their business plans an assumption for ongoing efficiency and to evidence how this assumption has been derived.
- 4.39. It is not clear to us, at this time, why there would be substantial differences in the potential for productivity improvements between the DNOs and the GDNs. As stated in our recent decision on the ongoing efficiency assumption for GDNs, we did not specifically isolate the impact of comparative competition and therefore our view is that the evidence used to derive the assumption for GDNs is equally valid for DNOs.

- 4.40. We emphasise that the ongoing efficiency assumption represents the productivity improvements that even the most efficient DNO should be able to achieve. It is therefore separate from our assessment of the efficiency of DNOs costs which is discussed elsewhere in this annex.

## 5. Network investment – load-related expenditure

---

### Chapter Summary

This chapter details our latest thinking on our approach to assessing the load-related elements of network investment.

### Introduction

- 5.1. Network investment refers to direct capital investment to maintain or improve network reliability in order to maintain compliance with relevant legislation and industry obligations. For the purposes of this document, we have split Network Investment into two groups – load-related expenditure (LRE) which is discussed in this chapter and non-load-related expenditure (NLRE) which is discussed in Chapter 6.
- 5.2. LRE refers to expenditure relating to the following activities:
  1. Connections
  2. General reinforcement
  3. Fault level reinforcement
  4. Diversions, wayleaves and easements
  5. High value projects (HVPs)
  6. Transmission connection points (TCPs)

#### *Connections*

- 5.3. Connections, with the exception of any connection of distributed generation (DG) to customer profile classes 1-4, refer to the provision of new or upgraded network exit points to new or existing customers. The upgrading of a network exit point refers to increasing the capacity available to an existing exit point or allowing an existing exit point to feed a supply onto the network where it previously could not. Connections are delivered through connection projects.

#### *General reinforcement*

- 5.4. General reinforcement is defined as work carried out on the network in order to enable new load growth (both demand and generation) which is not attributable to specific customers.
- 5.5. Our latest thinking for setting allowances for RIIO-ED1 is that general reinforcement includes the practical alternatives to reinforcement for

accommodating demand growth, such as demand-side response schemes. We intend to break down general reinforcement cost assessment into three separate areas based upon the likely cost drivers:

1. **general reinforcement (EHV and 132kV n-2)** - refers to schemes designed to maintain P2/6<sup>9</sup> compliance during a second circuit outage
2. **general reinforcement (EHV and 132kV n-1)** - refers to schemes designed to maintain P2/6 compliance during a first circuit outage
3. **general reinforcement (HV and LV)** - refers to reinforcement, and alternative techniques to enable load growth on the secondary network.

#### *Fault level reinforcement*

- 5.6. Fault level reinforcement refers to reinforcement work carried out for the primary objective of alleviating fault level issues associated with switchgear or other equipment.

#### *Diversions, wayleaves and easements*

- 5.7. DNOs are funded for the unavoidable costs they incur for both the securing of necessary access to private land and rerouting the network where such access cannot be secured. Where such costs are efficiently incurred as part of a DNOs network investment or from the conversions of wayleaves to easements, they are funded through the price control. We expect DNOs to secure relevant access, be it through compensation or diversion, at the lowest cost to network customers.

- 5.8. For the purpose of assessing the appropriate funding for the different elements of these price control funded activities, we intend to group them as follows:
- conversion of wayleaves to easements<sup>10</sup> and injurious affection payments<sup>11</sup>
  - diversions due to wayleave terminations<sup>12</sup>
  - diversions due to New Roads and Street Works Act (NRSWA).

#### *High value projects (HVPs)*

- 5.9. HVPs cover specific schemes where the related expenditure is forecast to exceed the high value project threshold as determined by Ofgem.

---

<sup>9</sup> More information about Engineering Recommendation P2/6 is available in the Distribution Code: [http://www.energynetworks.info/storage/dcode/dcode-pdfs/Distributionper\\_cent20Codeper\\_cent20vper\\_cent2018r1.pdf](http://www.energynetworks.info/storage/dcode/dcode-pdfs/Distributionper_cent20Codeper_cent20vper_cent2018r1.pdf)

<sup>10</sup> changing the terms of access to a private landowner's property from an annual rental for access and reasonable compensation to a one-off payment for permanent right of access.

<sup>11</sup> compensation payments made to landowners for the impact of DNO assets on land value due to loss of visual amenity and fear of the effects of electromagnetic fields.

<sup>12</sup> where a DNO is required to move assets due to them being located on land that they no longer have permission to enter under the terms of a wayleave.

Strategy decisions for the RIIO-ED1 electricity distribution price control  
Tools for cost assessment

5.10. We recognise that not all HVPs include load-related expenditure, but given that to date in DPCR5 the majority have done, we feel it is appropriate to include HVPs in this chapter.

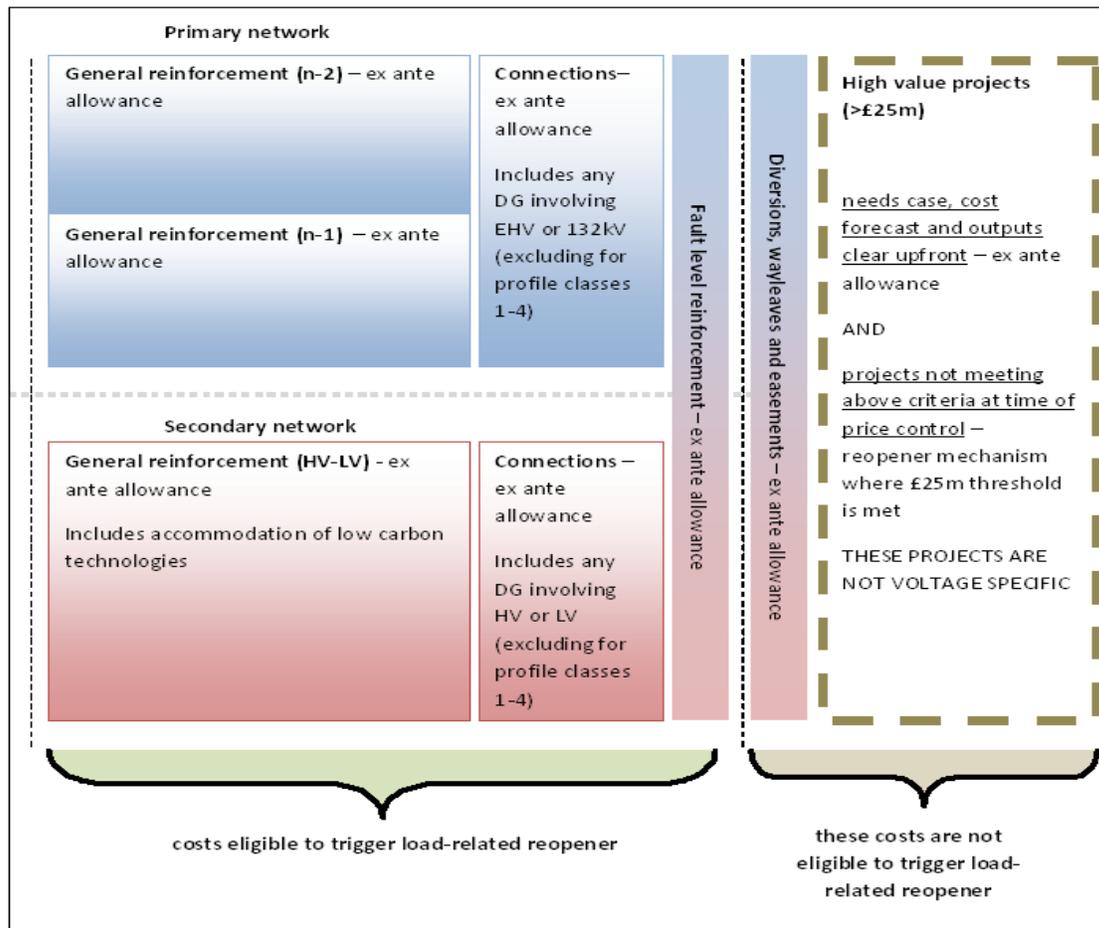
*Transmission connection points (TCPs)*

5.11. TCPs refer to investment costs relating to the points at which the DNO network connects to the transmission network.

**Our updated thinking**

5.12. Figure 6.1 shows the activities that make up load-related expenditure.

**Figure 6.1: Components that make up load-related expenditure assessment**



*Overall load-related expenditure interactions and uncertainty*

- 5.13. Our minded to position is that general reinforcement, connections and fault level reinforcement will each be funded through ex ante totex allowance. They will, in aggregate, feed into the load-related expenditure reopener mechanism to manage material uncertainty around these areas.
- 5.14. Our latest thinking is that there will be two reopener windows, with one in each half of the price control. This reopener mechanism will protect both customers and DNOs from any significant changes in the level of expenditure required in the RIIO-ED1 period.
- 5.15. As set out in Chapter 3 of the 'Supplementary annex – Outputs, incentives and innovation', our decision is that DNOs must continue to recover the costs of any reinforcement triggered by load or generation growth by domestic (as defined in the electricity distribution licence) and small business (profile class 3-4) customers through Distribution Use of System (DUoS) charges. Our intention is that, alongside any other secondary network reinforcement that does not relate to a specific new or upgraded connection project, these costs should be funded through the general reinforcement (HV-LV) ex ante allowance.
- 5.16. All installations of low carbon technologies that are delivered through a specific new or upgraded connection project should be classed as connections within the business plans and our current thinking is that this activity will be funded through the connections ex ante allowance, as set out in the connections section of this chapter. We are minded to fund the reinforcement costs associated with the installation of any DG by customers not in customer profile class 1-4 through this allowance also.
- 5.17. At the end of RIIO-ED1 we intend to true up the difference between the value of relevant expenditure forecast to be funded by connection customers and the actual amount that is contributed. This true-up will be carried out across the load-related expenditure as a whole, rather than just the connection cost categories. This should ensure that, from an allowed revenue perspective, DNOs are neutral to whether a specific level of reinforcement is carried out as part of a connections project or fully funded by the DNO.
- 5.18. As stated in the 'Supplementary annex - Uncertainty mechanisms', DNOs will be able, as part of their business plans, to set out which uncertainty mechanisms they are seeking to use to help them manage risk, and what benefits these would bring for consumers (eg enabling a lower cost of capital). This could include alternatives to the approach detailed here. However, we do not believe that the volume driver mechanisms proposed to date are appropriate. DNOs will need to provide a strong justification if they are proposing a volume driver in their well-justified business plan. Ultimately we will decide whether to accept the companies' proposals.

### *Connections*

- 5.19. As explained above, our latest thinking is that connections activities will be funded through an ex ante allowance. Variation in efficient connections costs or volumes will not be funded explicitly, but will count towards the overall load-related expenditure reopener.
- 5.20. We intend to set the ex ante allowance using forecast and historic data to determine the benchmark unit cost for each of the connection market segments. This benchmark will relate to the cost of the full element of a project's costs that are subject to the cost apportionment factor (CAF) rules. The CAF rules prescribe how the cost of upstream reinforcement driven by individual customer connections should be shared between the connecting customer and DUoS funding.
- 5.21. Where possible, for connection projects that involve work on the primary network, the project unit costs derived from a DNO's business plan will be compared to any relevant general reinforcement projects (involving the same voltage levels) within the same business plan.
- 5.22. Since the major driver for the volume of connection projects completed is likely to be localised economic growth, we will expect DNOs to justify the volume of projects put forward in their business plans in the context of their wider view of economic conditions and the volumes completed in comparable years historically.

### *General reinforcement (EHV and 132kV n-2)*

- 5.23. We intend to remove n-2 schemes from the primary network reinforcement cost assessment modelling in order to carry out a scheme-specific review of each scheme included. We will assess the viability and deliverability as a whole, and where possible, the individual aspects of the schemes will be compared to the relevant asset replacement benchmarked unit costs.

### *General reinforcement (EHV and 132kV n-1)*

- 5.24. We intend to use the same modelling techniques to assess these costs as we used in the DPCR5 price control assessment.
- 5.25. We intend to benchmark the ratio of capacity (MVA) forecasted to be added by DNOs relevant to the forecast MVA growth in maximum demand at the nominated sites.
- 5.26. We intend to use the modern equivalent asset value (MEAV) of each DNO network to benchmark the ratio of cost of new capacity added to the historical MEAV value of the capacity already in place. This process should give a high level view of where DNOs are proposing to add more or less capacity relative

to demand growth, their peers and relative to their own approach for DPCR4 and DPCR5. Additionally, it should provide a view on the relevant efficiency of the costs of DNO capacity while also factoring in the long-run historical characteristics of the long-term £ per MVA level.

- 5.27. Where possible we will also review elements of individual schemes through the asset replacement new-build unit costs.

*General reinforcement (HV-LV)*

- 5.28. As set out at the start of this chapter, we intend to fund this expenditure via an ex ante allowance. Significant variation in costs has the potential to contribute to the triggering of our proposed load-related expenditure reopener. This will manage uncertainty around DNOs' forecasts for necessary investment on the secondary network during the RIIO-ED1 period.
- 5.29. We are minded to combine the low carbon technology/ domestic DG load growth cost category with the general Reinforcement (HV-LV) category and will fund both through a single ex ante allowance. This will ensure that we do not discriminate between how we fund the accommodation of these load types, and do not become overly reliant on unproven notification processes to trigger the funding for low carbon device-driven reinforcement.
- 5.30. Our latest thinking is that the ex ante allowance will be built up using forecast and historic data to determine the benchmark unit costs for conventional reinforcement interventions. Where robust and comparable cost data is available across DNOs, we will apply the same approach for smart solutions. We expect DNOs to forecast the range and mix of solution types that will be implemented in RIIO-ED1, with clear explanation of the assumptions and modelling used to reach this forecast. The broad solution strategy for catering for the relevant load growth should be informed by supporting cost-benefit analysis (CBA).<sup>13</sup> We also expect DNOs to set out how the mix of conventional and smart solutions enacted will alter if the DNO finds that the scenario faced changes within the period.<sup>14</sup>
- 5.31. Where appropriate, conventional reinforcement unit costs will be compared with any equivalent derived unit cost forecast for connection projects put forward within the same business plan.

---

<sup>13</sup> For further information and Ofgem's guidance on cost benefit analysis, see the CBA chapter of the 'Supplementary annex - Business plans and proportionate assessment'.

<sup>14</sup> For more information on the information we expect DNOs to provide regarding different low carbon scenarios, see the scenarios section of the 'Supplementary annex - Business plans and proportionate assessment'.

*Fault level reinforcement*

- 5.32. We intend to set ex ante allowances for fault level reinforcement based on known issues affecting the network at the time the business plan is submitted. Unit cost benchmarking will be applied to relevant schemes requiring the replacement of switchgear or circuit breakers.

*Diversions, Wayleaves and Easements*

- 5.33. We are minded to fund diversions, wayleaves and easements through a ex ante allowance, but will not be subject to an uncertainty mechanism as we do not foresee a material level of uncertainty around the likely scope of costs.
- 5.34. We intend to set the ex ante allowance based on historical cost data and forecast developments in the number of claims over the RIIO-ED1 period.

*High Value projects (HVPs)*

- 5.35. We intend to set an ex ante allowance for qualifying HVPs. This will be contingent on DNOs providing sufficient evidence of need, costs and clearly identified outputs within their business plan. In order to assess this need case, we will require DNOs to provide specific project details and clear outputs, which will be subjected to cost assessment. The threshold for projects to be considered high value is £25m per bespoke project.
- 5.36. Our latest thinking is that in addition to the HVPs that are funded through the ex ante allowance, other specific large schemes above £25m that are not funded ex ante (as a result of either relating to an issue not identified at the time of delivering the business plan, or where the needs case was not met) can be included in the expenditure that could be eligible for the HVP reopener. We expect to see clear outputs, forecast costs and a need case presented at the time of their submission for a reopener.
- 5.37. This approach will effectively move benchmarking of these HVPs outside of the normal price control and create separate outputs for them. If all of the criteria are met we would then adjust the DNO's revenues during the price control period to enable these costs to be recovered.
- 5.38. We intend to fund HVPs, specific large projects of at least £25m, through an ex ante allowance where the parameters are known and set out within the business plans, or through the HVP reopener mechanism where the parameters are uncertain or unknown at the start of the RIIO-ED1 period.

### *Transmission connection points (TCPs)*

- 5.39. We are minded to combine elements of the two options proposed in our 'September strategy consultation'. We intend to separate cost areas into:
- new grid supply point (GSP) and GSP reinforcement during RIIO-ED1 as a result of DNO requirements
  - costs relevant to assets installed before 1 April 2015, GSP refurbishment in RIIO-ED1 and any work not resulting from a DNO requirement.
- 5.40. For the first cost area we intend to assess and provide an efficient level of ex ante funding. For the second cost area we intend to continue with the DPCR5 policy of treating these costs as pass through.

## **Summary of consultation proposals**

### *Overall load-related expenditure interactions and uncertainty*

- 5.41. We proposed that all areas of general reinforcement (including secondary network reinforcement relating to load growth from low carbon technologies), connections and fault level reinforcement would be covered by an overall reopener. We proposed that in the specific cases of connections and general reinforcement (HV-LV) that these could operate under volume drivers within the wider reopener.
- 5.42. Our amended view, that the areas of expenditure covered by the reopener should all be funded through ex ante allowances, was discussed with members of the RIIO-ED1 Flexibility and Capacity Stakeholder Working Group.

### *Connections*

- 5.43. We set out three different volume drivers options in the September strategy consultation:

#### Option 1: connection cost assessment approach similar to DPCR5 approach

- LV end connections involving no voltage beyond HV operate within volume driver against exit points provided
- Small-scale LV and other LV benchmark unit cost set using lowest of DNO own or industry median due to relative uniformity of project specification
- LV involving HV benchmark unit cost set using lowest of DNO own or industry lower quartile (LQ) due to greater variance in project specification
- LVHC connections operate as an ex ante allowance based on detailed review of proposals

Option 2: connection projects within each of the metered market segments operate as a volume driver with a benchmarked unit cost of reinforcement set for a project within each segment. The means of setting this benchmark would have to reflect the relative uniformity or non-uniformity in costs across DNOs.

Option 3: combination of approaches

- Connection projects involving primary network reinforcement based on £ per mega volt-ampere (MVA) of capacity added as benchmarked through general reinforcement modelling
- Remaining connection projects operate in volume driver as detailed in either option 1 or 2 above.

5.44. We explained that we favoured option three and proposed to use the unit cost of the element of connection subject to the CAF rules within each market segment to determine an appropriate flexible allowance.

*General reinforcement (EHV and 132kV n-2)*

5.45. We proposed to allow DNOs to identify specific schemes that they forecast to be undertaken as well as those that will be required where demand or generation levels exceed their base forecast. The funding for these schemes would have particular trigger points or conditional outputs deliverables applied. We proposed that this would allow us to determine which schemes were likely to be required regardless of the demand profile faced in RIIO-ED1, and which would be more reliant on changes demand profiles over the period.

*General reinforcement (EHV and 132kV n-1)*

5.46. We proposed to use the same modelling approach utilised at DPCR5 to provide a high level assessment of whether the level of capacity proposed to be delivered by n-1 reinforcement schemes was appropriate, as well as the cost efficiency of this capacity.

5.47. We proposed to allow DNOs to identify specific schemes that they forecast to be undertaken as well as those that will be required where demand or generation levels exceed their base forecast. The funding for these schemes would have particular trigger points or conditional outputs deliverables applied. We proposed that this would allow us to determine which schemes were likely to be required regardless of the demand profile faced in RIIO-ED1, and which would be more reliant on changes demand profiles over the period.

*General reinforcement (HV-LV)*

5.48. In the September strategy consultation we asked for views on:

- whether secondary network reinforcement is correlated with localised economic growth
  - whether it is feasible and appropriate to set definitions and unit costs for load-related interventions on the secondary network
  - what the most appropriate funding mechanism for load-related expenditure on the secondary network would be.
- 5.49. We proposed that an uncertainty mechanism should be introduced to manage uncertainty around the penetration of low carbon technologies. We suggested that if practicable we would be minded to introduce a volume driver. We set out two proposals for volume drivers proposed by industry and indicated that we had concerns with both. We indicated that we would continue to work with stakeholders to develop a proposal for an uncertainty mechanism.

#### *Fault level reinforcement*

- 5.50. We consulted on whether it would be possible to derive a unit cost for an intervention to address a fault level problem.

#### *Diversions, wayleaves and easements*

- 5.51. In the September Strategy Consultation we set out the following options for the funding of diversionary works:
1. two volume drivers; one for conversion of wayleaves to easements and injurious affection and one for diversions. The unit costs would be based on the benchmarked cost of covering the relevant payments and legal fees
  2. ex ante baselines set based on historical cost data and forecast developments in the number of claims over time
  3. ex ante baselines set based on historical cost data with a volume driver based on benchmarked unit cost that can be triggered where the volume of claims is significantly higher or lower than set out in the business plan.
- 5.52. Of the three options, we proposed that the second option, setting ex ante allowances based on historical cost data and forecast developments in the number of claims over time is the most appropriate approach to setting the relevant RIIO-ED1 funding for these activities.

#### *High Value Projects (HVPs)*

- 5.53. In our September strategy consultation we proposed to set ex ante allowances for specific and identifiable HVPs that met a proposed £50m threshold. Additionally, in the Supplementary annex- Uncertainty mechanisms document as part of the September strategy consultation we proposed to have a reopener mechanism for major schemes above £50million in value and enable DNOs to recover any additional efficient expenditure above a 20 per cent materiality threshold. We proposed that the reopener window should be set in 2019.

- 5.54. The reopener was proposed to cover both schemes that were not included in the original price control baselines due to insufficient justification and schemes which were not known about by the DNO at the time of the price control review.

*Transmission connection points (TCPs)*

- 5.55. In the September Strategy Consultation we considered that setting an ex ante allowance, which takes into consideration the learning from DPCR5 on how non-traditional commercial arrangements can be utilised, would encourage the same behaviour whilst offering the benefit of giving DNOs more certainty and being easier and more transparent during RIIO-ED1.

- 5.56. We set out two potential options for consideration

Option 1: continuation of DPCR5 hybrid incentive scheme. Cost areas separated into those that are incentivised and those that are not:

- incentivised: New Grid Supply Point (GSP) and GSP reinforcement during RIIO-ED1 as a result of DNO requirement
- pass through: Costs relevant to assets installed before 1 April 2015, GSP refurbishment in RIIO-ED1 and any work not resulting from a DNO requirement

Option 2: ex ante allowance based on individual review of schemes put forward in DNO business plans and historical costs. This would potentially have included the benchmarking of associated unit costs where appropriate for any commonly occurring elements and discount factor applied to historical cost trends to account for likely cost benefits of innovative techniques

## **Summary of consultation responses**

*Overall load-related expenditure interactions and uncertainty*

- 5.57. Respondents were in general agreement with our proposals on how the specific elements of load-related expenditure would fit together within the relevant uncertainty mechanisms.
- 5.58. One respondent sought further clarification on how domestic DG would be treated, and another felt that the proposals should be developed further through the working groups.
- 5.59. With regards to our amended view that the areas of expenditure covered by the load-related reopener should all be funded through ex ante allowances, amongst the membership of the RIIO-ED1 Flexibility and Capacity Stakeholder Working Group there was broad support for removing boundary issues by combining LRE building blocks in a single funding mechanism. However, some DNOs had reservations about including either high volume low

cost connections or distributed generation (DG) connections in the mechanism due to the perceived increase in risk DNOs will have to carry.

#### *Connections*

- 5.60. There was no consensus amongst the six respondents that responded to this section. Three respondents favoured a volume driver based on the number of projects involving an element subject to the CAF rules, two felt that it should be driven by exit points delivered. One respondent suggested an alternative volume driver based on the benchmarked cost of the capacity connected.

#### *General reinforcement (EHV and 132kV n-2)*

- 5.61. Respondents were broadly supportive of our preferred approach. No alternative approaches were put forward by any respondent.

#### *General reinforcement (EHV and 132kV n-1)*

- 5.62. Respondents were broadly supportive of the modelling principles we set out. However, they stressed that the principles should not be applied in a mechanistic fashion.
- 5.63. Respondents felt that breaking down primary network reinforcement schemes by the scenarios in which they were predicted to occur would be feasible for the first half of RIIO-ED1, but that we may have to rely on more generic assumptions for the latter part of the period.

#### *General reinforcement (HV-LV)*

- 5.64. The majority of respondents believed that secondary network reinforcement is still going to be correlated with economic growth. Some suggested that low carbon technologies are only likely to become a driver of reinforcement at the end of the RIIO-ED1 price control period. There was no consensus in the responses on the most appropriate mechanism for funding secondary network reinforcement or on whether unit costs could be set for load-related interventions. The majority of respondents believed that an uncertainty mechanism should be introduced, but there was no consensus on what this should be, as there was little support for either of the proposals put forward in the consultation.

#### *Fault level reinforcement*

- 5.65. Respondents were split on whether it was possible and appropriate to derive a unit cost for an intervention to address a fault level problem. It was generally agreed that in terms of network investment activities, there would be a limited scope of actions that could be taken, but a number of parties warned

against an approach that would incentivise these approaches over cheaper operational solutions.

#### *Diversions, wayleaves and easements*

- 5.66. All respondents to this area agreed with our proposed approach.
- 5.67. Respondents agreed that a combination of volume drivers at a disaggregated level would constitute an excess level of complexity for a fairly small area of expenditure.

#### *High value projects (HVPs)*

- 5.68. All of the respondents in this area agreed a HVP allowance and reopener were necessary. Several respondents did however feel that the project threshold was not appropriate. One felt that the proposed threshold of £50m did not reflect the differing requirements for DNOs in drawing on this area of expenditure and that the determination of the proposed value had not been fully explained. This respondent felt that the existing DPCR5 mechanism was appropriate and should be continued into RIIO-ED1. Another respondent also felt that the threshold value was too high. Several respondents felt that the proposed threshold of £50m was appropriate or that the DPCR5 threshold value should be raised.

#### *Transmission connection points (TCPs)*

- 5.69. One respondent strongly opposed to option 2.
- 5.70. This respondent agreed with the proposal that transmission exit charges should not be subject to an incentive mechanism as at DPCR5, as this has simply been an incentive that has rewarded higher forecasting.

## **Reasons for our updated thinking**

#### *Overall load-related expenditure interactions and uncertainty*

- 5.71. Our general preference for cost assessment is to set ex ante baselines for each area of activity wherever feasible. This provides certainty and transparency for both DNOs and customers and prevents any unforeseen volatility in bills. It also provides much stronger incentives for the DNOs to deliver value for money.
- 5.72. Whilst we expect load uncertainty to increase during RIIO-ED1 due to the installation of low carbon technologies and distributed generation (DG), high level forecasts based on modelling the different DECC scenarios of potential

low carbon technology take-up indicate limited impact on the network in RIIO-ED1. Furthermore, most network impacts are not expected until the final years of the RIIO-ED1 period.

- 5.73. With regards to the primary network in isolation, we consider that the DNOs have sufficient certainty around the work required in RIIO-ED1 to be able to confidently forecast the funding needed to deliver their outputs. These costs will be driven by the long-term network development and are therefore less likely to be sensitive to fluctuations in economic growth or other external customer dynamics.
- 5.74. In the case of the secondary network (HV and LV assets), the scope of work is likely to be more sensitive to external dynamics. The work required at these voltages is driven more directly by customer behaviour in terms of the volumes of DG, connections and the levels of low carbon technology uptake across the network. For this reason, our September Strategy Consultation considered that, taking this work in isolation, a volume driver would be the most appropriate uncertainty mechanism to protect both customers and DNOs from the potential volatility in the volume of low carbon devices and DG connected in RIIO-ED1. We set out our views on two volume driver options in the September strategy consultation. However, we considered that all the proposals developed had significant draw-backs, in particular due to difficulties in setting the unit cost upfront and measuring volumes, whether of low carbon technologies or network interventions.
- 5.75. Given that there is a level of uncertainty around exactly how and where the likely increase in low carbon devices connected to the secondary network will impact on the network, our latest thinking is that it is important to ensure that DNOs and customers are sufficiently protected from the risk that the scope of work and investment needed in RIIO-ED1, at the aggregated level, is significantly higher or lower than has been forecast.
- 5.76. Segmenting the load-related work and applying different funding mechanisms has the danger of not fully accounting for the interactions between different expenditure categories that may be subject to different funding mechanisms. This could be where a specific load is forecast to occur in an expenditure category that is funded ex ante, but actually occurs in an expenditure category that is subject to a volume driver. Alternatively, where this load can fall into two different volume driver mechanisms and a particular DNO performs well against the unit cost in one, but poorly against the other.
- 5.77. By capturing expenditure on a range of LRE building blocks in a single mechanism, DNOs will not be unduly rewarded or penalised for the type of investment undertaken, as long as the overall quantum of load-related expenditure is correct.
- 5.78. This approach also gives more security to customers in terms of ensuring that, across a wider spectrum of costs, where DNOs are not required to invest

at the level anticipated within their business plan, Ofgem are able to return money to customers through adjusted baselines for RIIO-ED2.

### *Connections*

- 5.79. There are likely to be significant interactions between the connections and general reinforcement (HV-LV) expenditure categories. There will be uncertainty over whether anticipated volumes of low carbon devices will be delivered through fully socialised secondary network reinforcement schemes, or through the provision of new connected exit points. If these two expenditure categories fall under two separate funding mechanisms, there will be the potential that for a specific number of devices the category in which these low carbon devices are forecast to occur will materially impact on the level of funding that a DNO receives.

### *General reinforcement (EHV and 132kV n-2)*

- 5.80. As these schemes tend to be lumpy, expensive and technically sophisticated in nature, they have traditionally been excluded from Ofgem's load-related modelling and individually assessed. We believe that this is still a sensible approach to take in RIIO-ED1 as these costs are unlikely to be sufficiently comparable across DNOs to allow setting of robust unit cost per scheme delivered, or per MW of capacity delivered.

### *General reinforcement (EHV and 132kV n-1)*

- 5.81. The two key elements of the modelling reflect the two key relationships relating to reinforcement: how much capacity is being added relative to the expected demand growth and how much this capacity costing. These relationships remain critical regardless of how the LI will function, and are the relationships that should be referenced by DNOs to justify their reinforcement forecasts.
- 5.82. Where DNO reinforcement schemes involve the installation of new assets, it is appropriate to ensure that the cost allowed for these as part of the approved schemes is in line with the allowance for the equivalent assets installed within a DNO's asset replacement programme.

### *General reinforcement (HV-LV)*

- 5.83. Following further thinking on boundary issues between areas of investment, we have recognised the merits of including expenditure on managing low carbon technologies on the secondary network in the same mechanism as other LRE building blocks. There are likely to be interactions between expenditure on low carbon technologies and general reinforcement, and between voltage levels.

- 5.84. There are further merits of a reopener mechanism for the secondary network LRE. We believe that a reopener mechanism for load-related expenditure on the secondary network will more appropriately manage material uncertainty around penetration of low carbon technologies. The volumes of low carbon technologies are likely to be driven largely by changes in government policy. If these technologies are taken up to such an extent that the materiality thresholds for the reopener are reached, it is possible that the unit costs for associated reinforcement will be different from those forecast at the beginning of the price control period. Any volume driver would require a ratchet or mechanism to reset unit costs, whereas if the reopener threshold is reached, changes in unit costs will automatically be taken into consideration.
- 5.85. Modelling of potential expenditure across the different DECC scenarios of low carbon technology take-up indicates that network impacts are not expected until the final years of the RIIO-ED1 period. In addition, it suggests that the impact will be low. Therefore the materiality of the uncertainty around penetration of low carbon technologies is likely to be limited. Furthermore, given the indication from some respondents that reinforcement will continue to be largely driven by localised economic conditions throughout most of the RIIO-ED1 period, we believe that including secondary network general reinforcement expenditure in the reopener will sufficiently protect DNOs from changes in penetration of low carbon technologies.

#### *Fault level reinforcement*

- 5.86. Historically, forecasting the level and likely location of fault level issues has been difficult. As a result baselines in previous price controls have been set based on known issues at the time of the price control process. This has usually been based around the number of switchboards and substation busbars at locations where at least one item of switchgear that is experiencing a fault current level that exceeds 95 per cent of its current fault rating.

#### *Diversions, wayleaves and easements*

- 5.87. As set out in the September strategy consultation, there is a very strong argument that since the volume of wayleave and injurious affection claims resolved and diversions enacted will be key drivers in the costs of diversionary works as a whole, a volume driver mechanism could be an effective funding mechanism for the RIIO-ED1 period.
- 5.88. However, we believe that having separate injurious affection and diversion unit costs could lead to a potential perverse incentive. A DNO may be financially incentivised to carry out a relatively low-cost diversion in comparison with the relevant unit cost rather than settling an injurious affection claim that is marginally above the unit cost set for the activity.

- 5.89. Additionally, the scope of the works will differ across the different voltages at which the work can be triggered. For this reason, for a volume driver to be a credible funding mechanism, it would effectively need to function at a disaggregated voltage level, which would make the mechanism exceedingly complicated for what is, within the context of the price control as a whole, a relatively small area of expenditure.
- 5.90. We believe that historic regionalised data on the types of wayleave and injurious affection claims that have been previously settled will appropriately reflect the likely costs going forward. We do not see any significant changes in diversionary costs in comparison to previous price controls. To this end, we expect DNOs to put forward a credible and robust level of evidence and justification, where they forecast notable increases in costs for these areas in RIIO-ED1.

*High value projects (HVPs)*

- 5.91. We believe that there is a clear need for DNOs to be funded for both materially big schemes that are expected to take place, and those that may occur unexpectedly within the period. At the same time, we feel that it would be inappropriate to expect customers to fund significant projects that may not materialise within RIIO-ED1. We believe that an ex ante allowance is appropriate for known schemes that can be justified and tied to specific outputs up front, and a reopener appropriate for those that cannot be specifically justified or tied to outputs upfront, or are simply not known about when the plan is put together.
- 5.92. Following further consideration of the level of expenditure normally associated with major DNO investment schemes, and following review of the consultation responses, we believe that the originally proposed £50m threshold is too high, but believe that the DPCR5 level of £15m was too low. Having considered the responses we have revisited the proposed qualifying scheme threshold and taking into consideration the schemes put forward at DPCR5, and our current thinking is that a threshold of £25million is appropriate for RIIO-ED1.

*Transmission connection points (TCPs)*

- 5.93. In light of the responses we have revised our intended approach to how we will set allowances for RIIO-ED1. We have sought to simplify the mechanism whilst addressing the concerns raised over exposing DNOs to increased risk. Our current thinking is that DNOs can and should be incentivised in this area and those schemes initiated by the DNO should be included within the ex ante allowances, as through their ongoing dialogue with the transmission operator they should have a greater degree of certainty over them.

## 6. Network investment – Non-load-related expenditure

---

### Chapter Summary

This chapter details our latest thinking on our approach to assessing the non-load-related elements of Network Investment.

### Introduction

6.1. Network Investment has been split into two groups – load-related expenditure (LRE) and non-load-related expenditure (NLRE). NLRE covers all non-load-related capital investment associated with rectifying the likelihood and consequences of asset failure and refers to expenditure relating to the following activities:

- asset replacement
- operational information technology and telecoms (IT&T)
- legal and safety
- Electricity Safety Quality and Continuity of Supply Regulations (ESQCR)
- quality of supply (QoS)
- flood mitigation
- BT 21st century projects (BT21C)
- High impact low probability (HILP)
- environmental areas (losses, oil pollution, SF6 leakage, environmental other)
- enhanced physical site security
- black start
- rising and lateral mains.

### Our updated thinking

#### Asset intervention

6.2. For RIIO-ED1 our current view is to adopt a similar, with improvements, approach to the age-based model which was used in DCPR5. We also intend to introduce regression analysis to consider the efficiency of unit costs and expenditure not covered by age-based modelling.

6.3. We intend to use the asset age-based model to inform our assessment of DNOs' replacement volumes. In addition to this benchmarking, and for areas not amenable to such modelling, we intend to analyse unit costs and expenditure trends, and use expert review for specific asset types.



Strategy decisions for the RIIO-ED1 electricity distribution price control  
Tools for cost assessment

- 6.4. DNOs will be required to report on secondary deliverables in the form of asset health and criticality indices which correspond to their NLRE forecasts. We expect companies to provide robust evidence on asset health and criticality to justify departures from replacement volumes based on age-based modelling.
- 6.5. We expect DNOs to put forward a comprehensive approach to explain their forecast expenditure associated with the management of assets. This should recognise the trade-off between different types of asset intervention such as asset replacement, heavy or light refurbishment, inspection and maintenance (I&M) and replacement on failure (replacement or trouble call expenditure). It should include appropriate use of whole-life costing and cost benefit analysis (CBA). We expect DNOs to link this to their output information including health and criticality indices and load indices as well as primary outputs.
- 6.6. The DNOs should articulate and quantify the interactions between LRE and NLRE. Where the DNOs have poorer asset information they should articulate this and explain how they will address this during the review or as part of RIIO-ED1.

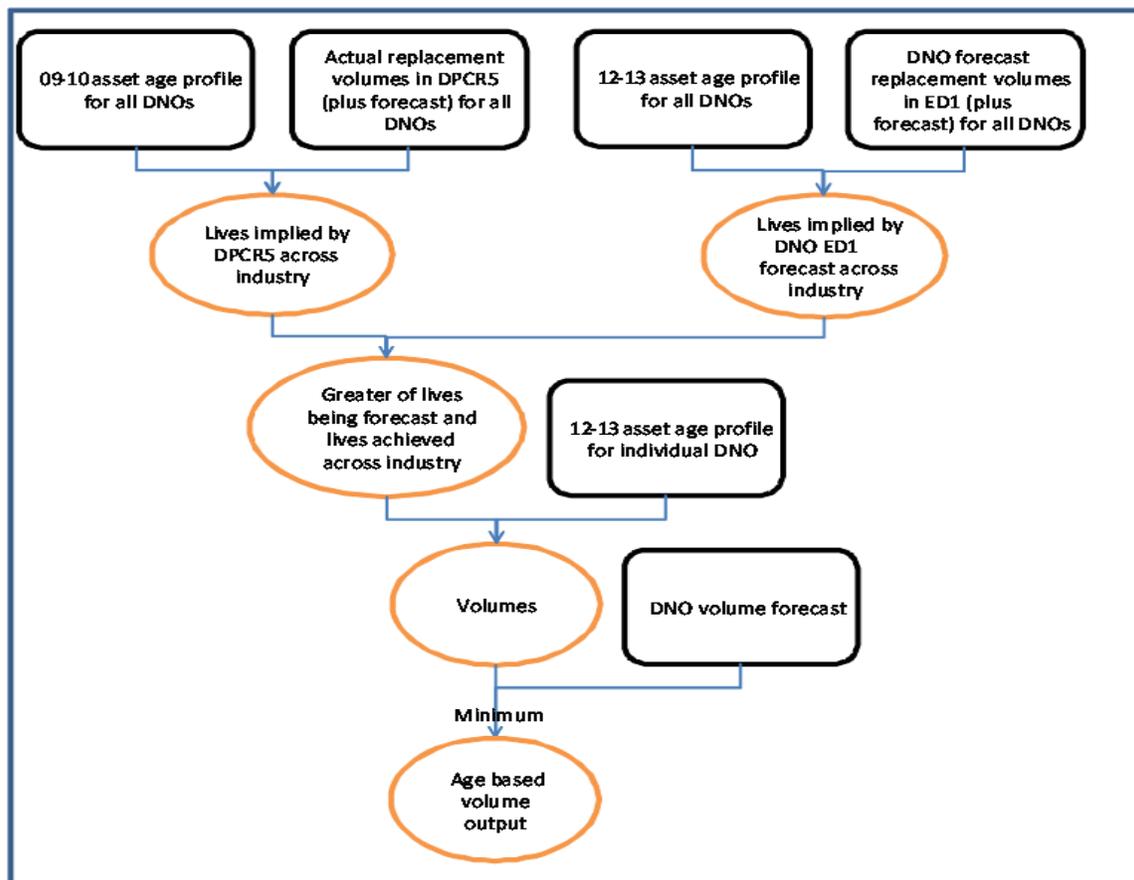
*Efficiency assessment*

- 6.7. We intend to use the asset age-based model to forecast a volume of asset replacement for each DNO. The model combines assumptions about the probability of asset failure/replacement and the DNOs' asset age profiles to derive an industry benchmark for the life for each asset type and forecast replacement volumes for each DNO. The model's outputs will be a point of comparison with the volumes and expenditures contained in the DNOs' business plans and can be more heavily relied on where there is limited data on asset condition (including where future deterioration is difficult to predict).
- 6.8. We intend to benchmark comparable unit costs for each asset type, with adjustments that recognise known cost differences between the DNOs. We intend to set the benchmark at the average at this level of analysis.
- 6.9. Previously some elements of NLRE were subjected to expert review where modelling or unit cost assessment were not appropriate. We are minded to minimise the need for ad hoc reviews for RIIO-ED1 by expanding the scope of volume and unit cost benchmarking.
- 6.10. DNOs should provide a range of outputs that relate to asset intervention expenditure, including a measure based on asset health and criticality indices and asset fault rates. As part of our assessment of the DNOs' expenditure forecasts we intend to consider the quality of their proposed outputs and the data behind these. Further detail on outputs can be found in the 'Supplementary annex – Reliability and safety'.

*Methodology for replacement volumes*

- 6.11. Our current thinking is to use 2009-10 and 2012-13 as age profile references which relate to the commencement of the DCPR5 period and the final year of actual data for the purposes of the RIIO-ED1 assessment respectively.
- 6.12. The model is designed around the assumption that industry asset lives can either be maintained at the levels achieved in the past or longer lives can be achieved in the future through improved asset management. For this reason, the model calculates the highest of the lives achieved across the industry that are implied by asset replacement volumes in DPCR5 or RIIO-ED1. This benchmark set of asset lives is then combined with each DNO's individual asset age profile to give a DNO modelled volume. This process is illustrated in Figure 7.1. The model refers only to assessing replacement volumes and the results of it must be considered in line with other potential asset intervention.

**Figure 7.1: Asset age-based model**



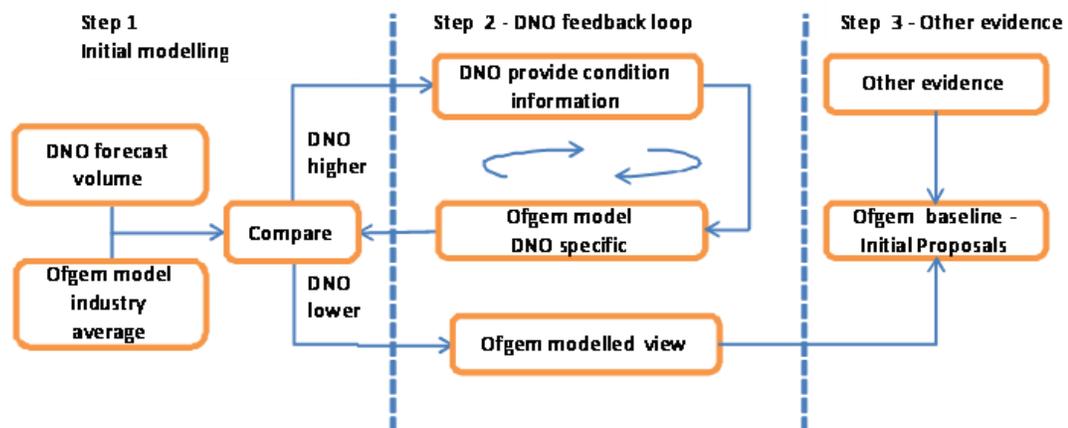
- 6.13. We understand that such modelling has limitations and will not fully take account of all relevant factors. Where such factors result in a material divergence from our modelling outputs, whether they be higher or lower than

implied by the model, DNOs should present compelling bottom-up evidence as part of their business plans to justify their expenditure needs. Where evidence provided is not considered to be of a high enough standard we will place more weight on the output of the model. The types of supporting evidence that are likely to be considered in RIIO-ED1, for departures from model outputs were:

- cost benefit analysis (CBA)
- business cases and other supporting narratives for named schemes and high value assets
- asset specific condition information
- relationships to health and criticality indices
- evidence of poor or worsening performance
- evidence of type faults, failure modes and safety issues
- reports from specialist external consultants.<sup>15</sup>

6.14. Our latest thinking on use of the replacement model in our overall approach to assessing NLRE is illustrated in Figure 6.2 below. As shown the model outputs form one part of an iterative process along with DNO supporting evidence such as condition information and any further evidence.

**Figure 6.2: Asset intervention methodology**



6.15. The model used in DPCR5 built on previous models to calculate lives based on historical and forecast volumes of replacements. The model's main feature is the assumed "Poisson" probability distribution where the standard deviation is

<sup>15</sup> Electricity Distribution Price Control Review Final Proposals - Allowed revenue - Cost assessment appendix (146a/09), 7 December 2009, p. 17.

the square root of the mean expected asset life.<sup>16</sup> Specifically, the model uses replacement volumes and asset age profiles to calculate the following:

- the lives that when entered into the model using the asset age profile at 2009-10 give output volumes equal to those actually (and expected to be) replaced by the DNOs in DPCR5
- the lives that when entered into the model using the asset age profile at 2012-13 give output volumes equal to those forecast by the DNOs to be replaced in RIIO-ED1.

6.16. We intend to carry out a separate unit cost assessment to derive expenditure allowances from our adjusted volumes.

#### *Unit cost assessment*

6.17. For RIIO-ED1 we intend to continue with a unit cost approach as a basis for expenditure modelling. We may also employ technical consultants to assist in this process which may involve providing comparative cost data as well as reviewing DNO proposals.

#### *Non-modelled costs*

6.18. In DPCR5, we undertook trend review for the following asset types:

- overhead pole lines
- substation costs
- other non-modelled costs.

6.19. We believe that we have made significant improvements during DPCR5 through the work undertaken in the RIGs and we are minded to avoid using non-modelled costs wherever feasible in RIIO-ED1.

### **Operational information technology & telecommunications (operational IT&T)**

6.20. Operational IT&T refers to equipment which is used exclusively in the real time management of network assets, but which does not form part of those network assets.

6.21. Our latest thinking is that operational IT&T may be an area that is subject to expert review.

---

<sup>16</sup> „Poisson“ probability distribution is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time and/or space if these events occur with a known average rate and independently of the time since the last event.

## Legal and safety

- 6.22. Legal and Safety includes any investment or intervention where the prime driver is to meet safety requirements and to protect staff and the public. It does not include assets replaced because of condition assessment or to meet Electricity Safety Quality and Continuity of Supply Regulations (ESQCR) regulations<sup>17</sup>
- 6.23. We intend to assess Legal and Safety expenditure based on analysis of the following cost categories:
- site security
  - asbestos management
  - safety climbing fixtures
  - fire protection
  - earthing upgrades
  - metal theft remedial work
  - other legal and safety cost areas as specified by the DNOs.
- 6.24. For site security expenditure we intend to use a similar approach to DCPR5 where site security costs were benchmarked based on the number of EHV and 132kV substations. We recognise that this approach may not capture the impact of increasing but regionally dependent levels of criminal activity and that DNOs were best placed to assess these trends. At this stage our thinking is that we will apply a benchmark unit cost to DNO volume forecasts, subject to these being suitably evidenced.
- 6.25. We intend to use run-rate, unit cost and, where merited, scheme analysis along with benchmarking to assess the remaining six areas of Legal and Safety forecast plans.

## Electricity Safety Quality and Continuity Regulations (ESQCR)

- 6.26. The bulk of ESQCR expenditure will fall away during RIIO-ED1. Our latest thinking is that for many DNOs ESQCR expenditure is likely to be considered business as usual, as it will no longer constitute a separate programme.
- 6.27. DNOs will need to model their efficient costs for maintaining clearances and we do not intend to provide catch-up allowances. This is to deter any delay in necessary investment taking place from the years specified in the DNOs' investment plans. DNOs will need to provide evidence that any spill over into RIIO-ED1 has not already been funded in previous price controls.

---

<sup>17</sup> <http://www.legislation.gov.uk/ukxi/2002/2665/contents/made>

### **Quality of service (QoS)**

- 6.28. We do not intend to provide any ex ante allowances for QoS investment in RIIO-ED1. In DPCR5 we did not propose any allowances for QoS. Under the methodology of the Information Quality Incentive (IQI), this resulted in some QoS costs being included in the baselines. We plan to adopt a similar approach for RIIO-ED1.

### **Flood mitigation**

- 6.29. Our latest thinking is to use a similar risk reduction benchmarking approach as used at DPCR5. We intend to assess the overall risk reduction across all sites and the associated expenditure. We would expect to calculate an industry average £ per risk point removed. At this stage we do not expect to provide allowances for site surveys.

### **BT 21<sup>st</sup> century (BT21CN)**

- 6.30. We intend to use DNO forecasts, with the possibility of a detailed scheme-by-scheme review if we believe this is warranted.

### **High impact low probability (HILP)<sup>18</sup>**

- 6.31. We intend to review this area on a DNO-specific basis. Our assessment will take into consideration whether forecasts in this area more appropriately belong to one of the other expenditure categories.

### **Losses**

- 6.32. DNOs should put forward a case for each of these activities using CBA in line with our proposals for CBA set out in the Supplementary annex – Business plans and proportionate treatment. For any new areas we will consider whether the CBA approach is appropriate or whether we should adopt another method in our toolkit.

### **Enhanced physical site security**

- 6.33. We intend to set an ex ante allowance for those enhanced physical site security projects where the DNO is able to provide sufficient detail on the

---

<sup>18</sup> HILP activity relates to increasing the security of supply to localities that have a high gross value added, to levels that exceed those recommended in Engineering Recommendation P2/619. More information about Engineering Recommendation P2/6 is available in the Distribution Code: [http://www.energynetworks.info/storage/dcode/dcode-pdfs/Distributionper\\_cent20Codeper\\_cent20vper\\_cent2018r1.pdf](http://www.energynetworks.info/storage/dcode/dcode-pdfs/Distributionper_cent20Codeper_cent20vper_cent2018r1.pdf)

expected works and associated costs. We intend to retain the reopener mechanism for enhanced physical site security, as set out in the 'Supplementary annex – Uncertainty mechanisms' which will cover those projects where the appropriate level of detail is not available at the time of setting RIIO-ED1 revenue allowances.

### **Black start**

- 6.34. We intend to fund Black start<sup>19</sup> activity via an ex ante allowance rather than requesting DNOs to log up expenditure or include specific reopener provisions in DNO licences. We intend to benchmark the costs of delivering the required level of capability using the information from the DNO business plans. Our current thinking is that the forecast volumes will be in line with DNOs' aiming to achieve the desired capability within the RIIO-ED1 period.

### **Rising and lateral mains (RLM)**

- 6.35. RLM relates to any expenditure on individual DNO owned three phase cable or busbar, not laid in the ground, which runs within or attached to the outside of a multiple occupancy building.
- 6.36. Our latest thinking is to carry out unit cost benchmarking using the data from the DNO business plans and assess the evidence provided by DNOs in support of their volumes in order to set ex ante allowances.

## **Summary of consultation proposals**

### **Asset intervention**

- 6.37. For asset intervention expenditure we proposed adopting a similar approach used in DPCR5 where we used an asset age-based model to benchmark DNOs' replacement volumes and expenditures. We proposed potential improvements to the age-based model used in DPCR5 and suggested the introduction of regression analysis and expert review to assess expenditure not covered by the age-based model.
- 6.38. We also proposed using output measures in the form of asset health and criticality indices and other secondary deliverables which corresponded to NRLE expenditure, suggesting that companies would be required to provide robust evidence on asset health and criticality to justify departures from our replacement volumes based on age-based modelling.

---

<sup>19</sup> Term used in the electricity industry to describe the actions necessary to restore electricity supplies to customers following a total or widespread shutdown of the GB transmission system

## **Operational information technology & telecommunications (operational IT&T)**

6.39. We proposed that for RIIO-ED1, operational IT&T is subject to expert review which includes a review of the indirect IT&T costs. For RIIO-ED1 we proposed that indirect IT&T costs should include associated non-operational capital expenditure.

## **Legal and safety**

6.40. We proposed that Legal and Safety expenditure will be derived from analysis of the following cost categories:

- site security
- asbestos management
- safety climbing fixtures
- fire protection
- earthing upgrades
- metal theft remedial work
- other legal and safety cost areas as specified by the DNOs.

6.41. We highlighted that while specific reviews might be appropriate for Legal and Safety; these reviews might not be practical given the timescales available and suggested that Legal and Safety is an area where the assessment approach may differ for fast-track and non-fast-track assessment.

6.42. For site security expenditure we proposed to revisit our approach used in DCPR5 where site security costs were benchmarked based on the number of EHV and 132kV substations. We recognised that this approach may not capture the impact of increasing but regionally dependent levels of criminal activity and agreed that DNOs were best placed to assess these trends. We proposed to apply a benchmark unit cost to DNO volume forecasts.

6.43. We proposed to use run-rate, unit cost and scheme analysis along with benchmarking to assess the remaining six areas of Legal and Safety forecast plans.

## **Electricity Safety Quality and Continuity Regulations (ESQCR)**

6.44. As the bulk of ESQCR expenditure will fall away during RIIO-ED1 we proposed that ESQCR expenditure should be considered business as usual as it will no longer constitute a separate programme.

6.45. We proposed that DNOs will need to model their efficient costs for maintaining clearances and that no catch-up allowances will be permitted. This is to deter any delay in necessary investment taking place from the years specified in the DNOs' investment plans. We suggested that it may be necessary for us to

develop a complementary output to monitor expenditure on clearance work in time.

### **Quality of service (QoS)**

- 6.46. Consistent with DPCR5, we did not propose to provide any ex ante allowances for QoS investment in RIIO-ED1. This approach was adopted in order to encourage improvements in the quality of service provided to customers without the need to incur investment expenditure. It was felt that this removed the need for any up-front funding for investment expenditure to meet the Interruptions Incentive Scheme (IIS) targets. We felt that any decision about expenditure to improve IIS should be based on the incentive rates.

### **Flood mitigation**

- 6.47. We proposed to use a risk reduction benchmarking approach for flooding, using Upper Quartile (UQ) benchmarking of average cost per risk reduction if possible, and the industry average if not. We also proposed not to include site survey expenditure within the allowance as these surveys should have been completed before the commencement of RIIO-ED1.
- 6.48. We believe that a whole life costs approach is appropriate in assessing flood protection because DNOs may adopt either an opex solution or a capex solution to flood risk. For example, some DNOs will be inclined to protect perceived weak points in their networks or sites, using temporary or portable flood protection measures (opex solution), whereas other DNOs will attempt to mitigate risks at an entire site by upgrading the permanent flood protection present (capex solution).

### **BT 21<sup>st</sup> century (BT21CN)**

- 6.49. We proposed to provide ex ante allowances for BT21CN in RIIO-ED1, given that we believe the situation in DPCR5 remains the same for RIIO-ED1.
- 6.50. In DPCR5, DNOs provided a high level forecast of expenditure for BT21CN following BT's provision of their plans for BT21CN. These forecasts were used to form ex ante allowances, informed by a review of more detailed scheme-by-scheme information. BT indicated that the leased line services that DNOs currently use will continue to be provided until 2018 whilst economically viable.

### **High impact low probability (HILP)**

- 6.51. We proposed to take a largely similar approach to DPCR5 for RIIO-ED1. Given that not all DNOs forecast expenditure on HILP for DPCR5 and that those who did forecasted relatively small amounts, we proposed to continue to look at

forecasts on an individual DNO basis. Any forecast expenditure on HILP will need to be well justified and supported by a robust cost benefit analysis.

### **Losses**

- 6.52. We proposed that the DNOs put forward a case for losses using CBA, following the requirements for CBA set out in the Supplementary annex - Business plans and proportionate treatment. We proposed to review each CBA (including appropriate benchmarking of input assumptions) as part of our work in assessing the appropriate ex ante cost baselines.

### **Enhanced physical site security**

- 6.53. We proposed to set an ex ante allowance for those projects where the DNO is able to provide sufficient detail on the expected works and associated costs for RIIO-ED1.
- 6.54. For those projects where the appropriate level of detail is not available at the time when RIIO-ED1 allowances are set, we proposed a reopener mechanism as set out in the Supplementary annex - Uncertainty mechanisms document.

### **Black start**

- 6.55. We proposed a strong preference for ensuring that the work undertaken by the Energy Networks Association (ENA) is funded via an ex ante allowance, rather than requiring the DNOs to log up expenditure or include specific reopener provisions in the DNO licences. The technical standard established by the ENA should allow us to achieve this.
- 6.56. We proposed that, once it has been agreed (with appropriate input from industry, government, and Ofgem), companies will be expected to use the technical standard in preparing their business plan submissions for the RIIO-ED1 period. We proposed to use this information to determine the efficient cost of delivering the required changes, and companies' allowances for this area would be based on this analysis.

### **Rising and lateral mains (RLM)**

- 6.57. We proposed to remove the reopener element from RLM funding given that we believe DNOs have had sufficient time to resolve any ownership issues, and expect DNOs to forecast on an ex ante basis only. We also proposed to set allowances based on the approach used for reviewing the DPCR5 reopener applications.

## Summary of consultation responses

- 6.58. Generally respondents agreed with our approach to assessing non-load-related costs, agreeing that there should be scope to use 'non-modelled' costs as part of our assessment.
- 6.59. One respondent did not agree with our proposed approach for assessing Legal and Safety expenditure specifically the proposal to benchmark using unit costs to assess site security. However the respondent did agree with our proposed assessment of the remaining areas of legal and safety expenditure.
- 6.60. Three respondents agreed that ESQCR activity will represent business as usual during RIIO-ED1 and therefore agree that it will no longer constitute a separate programme of activity; one stating that this proposal will have to be implemented carefully. One respondent stated that ESQCR should remain as a separate expenditure category and assessed separately.
- 6.61. One respondent supported an approach to Quality of Service (QoS) that allows companies to fund investment via the incentive rate but stated that the assumptions regarding improvements made in the approach to target setting is inappropriate. One respondent pointed out that we did not make clear how DNOs should fund year on year improvements in IIS.
- 6.62. There were varying responses on our proposals for Black Start. One respondent agreed that this area will be mature enough at the start of RIIO-ED1 to be funded via an ex ante allowance. However three respondents stated that they would prefer not to use an ex ante basis for Black Start as discussions are still ongoing between industry and DECC.
- 6.63. All three respondents who commented on Lateral Rising and Lateral Mains (RLM) agreed that ex ante funding is appropriate for RIIO-ED1.
- 6.64. Generally respondents agreed with our proposed approach to assessing enhanced security costs.

## Reasons for our updated thinking

### Asset intervention

- 6.65. For RIIO-ED1 we expect the volumes resulting from the age-based modelling to set out a medium-longer term view of the extent of asset intervention that is needed. It does not set out volumes of asset replacement and the model information will be considered together with appropriate output information to determine what intervention is needed. As such we would expect the volumes from the age-based modelling multiplied by the benchmark replacement unit costs to set the outer limit of expenditure related to asset intervention. We

recognise that the DNOs have a much wider range of tools at their disposal and forecast expenditure on asset intervention should be much lower.

- 6.66. In DPCR5 we developed benchmark unit costs as the industry median values for each asset type taken from unit cost schedules provided in the Forecast Business Plan Questionnaires (FBPQs). These values were adjusted to reflect known variances including due to scope of works. In limited cases we accepted DNO arguments to not apply the benchmark unit cost eg for works in central London. Some work was also undertaken by the DNOs to properly reconcile unit costs between assets subjected to volume modelling and those assets outside of the model. In setting baseline expenditures we only applied the benchmark where this was below the unit costs proposed by the DNOs. A unit cost adjustment was also made for those DNOs whose forecasts were based on unit costs that were better than the upper quartile (UQ) unit cost for the majority of asset categories (on the basis that they would otherwise have potential difficulties in outperforming the benchmark).

### **Operational information technology & telecommunications (operational IT&T)**

- 6.67. We have employed technical consultants to assist with the development of the business plan data tables for this area and our discussions at the Cost Assessment Working Group have indicated that this area may warrant expert review.

### **Legal and safety**

- 6.68. Given the materiality of site security we believe it is appropriate to consider using unit costs for this area of expenditure. At this stage we do not intend to apply this mechanistically, and will consider the evidence provided by DNOs in addition to any benchmarking we conduct. For the other areas of expenditure there was general agreement with our proposed approach and as such, at this stage our thinking is that our approach should remain unchanged.

### **Electricity Safety Quality and Continuity Regulations (ESQCR)**

- 6.69. In light of the consultation responses and the initial indications of forecast expenditure for RIIO-ED1 we intend to maintain this as a separately identified area within the business plan data templates. This approach is intended to give us visibility of this area and to provide scope for us to roll this into business as usual if needed.

### **Quality of service (QoS)**

- 6.70. We believe the incentive rates in the Interruptions Incentive Scheme (IIS) provide a cleaner route to delivering performance improvements. We are not intending to provide funding for year on year performance improvements as a

number of DNOs have shown during DPCR5 that improved performance does not necessarily require additional expenditure.

### **Flood mitigation**

6.71. Our approach used at DPCR5 took a high level view of the forecasts in this area and we believe a similar approach is in-keeping with the RIIO framework.

### **BT 21<sup>st</sup> century (BT21CN)**

6.72. Given current DNO forecasts in this area we believe it may be necessary to conduct a detailed scheme-by-scheme review.

### **High impact low probability (HILP)<sup>20</sup>**

6.73. As there may only be a small number of forecasts in this area covering company specific proposals, we currently believe reviewing on a DNO specific basis is appropriate.

### **Losses**

6.74. Electricity losses are a significant source of greenhouse gas (GHG) emissions. Effective losses management also protects customers from unnecessary cost increases. CBA enables a comprehensive assessment of DNO proposals.

### **Enhanced physical site security**

6.75. We did not receive any responses to our proposals that indicated a change was required. As such we are continuing with the intended approach, noting that as part of their evidence DNOs should include the provision of an initial audit recommendation to demonstrate that the proposed works demonstrate value for money.

### **Black start**

6.76. In light of the work undertaken between industry, DECC and Ofgem our view is that there is sufficient clarity on what the current requirements are in order for DNOs to be able to forecast their funding requirements for RIIO-ED1.

---

<sup>20</sup> HILP activity relates to increasing the security of supply to localities that have a high gross value added, to levels that exceed those recommended in Engineering Recommendation P2/619. More information about Engineering Recommendation P2/6 is available in the Distribution Code: [http://www.energynetworks.info/storage/dcode/dcode-pdfs/Distributionper\\_cent20Codeper\\_cent20vper\\_cent2018r1.pdf](http://www.energynetworks.info/storage/dcode/dcode-pdfs/Distributionper_cent20Codeper_cent20vper_cent2018r1.pdf)

### **Rising and lateral mains (RLM)**

6.77. Given the positive responses we are sticking with our proposal to include RLM within the ex ante assessment. Our approach to benchmarking costs and assessing proposed volumes is informed by the work undertaken on assessing the DPCR5 RLM reopener applications.

## 7. Network operating costs

### Chapter Summary

This chapter sets out our latest thinking on our approach to assessing Network Operating Costs (NOCs) which is the expenditure required to maintain and operate the distribution networks.

### Introduction

7.1. Network Operating Costs (NOCs) are the costs incurred by DNOs as part of the work required to maintain and operate the distribution networks. They are split into six activities:

- trouble Call (with seven categories)
- severe Weather 1 in 20 Events
- inspections and Maintenance (I&M)
- tree Cutting
- NOCs Other.
- smart meter roll-out (additional call outs).

### Trouble Call

#### Introduction

7.2. Trouble Call is the term applied to the activity for the resolution of faults which are interruptions and occurrences not incentivised (ONIs). Interruptions can cause customers to be without supply, whereas ONIs generally do not cause customers to be without supply.

#### Our updated thinking

7.3. Our latest thinking on cost assessment for Trouble Call by category is set out in Table 7.1 below.

**Table 7.1: Assessment of Trouble Call activity**

Category	Cost assessment
Trouble Call	<ul style="list-style-type: none"><li>• To retain all seven categories.</li></ul>
LV and HV overhead faults	<ul style="list-style-type: none"><li>• For unit costs benchmark across DNOs for each activity at the average</li><li>• For volumes we envisage using historical volumes and forecast values, where justified.</li></ul>
LV and HV underground faults	<ul style="list-style-type: none"><li>• Note: for pressure assisted cables we expect to continue to separate Trouble Call and I&amp;M costs</li></ul>
EHV and 132kV faults	

Category	Cost assessment
ONIs (formerly non-Quality of service (QoS) faults)	associated with this activity.
Pressure assisted cables	
Third party cable damage recovery	<ul style="list-style-type: none"> <li>To consider the maximum of forecasts, historical average and cross-DNO performance.</li> </ul>
Submarine cables	<ul style="list-style-type: none"> <li>Set cost baselines at the minimum of the average annual forecast and the annual actual costs reported for the previous years.</li> <li>Take into consideration specific information from the relevant affected DNOs.</li> </ul>

### Summary of consultation proposals and summary of responses

7.4. Our proposed approach in the September strategy consultation for each Trouble Call category, along with consultation responses is detailed in Table 7.2 below.

**Table 7.2: Trouble Call proposed approach and responses**

Category	Approach	Responses
Trouble Call	<ul style="list-style-type: none"> <li>To disaggregate Trouble Call into seven categories to benchmark at the category level (for disaggregated model)</li> <li>To benchmark at the upper quartile (UQ) at the disaggregated and aggregated levels.</li> </ul>	<ul style="list-style-type: none"> <li>General support for breaking down the Trouble Call costs into the seven categories. Agreement that this approach is proportional given the materiality of Trouble Call.</li> <li>However, concerns raised use of UQ benchmarking at this level of disaggregation (ie category level), given that different DNOs face different topographies and therefore different costs.</li> <li>Suggested benchmarking at the disaggregated level be based on average to avoid potential cherry picking and that UQ benchmarking should be based on aggregated performance.</li> <li>Problems with the current reporting rules.</li> <li>Preference for separate treatment of unit costs and volumes where a volume driver is justified.</li> </ul>
LV and	<ul style="list-style-type: none"> <li>Option 1: re-use the DPCR5</li> </ul>	<ul style="list-style-type: none"> <li>Some support for Option 1.</li> </ul>

Strategy decisions for the RIIO-ED1 electricity distribution price control  
Tools for cost assessment

Category	Approach	Responses
higher voltage HV overhead faults	<p>econometric modelling approach but benchmark at the UQ and at the most detailed levels using the new RIGs.</p> <ul style="list-style-type: none"> <li>Option 2: use historical volume and unit cost data to set a unit cost benchmark (based on UQ) and apply this to the DNOs' forecast volume.</li> <li>Option 3: determine efficient costs and also tie volumes to either agreed secondary deliverables or interruptions incentives scheme (IIS) fault rate benchmarking.</li> </ul>	<ul style="list-style-type: none"> <li>Suggestion to use a blend of all options as follows: at the most disaggregated level in the regulatory reporting rack (RRP) take actual unit costs per activity based on data submitted in DPCR5, smoothing out any volatility, use the average unit cost (to avoid cherry picking) and multiply by forecast volume to derive a predicted cost for each disaggregated activity for each DNO, sum all disaggregated activity costs to get a total for each DNO, and compare total actual cost and total forecast costs. The efficiency frontier would be identified at the UQ when total actual costs are compared with total forecast costs.</li> <li>Suggestion of blending LV and HV overhead and underground faults.</li> </ul>
LV and HV underground faults	As per LV and HV overhead faults	<ul style="list-style-type: none"> <li>Responses as per LV and HV overhead faults.</li> </ul>
EHV and 132kV faults	<ul style="list-style-type: none"> <li>Option 1: as per DPCR5 but at the most detailed level and also setting the benchmark at the UQ.</li> <li>Option 2: use the ten year average fault rate calculated as part of the IIS target setting mechanism and then apply average cost per fault.</li> <li>Option 3: use historical volume and unit cost data to set a UQ benchmark unit cost and apply this to the DNOs' forecast volume.</li> </ul>	<ul style="list-style-type: none"> <li>Mixed support – some support Option 1 and some Option 2. In both, there are concerns using UQ as the benchmark rather than the average, as such incidents are variable in their scale and costs.</li> <li>Suggestion to use the blended approach as set out above for LV and HV overhead faults but to use forecasts (RIIO-ED1) as well as actuals (DPCR5) on costs and volumes to smooth out volatility to achieve unit cost.</li> </ul>
ONIs (formerly non-QoS faults)	<ul style="list-style-type: none"> <li>Option 1: re-use the DPCR5 approach but benchmark at the UQ.</li> <li>Option 2: use benchmarking as set out in Option 2 of the LV and HV fault assessment.</li> </ul>	<ul style="list-style-type: none"> <li>Option 1 using the DPCR5 approach generated some support due to the variations in what DNOs report.</li> <li>Suggestion to use the blended approach as set out for LV and</li> </ul>

Category	Approach	Responses
		<p>HV overhead faults.</p> <ul style="list-style-type: none"> <li>General concerns remain over the consistency of data reporting.</li> </ul>
Third party cable damage recovery	<ul style="list-style-type: none"> <li>To allow the maximum of forecasts and historical average.</li> </ul>	<ul style="list-style-type: none"> <li>General support for this approach.</li> </ul>
Pressure assisted cables	<ul style="list-style-type: none"> <li>Option 1: as per DPCR5 to pro rate a proportion of the cost between faults and I&amp;M against the combined cost for these assets. Take a minimum of each DNO's own forecast costs and each DNO's average of actual reported costs from 2005-06 to 2008-09 with a one per cent efficiency glide path for the DPCR5 period.</li> <li>Option 2: combine with our main fault rate assessment.</li> </ul>	<ul style="list-style-type: none"> <li>Support for Option 1 as to incorporate this in LV/HV fault rate assessment would be problematic due to the volatility in costs and volumes associated with this type of asset.</li> <li>Suggestion to use the blended approach as set out above for LV and HV overhead faults.</li> </ul>
Submarine cables	<ul style="list-style-type: none"> <li>As per DPCR5, set cost baselines at the minimum of the average annual forecast and the annual actual costs reported for the previous years.</li> <li>The analysis for Trouble Call will be combined with the work on asset intervention and I&amp;M.</li> </ul>	<ul style="list-style-type: none"> <li>Some supported the continued use of the DPCR5 approach; others supported the blended approach as set out above for LV and HV overhead faults.</li> <li>View that further bilateral work with the DNOs most affected needs to be completed.</li> </ul>

### Reasons for our updated thinking

7.5. We acknowledge the past issues with the reporting and interpretation of the reporting rules, but believe through the work undertaken with the DNOs in recent months at the CAWG these issues will be resolved, allowing us to follow our intended approach to Trouble Call with confidence. However we retain the option to remove any data that we believe is erroneous prior to benchmarking.

7.6. It is vital that we continue to give efficient allowances to DNOs for all Trouble Call activity to ensure that faults are dealt with quickly and with least inconvenience to customers. In doing so, we believe it is important to assess not only unit costs forecast by the DNOs, but also to review whether the volumes of projected faults are reasonable (based on historical data and

comparisons with other DNOs). That is, DNOs must clearly justify both costs and volumes.

## Severe weather 1 in 20 events

### Our updated thinking

- 7.7. We intend to update the allowances provided for severe weather 1 in 20 events under DPCR5 for inflation.
- 7.8. Given their rarity, we intend to exclude severe weather 1 in 20 allowances from our benchmarking analysis and subject it to a qualitative/technical assessment.

### Summary of consultation proposals

- 7.9. We proposed to permit the allowances provided under the DPCR5 updated for inflation.

### Summary of responses

- 7.10. Respondents supported the continued allowance for severe weather 1 in 20 events following the approach set out above. One supplier supported this approach provided that these costs are not captured through any other capital mechanism or allowance (eg capital investment) and are therefore double counted.

### Reasons for our updated thinking

- 7.11. While severe weather 1 in 20 events are rare, they can have a significant adverse impact on customers and therefore we must ensure DNOs have the resources to respond to such faults. Separation of these costs from other Trouble Call costs will facilitate analysis and ensure that these costs are not accounted for in Network Investment costs.

## Inspection and maintenance

### Our updated thinking

- 7.12. For high-volume I&M activity, for both volumes and costs we intend to benchmark using historical (DPCR5) and forecast (RIIO-ED1) data at the most disaggregated level in the business plans.

- 7.13. We intend to separately analyse pressure assisted cables and submarine cables. Our current thinking is that urban specific issues should be picked up via any regional adjustments and are therefore not carving these out from our I&M analysis. For both costs and volumes we intend to take the minimum of each DNOs' forecasts and actuals (with an annual efficiency saving informed by DNOs' business plans and our total factor productivity analysis).
- 7.14. For both the main high-volume benchmarking, and separate low volume assessment, we are mindful that we may need to adjust our approach to account for:
- any CBA in this area to reach a judgement on whether high I&M unit costs for a particular DNO is a reflection of overall low whole life costs by considering expenditure across replacement, refurbishment and I&M
  - the fact that no/low volumes may reflect under-investment in I&M activity
  - commonality in the scope of I&M activity.

### **Summary of consultation proposals**

- 7.15. For all I&M activity, for volumes, we proposed to take the minimum of each DNO's own forecasts and the industry average of actual historical volumes with a one per cent efficiency glide path applied. For costs, we proposed to benchmark at the UQ unit cost.

### **Summary of responses**

- 7.16. Overall, there was support for benchmarking DNO I&M costs provided Ofgem fully understand the content of the work undertaken by DNOs to ensure commonality and comparability. Respondents supported Ofgem in continuing to review company policies on I&M (both the scope and the frequency).
- 7.17. One respondent suggested using the same benchmarking approach as many of the Trouble Call categories (set out in the response column for LV and HV overhead faults in Table 7.2 above) for all I&M activity. This approach would require no special consideration for pressure assisted cables, submarine cables and urban specific assets.
- 7.18. Another respondent suggested that the well-defined, high-volume I&M activities lend themselves well to a benchmarking assessment, through econometric modelling. In contrast, low-volume, asset-specific categories merit a separate approach; either specific analysis or an approach based on the lower of the average historical values and forecasts.
- 7.19. It was also suggested that, given the length of maintenance cycles relative to the length of the regulatory period, care should be taken when comparing forecast volumes across DNOs, especially at higher voltages.

- 7.20. Respondents also reported concerns that low volumes do not necessarily indicate good management practice and DNOs may make sub-optimal decisions that keep volumes low. There was a preference that Ofgem places more weight on assessment of costs across replacement, refurbishment and I&M and that Ofgem considers cost benefit analysis (CBA) in this area. This may suggest that enhanced I&M regimes are commensurate with a lowest whole life costs for some asset classes.

### **Reasons for our updated thinking**

- 7.21. For high volume I&M activity, we believe it is appropriate to benchmark both volumes and costs for I&M, noting that no/lower volumes do not necessarily infer efficiency. In addition, we consider it necessary to ensure commonality of I&M activity across DNOs before embarking on benchmarking analysis. That is why we intend to continue to review each DNO's I&M activity in detail. We propose to benchmark using both historical and forecast data in order to smooth out lumpy expenditure.
- 7.22. We intend to keep two asset categories, pressure assisted cables and submarine cables, distinct in our analysis in order that we can undertake a separate assessment of these. Despite taking a long run average approach to benchmarking to smooth out lumpy expenditure, we believe these activities do not lend themselves well to benchmarking as they only affect a small number of DNOs.

## **Tree cutting**

### **Our updated thinking**

#### *ENATS 43-8*

- 7.23. For tree cutting activity undertaken to meet the standards of ENATS 43-8<sup>21</sup>, we are minded to benchmark costs and volumes at the average for each voltage level. This will apply to both spans cut and spans inspected. Our latest thinking is not to include a true-up mechanism for this activity.

#### *ETR 132*

- 7.24. For tree cutting activity undertaken to meet the standards of ETR 132<sup>22</sup>, we intend to benchmark costs and volumes at the average for each voltage level.

---

<sup>21</sup> Energy Networks Association (ENA) Technical Specification 43-8 on overhead line clearances.

<sup>22</sup> ENA Engineering Technical Report (ETR) 132 "Vegetation management near electric overhead lines for the purpose of improving network performance under abnormal weather conditions"

This will apply to both spans cut and spans inspected. Our latest thinking is not to include a true-up mechanism for this activity.

### **Summary of consultation proposals**

- 7.25. For RIIO-ED1 we proposed to base our allowances on the DNOs' forecast number of spans managed and spans cut. As DNOs may decide to change the ratio of spans managed and cut after the allowance has been set, we also proposed to include a true-up mechanism which will adjust the level of allowance should the ratio change. This would contain a built-in tolerance level to allow more efficient tree cutting programmes to be implemented by the DNOs when available.
- 7.26. The unit cost for spans managed and spans cut was set at the upper third in DPCR5, as with other network operating costs. For RIIO-ED1 we proposed to benchmark costs and volumes at the average for each voltage level.

### **Summary of responses**

- 7.27. There was general support for following the DPCR5 approach to unit cost assessment, to allow the DNOs' forecast volume for spans managed and spans cut and to introduce a true-up mechanism.
- 7.28. One respondent made distinction between tree cutting to meet requirements of ENA TS 43-08 and tree cutting in accordance with ETR 132.
- 7.29. For ENA TS 43-08 it was suggested that at the most disaggregated level in the RRP (ie by voltage level, spans cut and spans inspected) take actual unit costs per activity based on data submitted in DPCR5, smoothing out any volatility, use the average unit cost (to avoid cherry picking) and multiply by forecast volume to derive a predicted cost for each disaggregated activity for each DNO, sum all disaggregated activity costs to get a total for each DNO, and compare total actual cost and total forecast costs. The efficiency frontier would be identified at the UQ when total actual costs are compared with total forecast costs.
- 7.30. For ETR 132 it was suggested that this can only be undertaken using reliable long run data and it is proposed that averaging expenditure for DPCR5 and RIIO-ED1 periods will help to average out low cost and high costs circuits. At the moment, ETR 132 tree cutting requires DNOs to report on the amount of expenditure and not the activity – that is, the length of overhead line that has been cleared to the required resilience standard. Yet the same length of overhead line cleared may require a small number of spans to be cut or may require a large number of spans to be cut. The former will cost significantly less. Therefore, using long run reliable data to compare the typical cost of clearing a kilometre of overhead line would seem reasonable.

- 7.31. Again, respondents raised concerns with consistency and commonality of data reporting.

### **Reasons for our updated thinking**

- 7.32. Given the variation in costs for activity at different voltage levels and the different scope of work required to meet the standards of ETR 132, we intend to differentiate tree cutting activity into separate voltage categories and by the standard that it is intended to meet. We intend to analyse performance according to the separate categories.
- 7.33. We intend to benchmark at the average for each voltage level as this is in keeping with our approach for other areas. We are minded not to include a true-up mechanism as we believe that this would lead to uncertainty in the level of allowances set. We believe that setting ex ante allowances is the most appropriate course of action and we intend to assess DNOs plans carefully in doing so. DNOs are responsible for discharging their duties in relation to tree cutting activity. If DNOs choose to shift the balance of their activity to include more inspection than cutting, than they had originally set out, we would expect this to be reflected by an adverse impact on their customer interruptions and customer minutes lost performance. It will also affect their network resilience. These additional incentives will encourage DNOs to deliver their agreed levels and compositions of activity on tree cutting.

## **NOCs other**

### **Introduction**

- 7.34. NOCs other comprises costs associated with the dismantlement of network assets, operation of remote location generation and electricity consumed in the DNOs' substations.

### **Our updated thinking**

- 7.35. We intend to set allowances at the minimum of the forecast presented by the DNOs or the average of the DNOs' historical actuals (with an annual efficiency saving informed by DNO business plans and our total factor productivity analysis).
- 7.36. For substation electricity, we intend to assess the efficiency of both units consumed and price per unit.

### **Summary of consultation proposals**

- 7.37. For dismantlement and remote location generation, we proposed to use the DPCR5 approach, ie to set allowances at the minimum of the forecast or the

average of the actuals (with a one per cent annual efficiency saving). Where specific work plans in these areas could be identified, we would consider these separately.

- 7.38. For substation electricity we proposed to benchmark the average usage per site, and multiply by the UQ pence per unit consumed. We noted that factors which might need to be considered with this approach include the size of the substation and whether the company is vertically integrated or not.

### **Summary of responses**

- 7.39. Respondents had little comment to make on proposals to dismantlement and remote location generation due to their relatively small cost. Those that did respond generally agreed with the approach.
- 7.40. Regarding substation electricity, the largest of the three categories, respondents agreed in principle to some form of benchmarking that considers usage rather than only price per unit. However, it was suggested that the characteristics of substations should be taken into account (ie size, underground substations that may require additional electricity to support ventilation and drainage/pumping, weather conditions where colder areas will consume more energy etc). Similarly respondents felt that consideration is given to vertical integration and the fixed price deals that cannot be achieved in the market.
- 7.41. There was also a view that deriving average consumption per site is problematic because any units not reported as being consumed at substations would ultimately be reported as losses. Depending on the plans for a losses incentive, a DNO would be indifferent to a benchmarked reduction in the quantity of electricity consumed at substations. An alternative approach suggested was to accept the DNOs' forecast of electricity consumed and use a true-up should the inventory and/or usage vary significantly.
- 7.42. Respondents also raised concerns of reporting errors in this area.

### **Reasons for our updated thinking**

- 7.43. For dismantlement and remote location generation, setting allowances based on the minimum of the (justifiable) forecasts presented by the DNOs or the average of the DNOs' historical actuals (with a one per cent annual efficiency saving) is reasonable as they are both small areas that do not affect all DNOs and therefore benchmarking is not appropriate. The one per cent annual efficiency savings is expected as DNOs become more apt at these activities.
- 7.44. The third and largest category under NOCs Other, substation electricity, affects all DNOs. Given the data that we have available, we believe it is

prudent to continue to benchmark on a price per unit and DNOs' forecast units consumed.

## Smart meter roll-out (additional call outs)

### Introduction

7.45. The roll-out of smart meters is predicted to have cost implications for DNOs due to the anticipated call-outs they will be required to attend to facilitate the safe installation of smart meters at domestic premises.

### Our updated thinking

- 7.46. In the Supplementary annex – Uncertainty mechanisms document, we have set out that, as it is unclear what proportion of smart meter installations will require a DNO to attend, we intend to provide an ex ante allowance based on a two per cent call out rate. This is set at the lower end of current DNO forecasts of intervention rates, but given the limited number of smart meters installed to date, we believe it is a prudent level. The volume driver will apply if actual volumes of call-outs are higher or lower than this.
- 7.47. Call-outs for smart meters may involve a number of different activities by the DNOs, which we will capture in the business plan data templates. If there are material differences in unit costs between the different activities we intend to use activity-specific unit costs, otherwise our benchmarked unit cost will be a composite of the different activity unit costs.
- 7.48. In the September strategy consultation this area was covered in the 'Supplementary annex - Uncertainty mechanisms' document.

## 8. Closely associated indirect costs

---

### Chapter Summary

This chapter sets out our latest thinking on our approach to assessing Closely Associated Indirect costs (CAIs). These are costs that are required to support a DNO's operational activities.

### Introduction

8.1. Indirect operating costs can be split into 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)). In this chapter we set out our updated thinking for CAIs, detail on BSCs can be found in Chapter 9.

### Our updated thinking

8.2. We intend to add two new activities to the DPCR5 CAIs categories - small tools, equipment, plant and machinery (moving it to CAIs from non-operational capex) and non-operational capex element of vehicles and transport from a separate non-operational capex category to the vehicles and transport CAI activity.

8.3. For CAIs, we therefore expect DNOs to report costs in terms of the following 11 categories:

1. Call centre
2. Control centre
3. Engineering management and clerical support
4. Network design and engineering
5. Network policy
6. Operational training (including workforce renewal)
7. Project management
8. Small tools, equipment, plant and machinery
9. Stores
10. System mapping – cartographical
11. Vehicles and transport.

8.4. In terms of benchmarking costs, we intend to group the activities based on common cost drivers.

8.5. Our current thinking is that wayleaves costs will not be removed from Engineering Management and Clerical Support prior to benchmarking unit



## Strategy decisions for the RIIO-ED1 electricity distribution price control Tools for cost assessment

- costs, but we will assess whether the wayleaves costs seem reasonable by looking at the run rate.
- 8.6. We intend to smooth the expenditure for both Vehicles and Transport (the Non-Operational Capex Vehicles element) and for Small Tools and Equipment and Plant and Machinery, using an average annual value, prior to benchmarking.
  - 8.7. We intend to use an average unit cost assessment for each activity or each group of activity (based on cost driver).
  - 8.8. We intend to assess Workforce Renewal costs separately from the overall benchmarking of CAIs and award these costs on an ex ante rather than “use it or lose it” basis.
  - 8.9. We intend to assess allowances for Workforce Renewal using historical trend analysis, forecast trend analysis and the Energy and Utilities Skills (EU Skills) Workforce Planning Model (WPM). The model will take account of the costs of replacing retirees with apprenticeships and other recruitment, as well as the up-skilling of current staff. Our latest thinking is that Workforce Renewal forecasts should indicate both outsourced and in-sourced requirements and Workforce Renewal costs should be considered both as a stand-alone initiative and as part of the DNOs’ wider training provision (both operational and non-operational training costs).
  - 8.10. Finally, for all CAIs we intend to assess costs before and after reallocation to non-distribution activities and connections. This is to allow us to assess the efficiency of costs that will be funded by DUoS customers and to show the extent to which different allocation methodologies may be distorting calculated efficiency.

### **Summary of consultation proposals**

- 8.11. In the September strategy consultation we proposed to add two new categories to the DPCR5 CAI activities, and include the Non-Operational Capex element of Vehicles and Transport into the CAI Vehicles and Transport category. For small tools, equipment, plant and machinery and vehicles and transport, we proposed to smooth the expenditure using an average annual value, in recognition that expenditure in these areas is irregular and lumpy.
- 8.12. Our second key proposal concerned the grouping of the CAIs activities for benchmarking. In assessing CAIs in RIIO-ED1 two options were proposed. The first was to place activities into two distinct groups - where costs are differentiated by costs that flex with changes in the volume of direct activity

undertaken by the DNO (Group A<sup>23</sup>) and those that are substantially fixed regardless of direct activity (Group B<sup>24</sup>) - with each group assessed collectively using a common composite cost driver and for allowances to be based on the UQ benchmark. The second option was to place each activity in groups based on their aligned cost driver and for allowances based on the UQ benchmark.

- 8.13. Regarding cost drivers, we proposed to move away from the DPCR5 approach of using direct expenditure as a cost driver as it potentially rewarded inefficient companies and also penalised companies who invest in design and project management costs in order to minimise or avoid direct costs. Instead, we proposed to use those which are as closely aligned to each activity as possible.
- 8.14. We proposed that Workforce Renewal costs should be removed from the benchmarking of CAIs but that wayleaves would remain in Engineering Management and Clerical Support prior to benchmarking.
- 8.15. We also proposed that Workforce Renewal costs should be awarded on an ex ante rather than "use it or lose it" basis and that they would be considered both as a stand-alone initiative and as part of the wider training provision (both operational and non-operational training costs). The assessment for allowances for workforce renewal would make use of historical trend analysis, forecast trend analysis, and matching workforce retirements to apprentices recruited only, making use of the EU Skills WPM. We proposed to set a unit cost to be applied to all trainee and apprentice programmes and to set a small amount per DNO per year to cover additional training costs over and above apprentice training costs. Finally, we proposed that Workforce Renewal allowance should exclude contractor costs.
- 8.16. We proposed to assess costs for all CAIs before and after reallocation to non-distribution activities and connections.

## Summary of responses

- 8.17. Regarding the addition of categories in CAIs, the majority of respondents supported the inclusion of network policy), and the inclusion of the non-operational capex element of vehicles and transport. There was strong support for smoothing the areas of lumpy expenditure.
- 8.18. However, this support was not universal with one suggestion that Small Tools, Equipment, Plant and Machinery should not be classified as a CAI activity but

---

<sup>23</sup> Network Design and Engineering, Project Management, System Mapping – Cartographical, Vehicles & Transport and Small Tools & Equipment & Plant & Machinery.

<sup>24</sup> Engineering Management and Clerical Support, Control Centre, Call Centre, Stores, Operational Training (including Workforce Renewal) and Network Policy.

as a direct activity. It was suggested that in order to undertake effective cost assessment it may be necessary to apportion non-operational capital expenditure associated with Small Tools, Equipment, Plant and Machinery across all direct activities. This acknowledges that Small Tools, Equipment, Plant and Machinery are essential to bringing assets into service and is closely aligned to direct activities.

- 8.19. With regards to the two options for grouping of activities, respondents largely agreed in principle to our overall approach to grouping CAIs in Group A and Group B. Although one stakeholder believed that if Group B activities remain substantially fixed regardless of the level of direct activity then they should be moved into the BSCs. A minority of respondents suggested changes to the composition of each group.
- 8.20. In general the respondents gave less weight to the grouping of activities than to the cost drivers of those activities. There was widespread support for our view that the use of direct expenditure as a cost driver was inappropriate. It was recognised that identifying a composite cost driver for each group (especially Group A) would be challenging. Respondents were sceptical of the use of volumes of the activity as a cost driver as this is likely to provide only a unit cost (useful in itself) but does not reveal if it is an efficient volume of activity.
- 8.21. The majority of respondents supported our view to include wayleaves in Engineering Management and Clerical Support prior to the benchmarking. Although one disagreed on the basis that payments remain a legacy issue that are not uniformly distributed across DNOs and therefore it has not been possible to identify a reliable cost driver.
- 8.22. There was widespread support for assessing Workforce Renewal separately to other CAIs. There was also support for looking at how this fits in with the wider company training within DNOs. However, some respondents raised concerns with elements of our proposed approach and there were clear divisions on whether Workforce Renewal costs should include or exclude contractor costs.

### *Concerns*

- 8.23. The concerns raised in responses were as follows.
- That the assessment of Workforce Renewal costs should extend beyond replacement of retirees with apprenticeships to also include other justifiable recruitment and up-skilling. This reflects the fact that DNOs will need to increase the level of direct staff due to sustained increased in direct activity and therefore trainees recruited will need to exceed the number of employees retiring. Upskilling is also required to meet the needs of a low carbon economy.

- As DPCR5 was “use it or lose it”, DNOs should not be penalised for under-recruitment nor should previous high levels of recruitment be a compelling reason to award further allowance (although it should be noted that others believe historical under-recruitment should be taken into consideration). Further, it was suggested that the economic circumstances that characterised DPCR5 should be considered when assessing historical data.

#### *Contractor costs*

- 8.24. The two respondents opposed to the inclusion of contractor costs argued that there is no guarantee that these resources would be available to industry in the future given the fluid nature of the contractor markets and the use of contractors is a conscious decision by companies. Therefore, the cost of training contractors’ employees is a cost that should be borne directly by the contractors and the contractors should seek to recover the cost of the training that they undertake via a schedule of rates for carrying out work for DNOs and other organisations.
- 8.25. The five respondents supporting the inclusion of contractor costs suggested that the way in which Workforce Renewal allowances are set should not distort company resourcing or delivery strategies and the proposed approach favours one operating model (insourcing) over another (outsourcing). Concerns were raised that, given the low margins typically available to contractors, many are unlikely to invest in the extensive recruitment and training required to meet the needs of the industry in order that they remain price competitive. Further, the long term incremental nature of Workforce Renewal can lead to a perception that it is an optional extra rather than a fundamental requirement. As such, the inclusion of contractor costs within the Workforce Renewal allowance would be the most effective means of ensuring sufficient future investment in training and skills and distributing the cost burden evenly across the sector.
- 8.26. It was suggested that Ofgem consider providing allowances to DNOs to allow them to expand their training capacity, such that DNOs could offer training services to contractors. It was further suggested that if Workforce Renewal funding should be extended to contractors it should be only those contractors that exclusively employ trades used by the DNOs (ie jointers, fitters, linesmen and engineers).

### **Reasons for our updated thinking**

- 8.27. We intend to use all 11 categories as suggested in the September strategy consultation under CAIs. We do not intend to move those that are substantially fixed to BSCs. We believe that these categories best reflect the definition of CAIs and as both sets of costs (CAIs and BSCs) are subjected to exactly the same treatment (ie the same efficiency incentive rate derived from the Information Quality Incentive (IQI) assessment process), the categorisation of activities to one of the two sets of cost is less of an issue than in the past.

- 8.28. We further believe that including the non-operational capex elements in the same assessment of CAIs avoids any differences in DNO ownership strategy distorting the results.
- 8.29. In terms of benchmarking costs, we intend to group the activities based on common cost drivers rather than in two groups (A and B). We believe it is appropriate to use cost drivers which are as closely aligned to the activity as possible and the cost drivers used will be based on regression testing to ensure that they are statistically robust. Also, this reflects the concerns of what activity should be in Group A and Group B, the challenges in determining a common composite cost driver for each group and our belief that it is appropriate to use cost drivers which are as closely aligned to the activity as possible.
- 8.30. Our latest thinking is, given the data that we now have available, wayleaves costs will not be removed from engineering management and clerical support prior benchmarking unit costs, but we intend to consider whether the wayleaves costs seem reasonable by looking at the run rate.
- 8.31. We intend to assess Workforce Renewal costs separately from the overall benchmarking of CAIs as these costs do not lend themselves easily to cost driver analysis.
- 8.32. Finally, we believe that it is appropriate to provide scope to include contractor training costs in the Workforce Renewal assessment. At a totex level any scope for double counting of contractor training costs should manifest itself in a DNO appearing less efficient. Having the flexibility to test this by including/excluding contractor requirements should allow us to test this theory.

## 9. Business support costs

---

### Chapter Summary

This chapter sets out our latest thinking on our approach to assessing Business Support Costs (BSCs). These are costs that are required to support a DNO's overall business. As noted in the previous chapter, BSCs comprise one category of indirect operating costs, the other being CAIs.

### Our updated thinking

- 9.1. BSCs will comprise five categories: human resources and non-operational training; finance and regulation; Chief Executive Officer (CEO) and other corporate functions; IT&T (including Non-Operational Capex costs) and Property Management (including Non-Operational Capex costs), with network policy removed from BSCs and placed in the CAIs.
- 9.2. Our decision on whether to benchmark with other network and industry sectors will be driven by availability of suitable comparator metrics and data. If suitable external and/or network comparator metrics cannot be obtained then we will benchmark only between DNOs. If we decide to utilise external benchmarking data then we will seek to maximise comparability with network companies. In order to account for any sectoral or company specific difference we will apply appropriate adjustments either to the comparator metrics or to network companies' costs or drivers.
- 9.3. We currently intend to benchmark at the average and feed these results into our totex analysis. At the totex level we will use upper quartile (UQ) benchmarking.
- 9.4. We currently intend to make use of specialist consultants to assist in our assessment of IT&T and Property Management costs.

### Summary of consultation proposals

- 9.5. For the fast-track assessment we proposed to examine evidence in the business plans, historical levels of BSCs and efficiencies made with a degree of benchmarking (either at the total BCSs level or at the level of the five categories).
- 9.6. For the non-fast track assessment we proposed a similar approach to above but at a more disaggregated and detailed level. Benchmarking for the non-fast-track assessment would be more detailed. We intended that BSCs would be benchmarked not only against other DNOs but also against other network

companies (in transmission and gas distribution) and against the external benchmarks developed for RIIO-T1 and GD1.

- 9.7. It was proposed that where a DNO's submitted costs were above the benchmark (ie the UQ of all network companies) its costs would be reduced to the benchmark level. Where they were below the benchmark three options were proposed:
- option 1: increase the allowance to the benchmark level of costs (the approach in RIIO-T1 and GD1)
  - option 2: set the allowance at the level suggested by the DNO
  - option 3: set the allowance at an average point between the submitted DNO costs and the benchmark.
- 9.8. We noted the cost drivers used for the above five categories in RIIO-T1 and GD1 (see Table 9.1) and welcomed views on their suitability for RIIO-ED1.

**Table 9.1: Proposed cost drivers for business support activities**

<b>Business support category</b>	<b>Proposed cost driver</b>
Human Resources and Non-Operational Training	Cost per direct employee
Finance and Regulation	Cost as a per cent of base revenue
CEO and Other Corporate Functions	Cost as a per cent of base revenue
IT&T	Cost per end user within the DNO business
Property Management	Cost as a per cent of base revenue

- 9.9. We proposed benchmarking at the UQ for each category against all network companies (not only DNOs) and before benchmarking to remove insurance costs from Finance and Regulation.
- 9.10. Finally, we proposed the use of specialist consultants to assist in our assessment of IT&T and Property Management costs.

## Summary of responses

- 9.11. Respondents generally supported removing Network Policy costs from BSCs and adding the Non-Operational Capex costs of IT&T (including Office Equipment) and Property to the appropriate activities within BSCs. The additions were seen as a means of avoiding any differences in ownership strategy distorting the results.
- 9.12. However, concerns were raised regarding our approach to benchmarking BSCs and the suggested cost drivers.
- 9.13. For benchmarking, there were three main issues. First, while there was general agreement in theory to extending benchmark comparators to other

Strategy decisions for the RIIO-ED1 electricity distribution price control  
Tools for cost assessment

network and industry sectors, some were concerned on how this would work in practice, largely on the basis of cost drivers used to allow these wider benchmarks (discussed below). Second, it was suggested that use of UQ benchmarking conflicts with the IQI<sup>25</sup> process (notably in the non-fast-track assessment) and that the use of an average benchmark would be more appropriate.

- 9.14. The third issue concerned the proposed options where costs submitted by DNOs are lower than the UQ benchmark. Respondents were of the view that the benchmark level of cost must be offered regardless of whether a DNO projects costs above or below the benchmark. It was argued that to do anything else would be cherry picking and would lead to excessive reward or penalty via the IQI. It was further suggested that allowing the benchmark provides a strong incentive for DNOs to put forward efficient cost proposals in these areas.
- 9.15. A supplier suggested that giving DNOs their submitted level of costs if lower than the benchmark was more appropriate, as this is more in line with delivery value for customers.
- 9.16. Respondents raised concerns with the proposed cost drivers. They were seen as crude measures that do not have the characteristics that they would expect to see in a cost driver (ie they should be relatively stable over time, should be beyond the control or influence of the DNO, and should not be strongly correlated with one another (ie collinear)). It was suggested that the proposed cost drivers were a reflection of limitations imposed when seeking to compare DNOs with other network companies and sectors. Table 9.2 sets out the alternative cost drivers that respondents suggested.

**Table 9.2: Alternative cost drivers for business support activities**

<b>Business support category</b>	<b>Proposed cost driver</b>	<b>Suggested alternative</b>
Human Resources and Non-Operational Training	Cost per direct employee	Total employees (full time equivalents (FTEs)) <sup>26</sup>
Finance and Regulation	Cost as a per cent of base revenue	Number of customers and network scale (MEAV) <sup>27</sup>
CEO and Other Corporate Functions	Cost as a per cent of base revenue	MEAV
IT&T	Cost per end user within the DNO business	Total employees (FTEs) and MEAV
Property Management	Cost as a per cent of base revenue	Network length

<sup>25</sup> Supplementary annex - Outputs, incentives and innovation.

<sup>26</sup> Non-operational would typically be received by non-operational (indirect) employees and the metric should reflect this.

<sup>27</sup> Modern Equivalent Asset Valuation (MEAV). These would reflect the diverse nature of the tasks within this activity.

- 9.17. Respondents raised concerns that the approach in RIIO-GD1 failed to take into account that the fixed costs are shared between ownership groups. It was stated that the level of fixed costs, especially in areas such as IT&T, needs to be clearly identified prior to any unit cost assessment and that there should be consideration made of the fact that many of the costs are fixed regardless of the size of the DNO as an individual entity and as a group.
- 9.18. Respondents generally supported the use of expert review to assess IT&T and property costs. Given the relatively large scale of these costs, the view was expressed that these activities do not lend themselves to simple cost driver assessment and that expert review was deemed to have worked well for DPCR5. The need for expertise to inform the costs associated the roll out of smart meters was seen as critical.

### Reasons for our updated thinking

- 9.19. Regarding the categories, we believe Network Policy is more aligned with CAIs than with BSCs and as this approach was taken in RIIO-T1 and GD1, should we seek to benchmark total BSCs with other network companies then this move is appropriate. We further believe that including the non-operational capex elements in the same assessment of BSCs avoids any differences in DNO ownership strategy distorting the results.
- 9.20. We are of the opinion that BSCs are, at least to some extent, comparable across sectors and industries and believe that such comparisons will help ensure that electricity customers are not paying more than is necessary. Our decision on whether to benchmark beyond the DNOs will ultimately depend on availability of suitable comparator metrics and data.
- 9.21. To avoid cherry picking, and consistent with our approach to the other detailed activity areas, we intend to benchmark Business Support at the average with the upper quartile being used at the totex level.

## Appendices

---

<b>Appendix</b>	<b>Name of Appendix</b>	<b>Page Number</b>
1	Summary of consultation responses	81

# Appendix 1 - Summary of consultation responses<sup>28</sup>

---

## Chapter Two

**Question 1:** Do you consider our overall approach to cost assessment appropriate and what changes, if any, would you propose?

1.1. One respondent suggested that emphasis should be placed on total cost benchmarking.

1.2. Another respondent suggested more reliance should be placed on the unit cost model which has been developed by a DNO.

**Question 2:** Do you think Ofgem should take into account poor historical performance in its assessment of business plans, and if so, how?

1.3. Few respondents provided views on this issue. One suggested that poor historical performance should be assessed but did not offer suggestions of how to do this. One respondent suggested that if poor historical performance is taken into account, three years of historical performance data should be considered.

## Chapter Three

**Question 1:** Do you agree with the use of totex benchmarking for RIIO-ED1 and what are your reasons?

1.4. All respondents agreed with the use of totex benchmarking in RIIO-ED1, however two DNOs suggested that it should only be used as a high level cross check. One of those DNOs argued that a top down model is least reliable as it must rely on proxy cost drivers that do not have causal relationship with the cost it tries to explain. Another DNO considered that totex benchmarking is superior to disaggregated benchmarking because the latter assumes the DNOs are identical, whereas in practice each network has adopted different strategies to manage its assets.

1.5. Most of the respondents that agreed with totex benchmarking highlighted that the method has some disadvantages and should therefore be used together with other, more disaggregated models. One DNO highlighted that totex does not differentiate between efficient delivery of work and non-delivery and should therefore be used in conjunction with models that test the efficiency of outputs delivered.

---

<sup>28</sup> Note the chapter numbers cited in this appendix refer to chapter numbers in the September Strategy Consultation for RIIO-ED1 – Tools for cost assessment.

1.6. There were mixed views on the use of high level cost drivers in totex benchmarking. One DNO thought the use of easily validated high level drivers was a plus while others thought there was no causal relationship between the drivers and the cost and the drivers could not indicate why a DNO is performing poorly or well under the model.

**Question 2:** Do you agree with the use of a capital expenditure as opposed to capital consumption approach for measuring total costs?

1.7. All respondents agreed with the use of capital expenditure for measuring total costs. Respondents' view was motivated by practical consideration, in particular the difficulty of consistently measuring historical capital consumption.

1.8. A couple of respondents highlighted that the use of capital expenditure would require some normalisations to ensure that DNOs are not penalised for being at a point in its investment cycle where significant expenditure is required. One DNO suggested that Ofgem uses a capital consumption version of totex benchmarking as a cross check of the results.

**Question 3:** Do you agree with using a similar approach to the top-down model used in RIIO-GD1, considering the adjustment for regional factors, the use of a composite cost driver, and the use of the upper quartile (UQ) to determine efficient costs?

1.9. Respondents were generally supportive of the top-down RIIO-GD1 modelling approach. The main concern was around the application of regional adjustments. The view was that adjustments should be made only where there is a clear evidence of material exogenous factor. One respondent was concerned of the wide range of normalisations in RIIO-GD1 and that these may distort benchmarking. Another suggested that adjustments should be modelled within the regression (by using an appropriate explanatory variable) rather than off regression as in RIIO-GD1.

1.10. Respondent generally agreed that an adjustment to reflect higher pay rates in London may be warranted. One respondent supported a one-off adjustment for London density and Highlands and Islands sparsity.

1.11. One DNO thought that CSV should be avoided both for transparency reason. Instead, to the extent that degrees of freedom permit, a multivariate regression should be specified (this would also aid in the detection of multi-collinearity). Other respondents highlighted that CSV should be constructed with appropriate weights.

1.12. There was agreement on the appropriateness of upper quartile (UQ) benchmarking.

**Question 4:** Do you believe it is appropriate to use a middle-up totex model and if so, do you agree with following the principles of the GD1 approach?

1.13. There was support to using a well specified middle-up model that is sufficiently distinct from a totex model. The view was that a middle-up model similar to RIIO-GD1 would have limited value and should not be used.

1.14. One DNO indicated that a useful middle-up model would test the efficiency of outputs delivered and investment volume.

**Question 5:** What level of disaggregation do you believe is appropriate for the middle-up model to provide a useful comparator to the top-down totex model?

1.15. The majority of respondents considered that the level of disaggregation proposed in our September consultation was broadly appropriate, in particular the five higher level groups. The view was that it was sufficient from the totex and the disaggregated "unit cost" model.

1.16. One DNO suggested that activity grouping should not be pre-defined but based on analysis and peer review.

**Question 6:** How do you believe lumpy expenditure should be treated in totex modelling?

1.17. Respondents generally proposed that lumpy expenditure should be smoothed over an appropriate period of time, which may differ for different types of expenditure. One DNO argued that a model based on eight years of RIIO-ED1 should be able to deal with it lumpy expenditure and another DNO argued that what is critical is that lumpy expenditure is well justified in relation to outputs.

## Chapter Four

**Question 1:** Do you believe it is appropriate to use a bottom-up, disaggregated model to compare with the totex model results?

1.18. One respondent suggested that the disaggregated unit cost model being developed by one DNO could form part of the benchmarking toolkit, but weaknesses and strengths should be noted. One respondent suggested that the bottom-up disaggregated models are more reliable than the totex models, however another respondent offered a different view and suggested that the bottom-up disaggregated models are less reliable than benchmarking at the totex level.

**Question 2:** Do you agree with our approach to the disaggregated, bottom-up model?

1.19. One respondent noted concerns over finding appropriate drivers for the disaggregated models and suggested it is unlikely that a single driver will capture the network. Another respondent noted that the unit cost based model developed by a DNO cannot be used across the entire cost base.

## Chapter Five

**Question 1:** Do you agree with our proposed approach to how the specific building blocks that make up load-related expenditure interact as well as which categories are proposed to be included in a load-related reopener?

1.20. One respondent broadly agreed with our approach but suggested that more clarity was needed. Another respondent suggested that working groups would be required to develop this area.

**Question 2:** Which of the three options set out for assessing connection-related costs within the price control do you feel is the most appropriate and why? Please reference the following in your answer:

- a) the gross cost assessment adjusted for net-to-gross ratio or just on the Distribution Use of system (DUoS) funded reinforcement costs
- b) the most appropriate cost driver for connection reinforcement costs: Meter Point Administration Numbers (MPANs) or number of connection projects
- c) the most appropriate approach for assessing cost of low volume high cost (LVHC) connections.

1.21. One respondent suggested that the cost of reinforcement within connection projects should be subject to a volume driver based on capacity connected, with higher voltage schemes remaining aligned with the primary network reinforcement.

1.22. Five respondents supported our proposal to split out connection market segments with a volume driver for projects connecting to the secondary network, and benchmarking in line with general reinforcement for those connecting to the primary network. Three of these respondents proposed that the secondary network volume driver element should be built on the unit cost of MPANs delivered from projects involving reinforcement. The other two respondents felt that this volume driver should be built on the unit cost of the project costs of reinforcement. All respondents felt that there should be a true-up for the actual net-to-gross ratio at the end of RIIO-ED1.

**Question 3:** Which of the three options set out for assessing wayleaves and diversionary-related costs within the price control do you feel is the most appropriate and why?

1.23. Five respondents suggested that option 2 - an ex ante baseline set based historical data and forecast developments in the number of claims over time - would be the most appropriate method to assess wayleaves. One respondent suggested that the lumpy nature of wayleaves needs to be taken into account if an ex ante allowance is set for this activity.

1.24. One respondent suggested that although option 3 - an ex ante allowance with a volume driver that can be triggered based on significant variation in volumes - would be most appropriate, the level of disaggregated data required to make this work would not be commensurate with the level of expenditure expected to be required in RIIO-ED1.

**Question 4:** For all general reinforcement, is it feasible for the DNOs to provide specific scheme lists based on commonly agreed demand scenarios in RIIO-ED1?

1.25. One respondent said that this would be feasible for the first half of RIIO-ED1, but would be too difficult to do beyond the mid-point review. Another respondent stated that it would be feasible to indicate the likely EHV reinforcement schemes but unlikely to be feasible to provide specific scheme lists at HV and LV. One respondent suggested that it would not be feasible to provide specific scheme lists for all reinforcement schemes.

**Question 5:** For all general reinforcement, do you think that reinforcement specifically relating to generation should be separately assessed from demand-related reinforcement?

1.26. One respondent stated that by the nature of reinforcement, it will be necessary to assess demand and generation both separately and interactively. One respondent pointed out that it is difficult to separately assess demand-related reinforcement in secondary networks. Two respondents felt that generation should be separately assessed, with one of these respondents suggesting it should be funded through an uncertainty mechanism, and the other preferring the retention of an improved DG incentive.

**Question 6:** Do you agree with our proposed modelling approach to cost assessment of n-1 reinforcement schemes, specifically in relation to the two proposals for the Load Index (LI) delivery as outlined in Chapter 4 in the 'Supplementary annex – Reliability and Safety'?

1.27. One respondent supported the proposed approach to costs assessment of n-1 reinforcement schemes, suggesting that the DPCR5 approach should continue. Another respondent also agreed with the approach however they suggested the methodology should not be applied mechanistically.

**Question 7:** Do you agree that expenditure on secondary network reinforcement is no longer highly correlated with localised economic growth?

1.28. Two respondents did not agree that the expenditure on secondary network reinforcement is no longer highly correlated with localised economic growth; one stated that it is possible that some low carbon technology uptake may be correlated with localised economic growth; another suggested that the correlation will continue but some divergence at the end of the period due to low carbon technologies (LCTs).

**Question 8:** Do you believe that it is feasible and appropriate to set definitions and unit cost(s) for the following:

- a) the conversion of wayleaves to easements and injurious affection payments;
- b) load-related interventions on the secondary network; and
- c) fault level reinforcement?

1.29. One respondent suggested the appropriateness will depend on how the unit costs are used and suggested it is not feasible or necessary to introduce a complicated revenue driver for these items.

1.30. One view was that defining a load-related intervention is likely to be fraught with problems and is unlikely to be feasible. Another respondent suggested that it was suitable to set load-related interventions at the level of the problems solved. One respondent suggested that many of the future costs for load-related interventions on the secondary network would be estimates.

1.31. One respondent suggested it may be possible to set unit costs for fault level reinforcement, provided that unit costs are set to 'make' or 'break' fault level remedial actions. One respondent suggested that it will be difficult to predict future fault level reinforcement.

**Question 9:** What is the most appropriate funding mechanism for load-related expenditure on the secondary network?

1.32. Two respondents suggested a volume driver based on the forecast level of interventions derived from the modelling of low carbon technology clusters as the most appropriate approach for assessing LRE on the secondary network. Four respondents suggested a combination of mechanisms; an ex ante allowance based on assessments similar to those undertaken at DPCR5 and a volume driver uncertainty mechanism where material changes to the level of work takes place. One respondent specified that the volume driver could be based on the volume of low carbon technologies connected.

1.33. One respondent suggested that conventional solution costs should be used to fund the work in RIIO-ED1, as this will incentivise the use of smart solutions and deliver greater understanding to develop an appropriate volume driver for RIIO-ED2, where the volumes are expected to be significantly higher.

## Chapter Six

**Question 1:** Do you agree with our approach for assessing NLRE in the companies' business plans?

1.34. One respondent supported our approach for assessing non-load-related expenditure and agreed that there should still be scope to use 'non-modelled costs'. One respondent did not agree with our proposed approach for assessing legal and safety costs.

**Question 2:** In light of our proposals, do you agree with our selection of risk removed as the primary output of the mains replacement programme?

1.35. Not applicable to RIIO-ED1.

**Question 3:** Do you agree with our approach to remove non-modelled costs in RIIO-ED1?

1.36. One respondent agreed that work carried out over the last few years will mean non-modelled activity will be reduced relative to DPCR5.

**Question 4:** Do you agree with our proposed approach for assessing the DNOs' plans for expenditure on Legal and Safety? If not, what changes would you propose?

1.37. Two respondents noted that care should be taken when considering site security and one respondent mentioned that our assessment should consider preventive measures to address potential metal theft. One respondent generally agreed with our approach for assessing legal and safety expenditure but did not agree that we should benchmark unit costs to assess DNOs forecasts of site security activity.

**Question 5:** Do you agree with our proposed approach for assessing the DNOs' plans for expenditure on ESQCR? If not, what changes would you propose?

1.38. Two respondents agreed that going forward the approach for assessing the DNO's plans for expenditure on ESQCR should be business as usual. One respondent stated that it should remain as a separate category for assessment.

1.39. Two respondents agreed that going forward the approach for assessing the DNO's plans for expenditure on ESQCR should be business as usual. One respondent raised the point that DNOs would need to make provision for the resolution of isolated ESQCR compliance issues which are likely to continue to emerge during RIIO-ED1. This respondent suggested that related costs, such as Trouble Call or asset replacement may increase slightly as a result of this, if no separate allowance was provided for ESQCR compliance. Another respondent felt that ESQCR should remain as a separate category for assessment during RIIO-ED1, given the likely emergence of incidences of non-compliance.

**Question 6:** Do you agree with our proposed approach for assessing the DNOs' plans for expenditure on flooding? If not, what changes would you propose?

1.40. The majority of respondents agreed with our approach for assessing flooding expenditure. One of the respondents who agreed with our approach felt that care would need to be taken to ensure solutions of equivalent robustness are compared and that where multiple benefits arose from a flood protection scheme, this was appropriately recognised. Another respondent highlighted that new reporting requirements may be required for RIIO-ED1 arising as a result of new or improved flood risk mapping techniques being developed.

**Question 7:** Do you agree with our proposed approach not to fund Quality of Service (QoS) improvements during RIIO-ED1?

1.41. One respondent supported an approach to quality of service that allows companies to fund investments via the incentive rate but suggested that our assumptions regarding improvements made in the approach to target setting are not appropriate.

**Question 8:** Do you agree with our proposed approach to change Black Start and Rising and Lateral Mains (RLM) from reopener mechanisms to ex ante allowances?

1.42. There were varying responses on our proposals for Black Start. One respondent agreed that this area will be mature enough at the start of RIIO-ED1 to be funded via an ex ante allowance. However three respondents stated that they would prefer not to use an ex ante basis for Black Start as discussions are still ongoing between industry and DECC.

1.43. All three respondents who commented on Lateral Rising and Lateral Mains (RLM) agreed that ex ante funding is appropriate for RIIO-ED1.

**Question 9:** Do you agree with our approach to assessing enhanced physical site security costs?

1.44. Generally respondents agreed with our proposed approach to assessing enhanced security costs.

## Chapter Seven

**Question 1:** Do you think that our proposals for the Trouble Call are proportional given the materiality of the area and do you have any preference between the options? Please separate your response by the following categories: low and high voltage overhead faults; low and high voltage underground faults; EHV and 132kV faults; ONIs (formerly non-QoS faults); third party cable damage recovery; pressure assisted cables; and submarine cables.

1.45. In general respondents supported our approach to assess the Trouble Call costs in seven categories. Concerns were raised regarding the use of upper quartile (UQ) benchmarking at this level of disaggregation (ie category level), given that different DNOs face different topographies and therefore different costs. It was suggested that benchmarking at the disaggregated level should be based on average, so as to avoid potential cherry picking and that UQ benchmarking should be based on aggregated performance. Some responses noted that there are problems with the current reporting rules. Responses indicated a preference for separate treatment of unit costs and volumes where a volume driver is justified.

### *LV and HV overhead faults:*

1.46. There was some support for re-using the DPCR5 econometric modelling approach which was to benchmark at the UQ and at the most detailed levels using the new RIGs (Option 1 in the consultation). Others suggested using a blend of all options in our approach as follows: at the most disaggregated level in the RRP take actual unit costs per activity based on data submitted in DPCR5 to smooth out any volatility, then use the average unit cost (to avoid cherry picking) and multiply by forecast volume to derive a predicted cost for each disaggregated activity for each DNO, sum all disaggregated activity costs to get a total for each DNO, and compare total actual cost and total forecast costs. The efficiency frontier would be identified at the UQ when total actual costs are compared with total forecast costs. Another approach suggested was to blend LV & HV overhead and underground faults.

*LV and HV underground faults:*

1.47. Responses were as per those received LV and HV overhead faults.

*EHV and 132kV faults:*

1.48. There was mixed support for the Options 1 and 2. There were concerns with using UQ as the benchmark rather than the average; as such incidents are variable in their scale and costs. One respondent's suggestion was to use the blended approach as suggested for LV and HV overhead faults but to use forecasts (RIIO-ED1) as well as actuals (DPCR5) on costs and volumes to smooth out volatility to achieve unit cost.

*ONIs (formerly non-QoS faults):*

1.49. Option 1 - re-use the DPCR5 approach and benchmark at the UQ - generated some support due to the variations in the data that DNOs report. Others suggested using the blended approach as set out above for LV and HV overhead faults. General concerns remain over the consistency of data reporting from some respondents.

*Third party cable damage recovery:*

1.50. There was general support for this approach.

*Pressure assisted cables:*

1.51. Some respondents supported Option 1 (as per DPCR5) as incorporating this in the LV/HV fault rate assessment would be problematic due to the volatility in costs and volumes associated with this type of asset. Another suggestion was to use the blended approach as set out above for LV and HV overhead faults.

*Submarine cables:*

1.52. Some respondents supported the continued use of the DPCR5 approach; others supported the blended approach as set out above for LV and HV overhead faults. It was suggested that this that further bilateral work with just those DNOs who have these assets should be completed.

**Question 2:** Do you agree with our approach to assessing severe weather 1 in 20 events and do you have any preference between the options?

1.53. Respondents supported the continued allowance for severe weather 1 in 20 events following the approach set out in the consultation (we proposed to permit the allowances provided under the DPCR5 updated for inflation). One supplier supported this approach provided that these costs are not captured through any other capital mechanism or allowance (eg capital investment) and are therefore double counted.

**Question 3:** Do you agree with our proposed approach for assessing the DNOs' plans for expenditure on Inspection and Maintenance (I&M)? If not, what changes would you propose?

1.54. Overall there was support for benchmarking DNO I&M costs provided Ofgem fully understand the content of the work undertaken by DNOs to ensure commonality and comparability. Respondents supported Ofgem in continuing to review company policies on I&M. One respondent suggested using the same benchmarking approach as many of the Trouble Call categories for all I&M activity.

1.55. Another respondent suggested that while the well defined, high-volume I&M activities lend themselves well to a benchmarking assessment, low-volume, and asset specific categories merit a separate approach. It was also suggested that given the length of maintenance cycles relative to the length of the regulatory period that care should be taken when comparing forecast volumes across DNOs, especially at higher voltages.

1.56. Respondents also reported concerns that low volumes do not necessarily indicate good management practice and DNOs may make sub-optimal decisions that keep volumes low. There was a preference that Ofgem places more weight on assessment of costs across replacement, refurbishment and I&M and that Ofgem considers Cost Benefit Analysis in this area which may suggest that enhanced I&M regimes are commensurate with a lowest whole life costs for some asset classes.

**Question 4:** Do you agree with our proposed approach for assessing the DNOs' plans for expenditure on Tree Cutting? If not, what changes would you propose?

1.57. There was general support for following the DPCR5 approach to unit cost assessment; to allow the DNOs' forecast volume for spans managed and spans cut and to introduce a true-up mechanism. One respondent made distinction between tree cutting to meet requirements of ENA TS 43-08 and tree cutting in accordance with ETR 132.

1.58. For ENA TS 43-08 one respondent suggested an alternative approach at the most disaggregated level in the regulatory reporting (RRP) which they felt could be used to compare total actual cost and total forecast costs. In this approach, the respondent suggested that the efficiency frontier would be identified at the UQ when total actual costs are compared with total forecast costs. The same respondent felt that for ETR 132, this can only be undertaken using reliable long run data and proposed that averaging expenditure for DPCR5 and RIIO-ED1 periods will help to average out low cost and high costs circuits.

1.59. Some respondents also raised concerns with consistency and commonality of data reporting between DNOs.

**Question 5:** Do you agree with our approach to assessing NOCs Other and do you have any preference between the options? Please separate your response by the following categories: dismantlement, remote location generation, and substation electricity.

1.60. Respondents had little comment to make on proposals to dismantlement and remote location generation due to their relatively small cost. Those that did generally agreed with the approach.

1.61. Regarding substation electricity, the largest of the three categories, respondents agreed, in principle, to some form of benchmarking that considers usage rather than only price per unit. However, it was suggested that the characteristics of substations should be taken into account (ie size and whether they are underground). Similarly consideration should be given to vertical integration and fixed price deals that cannot be achieved in the market.

1.62. There was also a view that deriving average consumption per site is problematic because any units not reported as being consumed at substations would ultimately be reported as losses. Depending on the plans for a losses incentive, a DNO would be indifferent to a benchmarked reduction in the quantity of electricity consumed at substations. An alternative approach suggested was to accept the DNOs' forecast of electricity consumed and use a true-up should the inventory and/or usage vary significantly.

1.63. Respondents also raised concerns of reporting errors in this area.

## Chapter Eight

**Question 1:** Do you agree with our proposed approach to assess closely associated indirects (CAIs)? In particular, do you agree with our groupings of activities?

1.64. Regarding the addition of categories in CAIs, the majority of respondents supported the inclusion of the two new categories (Small Tools, Equipment, Plant and Machinery and Network Policy), and the inclusion of the Non-Operational Capex element of Vehicles and Transport. There was strong support for smoothing the areas of lumpy expenditure.

1.65. However, this support was not universal with one suggestion that Small Tools, Equipment, Plant and Machinery should not be classified as a CAI activity but as a direct activity. It was suggested that in order to undertake effective cost assessment it may be necessary to apportion non-operational capital expenditure associated with Small Tools, Equipment, Plant and Machinery across all direct activities. This acknowledges that Small Tools, Equipment, Plant and Machinery are essential to bringing assets into service and is closely aligned to direct activities.

**Question 2:** Are there any views as to which cost drivers would be most appropriate?

1.66. With regards to the two options for the grouping of activities, respondents largely agreed to our overall approach to grouping CAIs in Group A and Group B. Although one stakeholder believed that if Group B activities remain substantially fixed regardless of the level of direct activity, then they should be moved into the business support costs (BSCs). A minority of respondents suggested changes to the composition of each group.

1.67. In general the respondents gave less weight to the grouping of activities than to the cost drivers of those activities. There was widespread support for our view that the use of direct expenditure as a cost driver was inappropriate. It was recognised that identifying a composite cost driver for each group (especially Group A) would be challenging. Respondents were sceptical of the use of volumes of the activity as a cost driver as this is likely to provide only a unit cost (useful in itself) but does not reveal if it is an efficient volume of activity.

1.68. The majority of respondents supported our view to include wayleaves in Engineering Management and Clerical Support prior to the benchmarking. One respondent disagreed on the basis that payments remain a legacy issue that are not uniformly distributed across DNOs and therefore it is not been possible to identify a reliable cost driver.

**Question 3:** Do you believe our approach to assessing Workforce Renewal is appropriate? In particular, do you believe it is appropriate to consider Workforce Renewal allowances both in isolation and also as part of wider training and do you believe Workforce Renewal should include or exclude the training of contractors?

1.69. There was widespread support for assessing Workforce Renewal separately to other CAIs. There was also support for looking at how this fits in with the wider company training within DNOs. However, some respondents raised concerns with elements of our proposed approach and there were clear divisions on whether Workforce Renewal costs should include or exclude contractor costs.

1.70. Views were expressed that the assessment of workforce renewal should include other justified recruits and upskillers as higher staff numbers will be required to deal with increases in direct activity and to meet needs of a low carbon economy.

1.71. Respondents did not agree on whether historical levels of over and under recruitment should be taken into account and it was suggested that if historical recruitment is considered then economic circumstances that characterised DPCR5 should also be considered.

#### *Contractor costs*

1.72. The two respondents opposed to the inclusion of contractor costs argued that there is no guarantee that these resources would be available to industry in the future given the fluid nature of the contractor markets and that the use of contractors is a conscious decision by companies. Therefore, the cost of training contractors' employees is a cost that should be borne directly by the contractors and the contractors should seek to recover the cost of the training that they undertake via schedule of rates for carrying out work for DNOs and other organisations.

1.73. The five respondents supporting the inclusion of contractor costs suggested that the way in which Workforce Renewal allowances are set should not distort DNO resourcing or delivery strategies. They noted that the proposed approach favours one operating model (insourcing) over another (outsourcing). Concerns were raised that given the low margins typically available to contractors many are unlikely to

invest in extensive recruitment and training required to meet the needs of the industry in order that they remain price competitive. Further the long term incremental nature of Workforce Renewal can lead to a perception that it is an optional extra rather than a fundamental requirement. As such, the inclusion of contractor costs within the Workforce Renewal allowance would be the most effective means of ensuring sufficient future investment in training and skills and distributing the cost burden evenly across the sector.

1.74. It was suggested that Ofgem consider providing allowances to DNOs to allow them to expand their training capacity, such that DNOs could offer training services to contractors. It was further suggested that if Workforce Renewal funding should be extended to contractors it should be only those contractors that exclusively employ trades used by the DNOs (ie, jointers, fitters, linesmen and engineers).

## Chapter Nine

**Question 1:** Do you agree with our general approach to assessing BSCs? If you disagree with any particular areas can you please specify what these are and your reasons?

1.75. Respondents generally supported removing Network Policy costs from BSCs and adding the Non-Operational Capex costs of IT&T (including Office Equipment) and Property to the appropriate activities within BSCs. The additions were seen as a means of avoiding any differences in ownership strategy distorting the results.

**Question 2:** With regards to the non-fast-track benchmarking, for those DNOs that report lower than the benchmark costs which of the three options for setting cost allowances to you think is most appropriate and why? The options are: increasing allowances to the benchmark level of costs, giving the DNO their submitted level of costs, and taking an average between the benchmark and the submitted costs.

1.76. Concerns were raised regarding our approach to benchmarking BSCs and the suggested cost drivers.

1.77. For benchmarking, there were three main issues. First, while there was general agreement in theory to extending benchmark comparators to other network and industry sectors, some were concerned about how this would work in practice, largely on the basis of cost drivers used to allow these wider benchmarks (discussed below). Second, it was suggested that use of UQ benchmarking conflicts with the IQI process (notably in the non-fast-track assessment) and that the use of an average benchmark would be more appropriate.

1.78. The third issue concerned the proposed options where costs submitted by DNOs are lower than the UQ benchmark. Respondents were of the view that the benchmark level of cost must be offered regardless of whether a DNO projects costs above or below the benchmark. It was argued that to do anything else would be cherry picking and would lead to excessive reward or penalty via the IQI. It was further suggested that allowing the benchmark provides a strong incentive for DNOs to put forward efficient cost proposals in these areas.

1.79. A supplier suggested that giving DNOs their submitted level of costs, if lower than the benchmark, was more appropriate as this is more in line with delivering value for customers.

**Question 3:** Do you agree with the cost drivers set out for each of the categories of Business Support Costs? If not, can you please suggest an alternative?

1.80. Some respondents raised concerns with the proposed cost drivers, which they considered to be crude measures that do not have the characteristics that they would expect to see in a cost driver (ie they should be relatively stable over time, should be beyond the control or influence of the DNO, and should not be strongly correlated with one another (ie collinear)). It was suggested that the proposed cost drivers were a reflection of limitations imposed when seeking to compare DNOs with other network companies and sectors. Some alternative cost drivers were suggested.

1.81. Respondents raised concerns that the approach in RIIO-GD1 failed to properly account for fixed costs that are shared between ownership groups. It was stated that the level of fixed costs, especially in areas such as IT&T, needs to be clearly identified prior to any unit cost assessment and that there should be consideration made of the fact that many of the costs are fixed regardless of the size of the DNO as an individual entity and as a group.

**Question 4:** Do you agree with the proposed use of expert review to assess IT&T and property costs?

1.82. Respondents generally supported the use of expert review to assess IT&T and property costs. Given the relatively large scale of these costs, the view was expressed that these activities do not lend themselves to simple cost driver assessment and that expert review was deemed to have worked well for DPCR5. The need for expertise to inform the costs associated with the roll out of smart meters was seen as critical.

## Chapter Ten

**Question 1:** Do you agree with our approach to regional and company specific adjustments?

1.83. There was support from respondents to our approach of setting a high bar for regional and company specific allowances, although many accepted that the UK's distribution networks are not homogeneous and as such allowance must be made for this.

**Question 2:** Which regional and company specific adjustments do you think we should consider in RIIO-ED1? Please give a rationale for your suggestions.

1.84. One respondent stated that it does not believe that there is evidence of regional salary differences outside of central London. Two believed that regional variations extended beyond labour and contractors costs to include quantifiable impacts on productivity due to the operating environment (ie highly dense or highly

sparse areas) and the requirement for assets which are unique to a DNO (eg submarine cables, private mobile radio).

## Chapter Eleven

**Question 1:** Are there any additional analytical techniques that we should consider beyond those we have used at past price control reviews to assess RPEs and ongoing efficiency?

1.85. On RPEs, there was broad agreement on the methodology used to set assumptions at previous price controls. Comments were made on the importance of the choice of indices considered and that independent forecasts should be used where possible. One response suggested that analysis of higher level cost indices should be cross checked against commodity price indices.

1.86. On ongoing efficiency, one respondent raised concerns with the reliance of historical trends in productivity to forecast what may happen in the future. It noted that historical trends may not accurately reflect the future, in part, due to the impact of the recession.

**Question 2:** Are there any additional data sources that we should be aware of to assist with our analysis of RPEs and ongoing efficiency? Are there some that you think we should rely more on than others?

1.87. One respondent considered that macroeconomic forecasts developed by the Office of Budget Responsibility and the Bank of England should be used. Comments were made on the importance of the choice of indices considered and that independent forecasts should be used where possible.

1.88. One response noted that a reliance on the EU KLEMS<sup>29</sup> data for use in setting the ongoing efficiency assumption may be inadequate as the data ends in 2007 and therefore more up to date information should be sought.

---

<sup>29</sup> <http://www.euklems.net/>