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# Electricity Distribution Price Control Review
# Initial consultation document

**Document type:** Consultation

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**Target audience:** Consumers and their representatives, distribution network operators (DNOs), independent distribution network operators (IDNOs), owners and operators of distributed energy schemes, generators, electricity suppliers and any other interested parties.

**Overview:** Ofgem regulates the 14 DNOs, who are all regional monopolies to protect the interests of current and future customers. We set the total revenues that each DNO can collect from customers at a level that allows an efficient company to finance their business. We set commercial incentives to improve their efficiency and quality of service. We do this by setting a price control every five years.

The current price control expires on 31 March 2010 and this document is the beginning of the next Distribution Price Control Review (DPCR5) to set the controls for 2010-2015. We set out our initial thoughts on the issues we have to address, the methodologies we might use to set revenues and the process we intend to follow. One of the key themes for this document is what further steps we need to take to allow the DNOs to play their part in helping us to move to a lower carbon economy.

We would welcome comments and views on the issues raised by the review by Monday 23 June 2008.

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## Context

Ofgem's principal objective is to protect the interests of consumers. For the monopoly energy networks, this means regulating the charges they pay and the quality of service that they receive. We regulate the 14 distribution network operators (DNOs) by setting a price control every five years. The price control sets the total revenues that each DNO can collect from customers at a level that allows an efficient business to finance their activities. We also place incentives on DNOs to improve their efficiency and quality of service.

The current price control expires on 31 March 2010 and Ofgem is now undertaking a Distribution Price Control Review (DPCR5) to set the controls for 2010-2015. This document is the initial consultation in the process and follows on from the open letter consultation published in May 2007. We will publish a policy paper in December 2008 and will publish initial proposals in June/July 2009 followed by final proposals in November/December 2009.

This document focuses on three key themes; the environment, customers and networks. We intend to use these themes throughout DPCR5. We will look to encourage DNOs to take a full role in helping to tackle climate change, to balance quality of service to customers with costs of delivery and to provide security of supply at reasonable cost. DPCR5 will require the DNOs to play a more active role in setting business strategies whilst taking into account the need of their customers.

## Associated Documents

- Approval of Redress Schemes in the Energy Sector (247/07)
  http://www.ofgem.gov.uk/Markets/RetMkts/Compl/ConsRep/Documents1/Consultation%20criteria%20for%20approval%20of%20redress%20schemes%2024707.pdf

- Complaint Handling standards (272/07)
  http://www.ofgem.gov.uk/Markets/RetMkts/Compl/ConsRep/Documents1/Complaint%20Handling%20Standards%20Consultation.pdf

- Consumer First research for DPCR5 – cover letter
  http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=127&refer=Networks/ElecDist/QualofServ

- Distributed Energy – Initial proposals for more flexible market and licensing arrangements (295/07)
  http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=160&refer=Networks/ElecDist/Policy/DistGen

- Distribution Price Control Review – Final Proposals (265/04)
  http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=51&refer=Networks/ElecDist/PriceCntrls/DPCR4

- DPCR5 - looking ahead an initial consultation letter (119/07)

http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=1&refer=Networks/ElecDist/PriceCntrls/DPCR5

- Electricity Distribution Cost Review 2006-07 (289/07)
  http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=22&refer=Networks/ElecDist/PriceCntrls/CostRep

- Gas Distribution Price Control Review Final Proposals Consultation Document (285/07)
  http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=362&refer=Networks/GasDistr/GDPCR7-13

- Review of Competition in Gas and Electricity Connections Proposals Document (26/07)
  http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=160&refer=Networks/Connectns/CompinConn

- Transmission Price Control Review: Final Proposals (206/06)
  http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=191&refer=Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses

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# Summary

The electricity distribution networks play a very important role in the British energy industry. They physically deliver electricity to our homes and most businesses. The way the network is managed, maintained and operated directly affects the quality of service electricity customers receive such as the number and duration of any power cuts and how quickly they get their electricity restored after storms and other severe weather events. Electricity distribution charges make up about 17 per cent of a typical domestic electricity bill.

Tackling climate change could lead to profound changes in the way the networks are run. Traditionally the networks were designed to take electricity generated in large power stations on the national grid to houses and businesses. But efforts to reduce carbon emissions from energy use could lead to much more generation being connected to the distribution network rather than the national grid. Some of that generation could be from household-scale micro generation. Increasingly, distribution networks will be called on to transport electricity to and from households, businesses and the national grid.

The 14 DNOs are regional monopolies and it is the duty of Ofgem to regulate them to protect the interests of current and future customers. We set the total revenues that each DNO can collect from customers at a level that allows an efficient business to finance their activities while delivering required outputs. We place incentives on DNOs to improve their efficiency and quality of service. We do this by setting a price control every 5 years.

The current price control expires on 31 March 2010 and Ofgem is now undertaking DPCR5 to set the controls for 2010-2015. This document is the initial consultation in the process. In it we set out our early thoughts on the issues we have to address, the methodologies we might use to set revenues and the process we intend to follow.

We have three key objectives for DPCR5:

- **environment:** ensuring that the price control gives the DNOs strong financial incentives to play a full role in tackling climate change. This price control needs to be flexible enough to accommodate technology change and other opportunities which may arise for DNOs between 2010 and 2015;
- **customers:** encouraging the DNOs to respond to the needs of current and future customers, and to strike the appropriate balance between delivering quality of service and managing network costs; and
- **networks:** incentivising DNOs to invest efficiently so that security of supply is provided at reasonable costs.

Each of these objectives require DNOs to play a more active role in setting the priorities and strategies for their businesses based on a clear understanding of their customers' needs.

These objectives reflect our statutory duties and events since the current price control was set, with the most significant event being the increased priority placed on tackling climate change as reflected in new legislation being introduced at a European and national level.

This price control will place stronger incentives on DNOs to lessen their impact on the environment. They can address their direct impact, for example by reducing the percentage of electricity which is lost on the distribution network or lowering emissions from their vehicle fleet. Indirectly, DNOs may need to introduce more active management of their networks to accommodate increased demand side management from end users and increased connection of local, low carbon generation. This price control needs to promote and encourage innovation in the way DNOs invest, operate, maintain and charge for their networks and to be flexible enough to allow the role of DNOs to change.

A number of anticipated developments mean that DNOs will need to step up their responsiveness to customers. These include changes in customer representation, a new legislative requirement on DNOs to join an ombudsman scheme and growing customers' interest in managing their own energy use. The roll out of smart meters for business and domestic customer could also have a significant impact on the way DNOs invest in and run their networks. While current quality of service incentives on DNOs work well we will be looking to place broader incentives on DNOs to address these and other consumer issues.

Over 2010-2015 DNOs expect to ramp up investment, mainly to replace ageing assets. Financing this is likely to drive up distribution costs. It is possible also that increased input costs will put further pressure on network charges. In setting the price control Ofgem will make sure that the overall package represents good value for consumers, and that in return for the allowed revenue, DNOs provide secure and more sustainable networks capable of adapting to changing needs.

There are alternatives to the incentive (or RPI-X) regulation that Ofgem and other regulators use to regulate monopoly utilities. Earlier this month we announced that we will start a thorough review of RPI-X regulation. However, we will retain the RPI-X framework for DPCR5. This framework goes a long way to simulate the competitive pressure that normal businesses face and there is considerable scope for us to build on and refine mechanisms introduced at the last review. In particular we are looking to: conduct more robust benchmarking and modelling of DNO costs; introduce new financial incentives on DNOs to reduce carbon emissions to help tackle climate change; and get a more accurate and timely indication of the condition of assets. As with all reviews, we will pay particular attention to establishing an appropriate cost of capital for DNOs and this document begins a consultation on a range of measures we could use to do this.

As part of DPCR5, each DNO will be encouraged to seek comments from regional stakeholders on its high level business plan before submitting its forecasts to us. Ofgem is also considering how to obtain the views of a cross-section of customers throughout the price review process.

Responses to this document should be sent by 23 June 2008. We will hold a series of seminars in May to assist those aiming to respond. At the end of this year we will publish our conclusions on the key policy matters for DPCR5 and decide on any major innovations in our approach to setting the controls.

# 1. Introduction and overview

**Chapter Summary**

This chapter provides the background to the price control review, our objectives for DPCR5, an overview of the methodologies and incentives we might apply and a summary of the process we intend to follow during the review.

## Introduction

1.1. Electricity distribution costs account for around £3.5 billion annually and make up around 17 per cent of domestic consumers' electricity bills. For a typical electricity domestic customer the distribution element of their annual bill would be approximately £62.

1.2. The 14 DNOs are regional monopolies. We set the total revenues that DNOs can collect from customers so that they are sufficient to run and finance an efficient business and deliver required outputs[1]. We place incentives on DNOs to improve their efficiency and quality of service. This is achieved through a price control. As the current price control expires on 31 March 2010, Ofgem is now undertaking DPCR5 to set the controls for 2010-2015.

1.3. This document is the initial consultation of DPCR5. In it we set out our early thoughts on the issues we have to address, the methodologies we might use and the process we intend to follow in order to obtain feedback from interested parties. The document has two parts:

- **Part 1** provides an overview of each of the key themes in the price control and is intended to be accessible to a wide range of stakeholders.
- **Part 2** contains more detail on the cost assessment and incentive mechanisms and is particularly aimed at DNOs and interested persons wishing to comment in detail on our proposed approach.

1.4. After an overview of the document in the remainder of this chapter, Part 1 of the document follows the key themes for the review and is structured as follows:

[1] As a separate exercise, DNOs set out how this allowed revenue is to be recovered from different customer groups. Ofgem reviews these charging methodologies and can veto them if they do not think they reflect DNOs costs or are not sufficiently transparent or discriminate unduly against particular groups of customers.

- **Environment - Chapter 2**. This chapter discusses the role DNOs can play in reducing direct and indirect greenhouse gas emissions to help tackle climate change and sets out ways in which the price control could provide stronger financial incentives whilst allowing sufficient flexibility for DNOs to respond to new opportunities.
- **Customers - Chapter 3.** This chapter lists our findings on what customers want from distributors and explores ways in which current incentives could be improved and developed**.**
- **Networks - Chapter 4**. This chapter discusses the lessons learned from distribution price control review 4 (DPCR4) and contains our initial thoughts on how to assess network costs and provide efficiency incentives for the 5 year period 2010-2015. We also set out our thoughts on the minimum requirements for DNO stakeholder engagement.
- **Financial issues - Chapter 5**. This sets out the key financial issues related to the review, including the calculation of the cost of capital, our approach to financeability and the treatment of tax.
- **Process and timetable for the review** - **Chapter 6**. This provides detail on the process we intend to follow over the next 2 years before the new price control is implemented, including our proposals on consumer involvement in the review.

1.5. Part 2 of the document is comprised of the following appendices:

- **Appendix 1 -** Provides a list of the questions asked throughout this document
- **Appendix 2 -** Outlines the Authority's powers and duties
- **Appendix 3 -** Contains a glossary
- **Appendix 4 -** Provides instructions on how to give feedback on this document

- **Appendix 5 -** Provides a summary of responses to our May 2007 Open Letter on DPCR5
- **Appendix 6 -** Contains more detail on our approach to assessing network costs
- **Appendix 7 -** Contains more detail on our thoughts on quality of service regulation
- **Appendix 8 -** Provides details of the building block approach
- **Appendix 9 -** Provides details of the volume of distributed generation (DG) connections completed
- **Appendix 10 -** Provides a full list of excluded services

## Background to DPCR5

1.6. The DNOs are responsible for maintaining and developing an economic, efficient and co-ordinated distribution network. This includes responsibility for ensuring that consumers can get a reliable electricity supply, restoring power promptly in the event of an interruption to supply and connecting new customers and local generators to their network quickly and efficiently. These and other responsibilities are set out in the DNO licences, the Electricity Act 1989 (as amended) and the Utility Act 2000.

1.7. There are 14 distribution licence areas in Great Britain shown in the map below. Following privatisation and a number of mergers and acquisitions, the 14 licenses are now held by seven companies: EDF Energy (EDFE), CE Electric (CE), E.ON Central

Networks (CN), Western Power Distribution (WPD), Scottish and Southern Energy (SSE), Scottish Power (SP) and Electricity North West (ENW) which recently bought United Utilities' distribution network.

1.8. There are currently four licensed IDNOs in GB. We regulate IDNOs using a relative price control and so they are not formally part of this review.

**Figure 1.1 – Map of GB electricity distribution licence areas**


1.9. Ofgem regulates the revenues earned by the DNOs through a price control which is currently set every five years. We do this by applying incentive regulation. This involves setting each DNO a base revenue allowance sufficient to cover efficient investment and operating costs while delivering required outputs. If the company

manages to invest and operate at lower cost it will be able to increase the rate of return it earns and vice versa. As such the control provides a strong efficiency incentive on DNOs.

1.10. DNOs may also earn more (or less) than the base revenue allowance depending on how they perform against a number of additional incentives in the control. For example, DNOs face rewards (or penalties) according to: the number and duration of interruptions there are each year and their performance relative to a target for electricity lost when transporting electricity across their distribution network.

1.11. DNO revenues from connection activities are not subject to the price control mechanism. Ofgem does, however, have the power to determine disputes between customers and DNOs over connection charges. There are a number of other "excluded services" and these are set out in full in Appendix ten.

1.12. The structure of charges which DNOs apply determines how allowed revenues are recovered from different customer groups. DNOs have to submit their charging structures to Ofgem and we can veto their proposals if we think they do not reflect the costs different customers impose on the network or if they are not transparent. As a separate exercise we are working with DNOs to encourage them to adopt better charging methodologies and this will be the subject of a consultation to be published shortly. In particular, we are concerned that current charging structures do not properly reflect the impact and benefits from generation connected to their networks. Recent work Ofgem has done suggests that current charging structures could be standing in the way of more small scale low carbon generation coming onto the system[2].

## Objectives and themes for DPCR5

1.13. Our overall objective is for this price control to protect current and future electricity customers by encouraging secure and sustainable distribution networks. There are several dimensions to sustainability which drive the three key themes that will run throughout DPCR5:

- **environment:** ensuring that the price control gives the DNOs strong financial incentives to play a full role in tackling climate change. This price control needs to be flexible enough to accommodate technology change and new opportunities which may arise for DNOs between 2010 and 2015,

[2] Distributed Energy – Initial proposals for more flexible market and licensing arrangements (295/07)

- **customers:** encouraging the DNOs to respond to the needs of current customers and future ones, and to strike the appropriate balance between delivering quality of service and managing network costs, and

- **networks:** incentivising DNOs to invest efficiently so that security of supply is provided at reasonable costs.

1.14. An overarching objective is to encourage DNOs to be active in setting the priorities and strategies for their businesses based on an assessment of their customers' current and future needs. Increased consultation with local stakeholders and a willingness from DNO management to think creatively about their business plans is essential if we are to move towards more sustainable networks and to meet the specific objectives related to the environment, customers and security of supply discussed above.

1.15. We discuss each of these themes and the objectives within them in more detail below.

**Environment**

1.16. The most significant development in the energy sector over the past few years has been the priority placed on tackling climate change. A key question for this review is how the price control can place incentives on DNOs to control their impact on the environment directly and indirectly. For example they can reduce their direct impact by reducing the percentage of electricity which is lost on the distribution network or reducing emissions from their vehicle fleet. Indirectly, DNOs may need to introduce more active management of their networks to accommodate increased demand side management from end users and increased connection of local, low carbon generation. This price control needs to promote and encourage innovation in the way DNOs invest, operate, maintain and charge for their networks and to be flexible enough to allow the role of DNOs to change.

**Customers**

1.17. We have been considering the effectiveness of the current control in encouraging DNOs to respond to the needs of their customers. Current arrangements on DNOs (incentives to reduce customer interruptions for example) work well but there may be other areas which need more focus such as the treatment of DNO's worst served customers or improved communications with customers when there are power cuts or when they are seeking a connection to the network. We are conducting research to get an understanding of what customers want from their DNO and their willingness to pay for improvements given rising energy bills.

1.18. Changes in customer representation which are planned for this year with the abolition of energywatch[3], the new requirement on DNOs to join an ombudsman scheme and the increased interest that customers have in managing their own energy demand mean that DNOs need to step up their ability to communicate with consumers. We will place an emphasis on these and other consumer issues throughout DPCR5 in addition to the overall objective of making sure that the price control settlement gives consumers good service and value for money.

**Networks**

1.19. Over 2010-2015 DNOs expect to ramp up investment, mainly to replace ageing assets. Financing this is likely to drive up distribution costs. It is possible also that increased input costs will put further pressure on prices. In setting the price control Ofgem will make sure that the overall package represents good value for consumers, and that in return for the allowed revenue, DNOs provide secure and more sustainable networks capable of adapting to changing needs. As part of this challenge we will need to make sure that DNOs are not encouraged to make short term efficiency gains at the expense of securing efficient investment which addresses the long term as well as the short term needs of the network.

1.20. In addition to these specific objectives, as with all recent price control reviews, we aim to discharge our statutory duty to have regard to best regulatory practice[4] and particularly to make sure that we avoid unnecessary complexity in the control. This will be a particular challenge given the possible need to introduce more incentives to meet the environmental objectives.

1.21. We also aim to ensure there are mechanisms in place to deal with uncertainty. The price control involves Ofgem forming a view about the efficient level of costs (including the cost of capital) that a company will incur over the 2010-2015 period. However, there are many factors that can impact on costs over this period, including changes in the level of demand, developments in capital markets and new obligations which Government may place on the DNOs[5]. The specific areas of uncertainty and our ideas for dealing with them are included in the chapters which follow.

[3] Section 30 of the Consumers, Estate Agents and Redress Act 2007
[4] Inserted as section 4AA(5A) of the Gas Act by section 178 of the Energy Act 2004. In carrying out its statutory functions, Ofgem must have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed.
[5] For example, the current price control has made allowances for the obligations which have been placed on DNOs by the Electricity Safety Quality and Continuity Regulations (ESQCR)

## Overview of Preliminary views on DPCR5

1.22. Throughout this document we set out our preliminary views on the form and scope of the next price control and the methodology by which we will set it. These views are based on our observations of how the current price control is working and an assessment of whether it needs to change given some of the key developments since 2004 when the price control was set. Our views are also based on discussions with DNOs, customers (and their representatives) and other interested parties. In May 2007 we issued an open letter[6] to solicit early feedback on a number of key questions, including whether it was appropriate to use an RPI-X framework in this price control and what role DNOs should play in tackling climate change. A summary of responses to the letter is included as Appendix five.

1.23. Below we set out an overview of our preliminary thoughts on DPCR5.

### Incentive regulation

1.24. We have decided that after almost twenty years of incentive regulation for energy networks it is a good time to have a more fundamental look at our approach to regulating network monopolies. On 6 March 2008 we set out our plans for a full review of our approach[7]. This review will be undertaken separately from DPCR5 and is currently expected to report in the summer of 2010. Developments identified in DPCR5 will feed into this review but it is unlikely that the outcome of the review will significantly influence our approach to DPCR5.

1.25. The form of network regulation may change post 2015 as a result of this review. But if it does, we will in implementing any new arrangements, allow DNOs to earn a reasonable rate of return on efficient investment made prior to and during the period 2010-2015. We will not introduce any change to the regulatory framework without adequate consultation, including with the capital markets, and at all times will have regard to our duty to regulate in a way that allows efficient network companies to finance their businesses.

### Scope and Form of control

1.26. RPI-X regulation has delivered real value to consumers since privatisation. In electricity distribution it has delivered a 50 per cent reduction in cost in real terms and improved quality of service (a reduction in the number and duration of power cuts) while delivering investment in excess of £1bn a year[8]. It has allowed us to

[6] DPCR5 - looking ahead an initial consultation letter (119/07)
[7] Ofgem to review regulatory regime for energy networks - R/8
[8] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=2&refer=MEDIA/KEYSPEECHES

focus on the service that the companies deliver as well as the cost of this service and there have been a number of important developments, including the Information Quality Incentive (IQI) to encourage DNOs to come forward with a more realistic forecast of their costs. There is still considerable scope for us to build on improvements that were introduced at the last review.

1.27. We will continue with RPI-X for the next five year price control period, recognising in some circumstances it may be appropriate to commit to a longer term view. For instance we have already made commitments to extend the Innovation Funding Incentive (IFI) to 2015 which provides longer term certainty to all parties. We will give careful consideration to how we can deliver longer term incentives given that the form of regulation may change after 2015.

1.28. In general, we expect the current structure of the price control to be appropriate for DPCR5. It comprises:

- DNO base revenue allowances which are generally indexed over the control period against inflation plus or minus an efficiency factor (X), hence the name RPI-X regulation,
- incentive mechanisms,
- a pass through of costs of a non-controllable nature,
- a correction mechanism for under and over recovery, and
- an adjustment mechanism for specific uncertain costs.

1.29. DNOs can increase the profits they make by delivering reliable, high quality services at operating costs below the base revenue allowance or outperforming against the incentive mechanisms in the control. In this way the control provides companies with a strong incentive to achieve efficiency saving while maintaining a good service.

1.30. The base revenue falls across three categories in approximately the following way:

**Table 1.1 Breakdown of actual costs - first two years of DPCR4 (2005-06 and 2006-07)**

| | **Per cent of actual costs by category[9]** |
|---|---|
| Operating expenditure[10] | 36 |
| Capital expenditure[11] | 39 |

[9] Excludes excluded services revenues (£0.46 billion)
[10] Expenditure is shown on a basis comparable to the DPCR4 allowances includes 42.3 per cent of normal and deficit repair pension costs and network rates and transmission exit charges

| | **Per cent of actual costs by category[9]** |
|---|---|
| | |
| Financing and tax costs[12] | 26 |

1.31. This split shows that our review needs to pay attention to efficiency across all three categories of costs as each has a significant impact on the level of network charges customers pay and network companies' profits.

1.32. Although we expect to retain a similar structure to the current price control, significant changes may be necessary given the environmental challenges already outlined and described in more detail in Chapter 2. In particular we need to reconsider whether it is appropriate for the base revenue allowance to vary according to the kWh of electricity which DNOs distribute (as per the volume revenue driver in the current price control) as this does not encourage DNOs to find ways to reduce energy consumption in running their networks and through working with customers.

1.33. Similarly, we consider that the range of activities that are subject to price regulation (scope of the control) is broadly appropriate although in this review we will be considering whether there is a case for bringing some element of connection services within the control. In considering this we will look at the pace at which competition is developing in connection services.

1.34. Currently DNOs can apply to Ofgem to reopen the control in predetermined circumstances and this is one way we have of making sure that DNOs are not unfairly penalised by unexpected and/or uncontrollable events during the five year control period[13]. We recognise there are a number of sources of uncertainty during the next control period including the speed at which new generation capacity is connected to distribution networks and the general trend in electricity demand. We will consider whether this is best dealt with by revenue drivers, reopeners, trigger mechanisms or allowing DNOs to log up expenditure for Ofgem to consider at the end of the price control period.

[11] Expenditure is shown on a basis comparable to DPCR4 allowances includes 57.7 per cent of normal and deficit repair pension costs
[12] Net interest expense and current corporation tax charge, excludes deferred tax
[13] The current price control includes a re-opener for changes in costs associated with the introduction of the Traffic Management Act and a two stage reopener for changes in costs associated with the Electricity Safety Quality and Continuity Regulations (ESQCR). The ESQCR reopener provides for an assessment of costs associated with overhead line clearances for low risk sites and an assessment of costs associated with amendments to the ESQCR itself.

**Incentives**

1.35. Several aspects of the existing price control are working well and although, as detailed in the following chapters, we are seeking views on how these might be developed, we will look to make an early commitment to continuing with these incentives.

1.36. To incentivise capex efficiencies DNOs are allowed to keep (bear) a proportion of any savings made (additional costs) from spending less (more) than the capex allowance over a five year period, regardless of when in the 5 year control period these occur. This is known as the capex rolling incentive. This mechanism is necessary to ensure DNOs have an incentive to make efficient investment throughout the 5 year control period (not just at the beginning) and this is a feature we are minded to retain. We will ensure that the rewards or otherwise due to DNOs under the capex rolling incentive are retained not withstanding any changes to the regulatory framework post 2015.

1.37. One of the risks of a capex rolling incentive is that it may encourage companies to overstate their forecasts. We addressed this at DPCR4 by introducing the IQI. This was successful in reducing the difference between DNOs' and Ofgem's view of DNOs' costs and we are likely to apply a similar mechanism in this price review.

1.38. As part of DPCR4 we put in place targets for customer service measures, in particular the number of customers interrupted (CIs), the duration of interruptions to supply (customer minutes lost (CMLs)) and the quality of telephone response. As explained in more detail in Chapter 3, we think these incentives have worked well, with CIs falling by ten per cent and CMLs by four per cent since 2002, and should continue in a similar form. There may be opportunities to develop, extend and improve customer service arrangements to reflect changes in performance and address worst served customers in particular, and to encourage DNOs to consider the standard of their interaction with customers and stakeholders more generally. The discretionary customer reward scheme which was introduced in 2005 has also worked well with good participation from DNOs and this is another feature we will expect to retain in DPCR5.

1.39. It will also be important to assess whether other measures, in addition to CIs and CMLs, can be put in place that better indicate the underlying performance and health of the network given the investment. There may also be a need to extend performance measures to include DNOs' service to customers seeking a connection.

1.40. The take up and connection of DG has so far been a lot lower than forecast by the DNOs in DPCR4. We need to establish whether the incentive is working in this area or whether there are external factors which are driving this situation. The connection of DG and other forms of distributed energy will be an important issue for DPCR5. We will review whether the existing incentives are appropriate and whether the DNOs should be taking a greater role in the facilitation of DG. As a minimum we will need to establish a framework that is sufficiently flexible to cater for potential

connections but also encourage efficient operation of the networks given their changing nature.

1.41. The DNOs also have a role in reducing their own environmental impact and as part of DPCR5 we will consider whether it is appropriate to introduce new incentives. One significant area which is already addressed as part of DPCR4 is electricity lost through the distribution network. There has been a significant reduction in reported distribution losses over the past ten years and the challenge for DPCR5 will be to consider whether this incentive mechanism can be further developed. We could, for example, increase the incentive on DNOs to invest to reduce losses by factoring in the social cost of carbon in the incentive. But recent experience of the schemes has called into question how well the current settlement arrangements can accurately measure reductions in losses because of actions taken by the DNOs.

**Methodology**

1.42. We are looking to make some significant changes to the methodology we use to assess DNOs costs for DPCR5. The cost reporting process we have been running since 2005 has given us better data per DNO and per cost category and this should allow more sophisticated modelling and benchmarking than we have used before.

1.43. Another improvement we propose is to require DNOs to submit their cost forecasts in defined building blocks each with clearly identifiable assumptions, costs and outputs. This will allow us to assess DNOs' forecasts taking into account the baseline expenditure from our modelling, compare forecasts across DNOs but also allow DNOs flexibility to submit cost forecasts which match their own business needs and commercial strategies. We think this is an important development and is consistent with our overall objective of encouraging DNOs to be proactive and innovative about how they run their businesses.

1.44. In formulating their business plans, we expect DNOs to engage with local stakeholders and to demonstrate how these views have impacted on their plans. We are also looking to extend the network output measures so that we can be sure the price control provides DNOs with the resources required to make efficient investments bearing in mind the longer term as well as the short term needs of the network.

**Financial issues**

1.45. In developing our thinking in this area we will have regard to our duty to ensure that the DNOs can finance their obligatory statutory and licence activities. In this review we will consider the main factors affecting the cost of capital including the cost of debt, cost of equity and gearing and the impact of recent developments, for example in the capital markets on these factors. We are considering whether it is appropriate to continue with our current approach of setting a fixed cost of capital for the full five year period or whether to modify our approach for example, by introducing debt indexation or debt triggers. We seek views on these mechanisms at this stage. However, we do not intend to settle on the cost of capital for DPCR5 until

later in the process not least to ensure the decision reflects the level of risk inherent in the price control itself.

1.46. We have set out at a high level our approach to financeability and the financial modelling we will undertake. We will do this analysis to ensure that DNOs can raise finance from the capital markets readily and on reasonable terms to avoid unnecessary costs being passed to consumers.

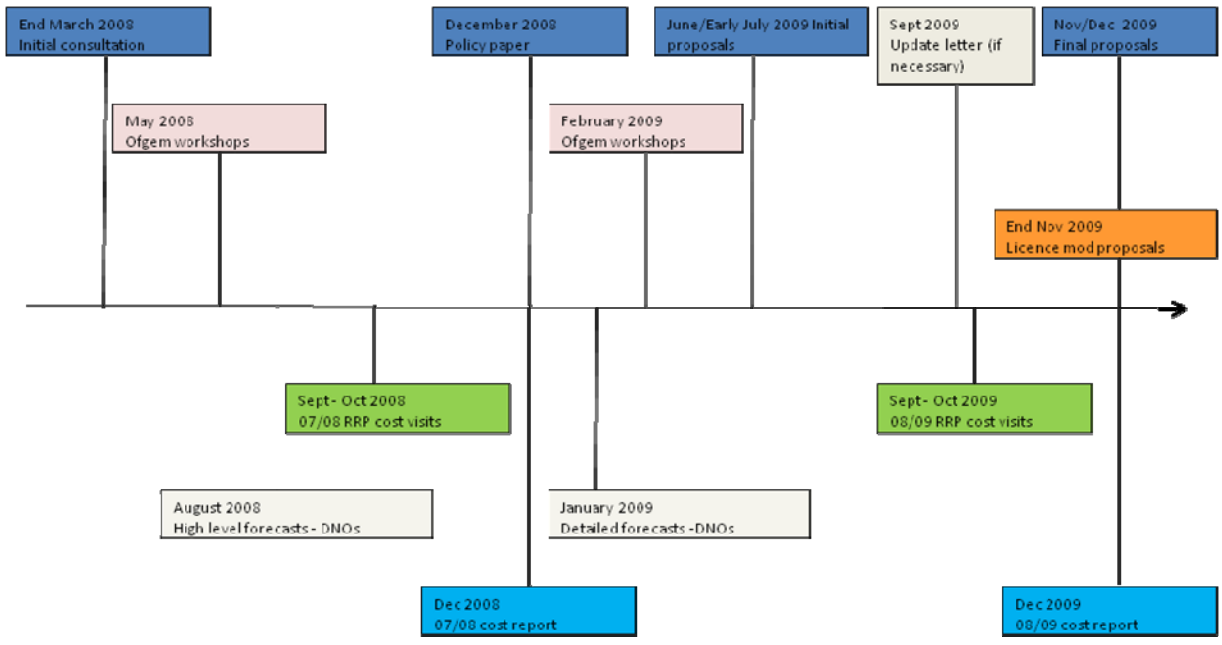
## Process and timetable

1.47. We will follow an open and transparent process to arrive at our final price control proposals. We will make sure that all interested parties have an opportunity to contribute fully. In this document we are consulting on different ways of allowing a cross section of customers or their representatives have their say throughout the review.

1.48. In designing the process we have also taken into account the cost of the review both on Ofgem and on the relevant stakeholders. We aim to close off key policy issues as early as possible to reduce the degree of uncertainty on DNOs and provide them a firm basis on which to submit their plans for 2010-2015.

1.49. The full process and timetable are set out in Chapter six. Key dates are illustrated below and are as follows:

**Figure 1.2 - Timeline for DPCR5**



- Consultation on the proposals in this document will close on 23 **June 2008**
- Ofgem will hold workshops for those intending to respond to the document in **May 2008**
- Having reviewed consultation responses we will issue a document on our policy decisions in **December 2008**
- We will consult on initial proposals for the price control settlements in **July 2009**; and
- Following feedback on the Initial proposals, we will publish final proposals in **December 2009**.

1.50. We may hold a further consultation in September 2009 if there are significant changes to our views in the light of the company and other responses to our initial proposals.

1.51. In any event, the regulated companies will have until the first week of January 2010 to decide whether to accept our final proposals or to have the matter referred to the Competition Commission.

# 2. Environmental issues

**Chapter Summary**

This chapter discusses the issues impacting the environment that we will consider as part of DPCR5. It considers the role that the DNOs can play in facilitating activities that have a positive impact on the environment as well as the issues associated with the DNOs' own carbon footprint.

**Question box**

**Question 1:** Do you think that evolutionary or revolutionary changes are required to the role of the DNOs to ensure that distribution networks remain fit for purpose? If the latter, in what specific areas does this apply?
**Question 2:** Do you think that we have identified the key areas where DNOs can facilitate activities that have a positive impact on the environment?
**Question 3:** How do we ensure progress is made on the issues identified with the connection of DG? Should progress be facilitated through a working group or should more formal obligations be developed?
**Question 4:** Do you agree that DNOs should have stronger financial incentives to reduce their carbon footprint? Do you think that we have identified the key areas where it may be possible to do this?
**Question 5:** How can the Long Term Development Statements be made more useful for DG and other users of the network?
**Question 6:** Is the current regulatory framework constraining a DNO's ability to facilitate low/zero carbon technologies and if so, what could be done to address this?
**Question 7:** We have raised more detailed questions throughout the chapter. We welcome views on these issues.

## Background

2.1. There are two ways that DNOs can reduce the detrimental effects on the environment that can arise from their operations. First, they can pave the way for activities that lessen their impact on the environment, such as low or zero emission electricity generation. Second, they can reduce their own emissions resulting from both the operation of its network for example by reducing network losses and from the operation of its business, such as reducing the environmental impact of its transport fleet.

2.2. In the fourth and current price control (DPCR4) we established measures targeted at some of these areas. An example was an incentive for DNOs to invest in their networks to connect distributed generation (DG). DG is so-called because it is connected direct to the distribution network, close to where its electricity is consumed. It is generally smaller than conventional power plant and includes wind and other renewable generators. DPCR4 also included an incentive for DNOs to reduce the electricity losses on their network. The effectiveness of these and other incentives is discussed below.

2.3. Since 2005 there have been a number of changes in Government and European Union (EU) policy towards reducing emissions from electricity generation. Recently the Government committed to new EU targets on reducing emissions and increasing the use of renewables. In March 2007, the European Council committed the EU to a binding target of reducing greenhouse gas emissions (GHG) by 20 per cent, a 20 per cent increase in energy efficiency and a 20 per cent share of renewable energies in overall EU energy consumption by 2020. This applies to heat and electricity, where DG has a key role to play, as well as to transport.

2.4. In January 2008 the European Council published a draft directive[14] including how the 20 per cent renewables target will be shared amongst the EU Member States. The proposal for the UK is that 15 per cent of final energy demand will be met by renewable energy. On that basis up to 40 per cent of electricity consumed would need to be generated from wind power and other renewables.[15]

2.5. In addition, the Government's proposal that all new homes in England should be "zero carbon" from 2016 is likely to increase the demand for and uptake of distributed energy (DE).[16] The Department for Communities and Local Government (DCLG) has outlined a ten-year timetable for the transition however the definition of a zero carbon home is still being debated. It currently allows for measures that apply to entire developments and connections to local DE to count towards the zero carbon homes standard. Final conclusions have not yet been reached on the extent to which zero carbon can be achieved using off-site generation, if at all. The final definition of zero carbon for homes will strongly influence future investment in DE.

2.6. Many local planning authorities have already taken steps to encourage local energy schemes through changes to the planning rules. Planning authorities can set targets for the use of on-site renewables in new developments in line with the Planning Policy Statement on Renewable Energy (PPS 22) – the so called 'Merton Rule'[17]. Another new Planning Policy Statement on Climate Change (supplement to PPS 1) confirms what is expected from regional and local planning on tackling climate change. This will require all planning authorities to set target percentages for the use of distributed, renewable or low-carbon energy in new developments.[18]

[14] http://ec.europa.eu/energy/climate_actions/doc/2008_res_directive_en.pdf
[15] Based upon final energy consumption figures for 2006, assuming a ten per cent final energy consumption target is applied to heat, transport and "other" sectors, leaving renewable electricity generation to meet the remainder that makes up the 15 per cent target for final energy consumption.
[16] To be "zero carbon", a home would produce no net carbon emissions resulting from the operation of the dwelling (heating, lighting and energy used by appliances such as TVs and cookers). Estimates suggest that from 2016, 200,000 new zero carbon homes will be built each year.
[17] www.merton.gov.uk/living/planning/planningpolicy/mertonrule.htm
[18] http://www.communities.gov.uk/publications/planningandbuilding/ppsclimatechange

2.7. This policy context will provide new challenges for the DNOs. The next set of price controls for the DNOs - DPCR5 - will need to consider what role the DNOs should play towards achieving the Government's objective for a low carbon economy. In DPCR5 there is an opportunity to reconsider the responsibilities of DNOs and the current incentive framework.

## DNO as facilitator

2.8. There are several activities that DNOs could be encouraged to facilitate that would have a positive impact on the environment. Such activities include connection of low carbon technologies, integration of low carbon heat schemes, energy efficiency and demand management, metering, active network management and reactive power management. We remain concerned that current charging structures do not properly reflect the benefits that DG can bring to the distribution system. These are discussed in detail below.

### Distributed Generation

*Connections*

2.9. As part of DPCR4, the DG incentive was introduced to encourage DNOs to undertake the investment required to connect DG in an efficient and economic manner and to generally be more proactive in responding to connection requests. There is a perception that the DG incentive has not worked as well as expected with the volume of DG connecting to date being significantly less than was forecast to connect at the time of setting the incentives for DPCR4[19]. However, there appears to be no evidence that DG has not been able to connect. We invite views on the effectiveness of the current DG incentive.

2.10. In addition, despite their statutory and licence obligations and financial incentives there are still suggestions that DNOs are being unhelpful with connections. Information received through the Distributed Energy Working Group (DEWG)[20] suggests that, in some cases, DNOs' connection practices appear to be disproportionate relative to the size of the plant being connected. It was noted that it was difficult to gauge how widespread these views are, and the consultation invited parties to come forward with examples.

[19] Appendix seven sets out the volume of DG connections forecast by the DNOs for DPCR4 and the actual volume of DG that has connected in the first two years of DPCR4.
[20] The DEWG was established by Ofgem and BERR to develop options for the consultation published in December 2007 on more flexible market and licensing arrangements for distributed energy.
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=160&refer=Networks/ElecDist/Policy/DistGen

2.11. A DNO has a duty to connect on request under section 16 of the Electricity Act. Standard Condition 4D of the distribution licence obliges a DNO to make a connection offer including to DG, within three months of receiving a valid application. During 2006, 135 connection offers were made by the DNOs for a total capacity of 2GW[21].

2.12. Generally developers will, when progressing connections, enter into a contract (connection agreement) with a contractor and/or the DNO to procure and provide connections works and ongoing operation of the connection. The terms and conditions for these contracts are subject to bilateral negotiation. We consider that there is an opportunity to further develop the Distribution Connection Use of System Agreement (DCUSA)[22] to address concerns regarding the lack of transparency and consistency in relation to connecting to the distribution system. We see merit in developing a national standard connection agreement, possibly in the form of a schedule to the DCUSA as a bilateral connection agreement template that could accommodate site specific information.

2.13. The DNOs, through the energy networks association (ENA), are currently reviewing the engineering recommendations for the connection of embedded generation to the distribution system, Engineering Recommendation (ER) G/59[23] and ER G/75[24]. Significant progress has already been made in simplifying the requirements for connecting small scale embedded generation (i.e. domestic microgeneration) to the distribution system with the introduction of ER G/83. Requirements on DG larger than those where ER G/83 applies are much more onerous in terms of technical design, process and timescales. We would strongly encourage the DNOs to address the proportionality of the connection process/requirements set out in ERG/59 and ERG/75 as part of the current review process.

2.14. In addition, we also consider that the connections process should be more consistent on a national basis. At the moment, for example, the information required from a connectee when requesting an application varies. The connections process encompasses negotiating a connection agreement and the application of engineering recommendations for connecting to the distribution system. Notwithstanding the work progressed through the Competition in Connections review, we consider that a standard national process for connection should be developed by DNOs to facilitate further connection of DG. We are aware that a technical guide to the connection of generation to the distribution network[25] was

[21] Source – Energy Networks Association
[22] DCUSA currently governs the commercial relationship between distributors and suppliers for use of the distribution system.
[23] ERG/59 sets out the technical standards for DG connecting at or below 20kV and where the plant does not exceed 5MW.
[24] ERG/75 sets out the technical standards for DG with output greater than 5MW or at system voltages greater than 20kV.
[25] http://www.energynetworks.org/spring/engineering/pdfs/DGSG/FES_00318_v040211.pdf

developed by the Distributed Generation Co-ordinating Group and the Technical Steering Group in February 2004 but has not been taken forward by the DNOs.

2.15. As part of the Energy White Paper[26] published in May 2007 we undertook to review how the DNOs' Long Term Development Statements (LTDS) can be made more useful for distributed generators. We consider that development of the LTDS could be used to address several connections related issues, such as giving DG better information about network availability for generation connections.

2.16. An online interactive LTDS would be one way of delivering better information on network availability which could also provide immediate indicative quotes for connection. Developments to the LTDS such as this would facilitate greater connection of DG. We invite views on how the LTDS could be made more useful for DG.

2.17. Have we identified the connection issues and the areas where DNOs need to do more? If so, how should we go about enabling development in these areas? We could establish a working group to further progress these areas and any others identified through consultation responses over the course of this year, with a view to addressing these issues by the end of 2009. An alternative is to consider more formal obligations for development in some or all of these areas.

2.18. The registered power zone (RPZ) incentive was introduced as part of DPCR4 to encourage DNOs to develop and demonstrate more cost effective technologies for connecting and operating generation on their distribution systems. Early evidence suggests that the RPZ incentive has been less successful than hoped. It generally requires the generator to take relatively higher risk than it otherwise would due to the innovative nature of the technical solution needed for the DNO to qualify for the incentive under RPZ. To date only four schemes have been registered as eligible schemes.

2.19. We recognise innovative connection arrangements can bring benefits to all customers, not just DG connections. Extension of the RPZ incentive to demand side initiatives would enable DNOs to develop more innovative ways of managing demand connections. Newly connecting industrial and commercial (I&C) customers would be possible participants in such arrangements given that they are already required to have half-hourly meters with real-time meter reads. It may also provide the flexibility to manage pockets of growth in DG rather than impose network wide solutions given uncertain development and penetration of DG across the country. We invite views on the possible extension of RPZ to include demand connections. We also invite views on whether RPZ should be extended more widely to include innovative ways of managing the network on an ongoing basis.

[26] http://www.berr.gov.uk/files/file39387.pdf

*Active Network Management*

2.20. The SmartGrids European Technology Platform for Electricity Networks of the Future began its work in 2005. Its aim was to formulate and promote a vision for the development of European electricity networks looking towards 2020 and beyond. The platform includes representatives from industry, transmission and distribution system operators, research bodies and regulators, including Ofgem. It has identified clear objectives in the context of the drive for lower-carbon generation technologies and greatly improved efficiency on the demand side that will enable customers to become much more interactive with networks.

2.21. A growing volume of DG will probably mean that issues such as physical constraints on electricity flow in the distribution network can be tackled by actively calling on DG plant, storage and users rather than simply reinforcing the network. Distribution networks that are managed in this way will be more economic relative to the current passive approach to managing distribution networks through adding to the network.

2.22. Requirements to develop an economic and efficient network may imply consideration of non-network solutions before undertaking reinforcement. In addition, Engineering Technical Report (ETR) 130, which provides guidance on ER P2/6[27], suggests that such contracts with DG, or potentially a storage device, can be taken into account when considering compliance with ER P2/6. We understand that DNOs generally choose to undertake reinforcement rather than contract with DG or demand customers. Is there sufficient incentive for DNOs to consider non-network solutions before undertaking reinforcement? Are there any particular constraints on the development of demand side management and storage solutions?

2.23. It may be appropriate to be more explicit about the interpretation of the 'economic and efficient' test and the obligation to consider alternatives to standard reinforcement. It may also be appropriate to develop more clarity around how payments to generators or demand customers that defer reinforcement are treated for regulatory purposes given that they are not traditionally treated as network costs. We invite views on whether there is clarity on the current regulatory treatment of such costs and what alternative treatments might create a greater incentive on DNOs to consider contracting with generators before undertaking reinforcement.

2.24. Moves towards DNOs contracting with DG and/or storage to manage constraints may create difficulties where the DNO is part of an ownership group that includes DG and storage as, in effect, the DNO would be making payments to a related party for a service. This may disadvantage DG not affiliated with a DNO. One way of addressing this potential conflict may be to set an incentive for

[27] ER P2/6 is the planning standard for security of demand on distribution networks.

independent DNOs free from generation and storage interests. We invite views on this issue.

*Roles & responsibilities*

2.25. As the volume of DG connections continues to increase there are questions about how to manage the interface between the transmission and distribution systems most efficiently. The Transmission Arrangements for Distributed Generation (TADG) Group, established by Ofgem in July 2006, sought to bring together all interested stakeholders to consider the relationship between DG and transmission and consider appropriate enduring commercial and technical arrangements.

2.26. The TADG Working Group published its final report[28] in July 2007. The report includes the Group's assessment of the issues with the existing arrangements and of four potential options for change to those arrangements, two being based around a DNO-agency model and two based around a supplier-agency model. In its open letter accompanying the publication of this report, Ofgem provided its thinking on several issues including the choice and role of agent.

2.27. Prior to 2010 there may be developments to clarify the existing obligations on DNOs to notify National Grid Electricity Transmission[29] at the time of connecting DG. Within the timescales of DPCR5, there may be an increasing role for the DNOs (e.g. making transmission access arrangements on behalf of a larger volume of DG) whilst some other aspects of the agent role could remain with suppliers (e.g. metering and billing for transmission charges). In the long term responsibilities of the DNOs could evolve, particularly as DNOs become involved in active network management. DNOs could become responsible for real-time management of power flows at the boundary with transmission. Developments such as these would require consideration of incentives on the DNOs and may necessitate DNOs becoming responsible for activities such as billing for transmission charges.

2.28. We invite views on the range of likely developments in this area over the period of DPCR5 and what proposals the industry are currently considering or are likely to consider. If implemented, how would these proposals impact the DNOs? Is there a need to take this into consideration for DPCR5 and if so, how?

[28] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=57&refer=Networks/Trans/ElecTransPolicy/TADG

[29] The systems are operated by the designated System Operator (SO), National Grid Electricity Transmission (NGET) plc.

*Commercial*

2.29. There are also some commercial issues in relation to DG that relate to DPCR5: cost-reflective use of system (UoS) charging, charging arrangements for DG that connected pre-April 2005 and the current framework of the DG incentive and the possible distortions that this might be creating. These are considered in turn below.

2.30. We have been encouraging the DNOs to make their UoS charges more cost-reflective. Cost-reflective charges provide the opportunity for DG to be rewarded for the benefits they bring to a distribution network and help facilitate the development of an efficient and economic network. In 2007 Ofgem approved one DNO's proposal to introduce a more cost-reflective charging methodology and we have been encouraging other DNOs to follow this lead.

2.31. In response to continued concerns regarding the slow progress by DNOs in this area, we will shortly publish a consultation document which presents options to progress the implementation of more cost-reflective charging methodologies.

2.32. 12.9GW of generation capacity was connected to distribution networks as at 31 March 2005. These generators connected under a "deep"[30] connection charge regime and do not currently pay UoS charges. The decisions they take about future use of network capacity may however impact network costs, including charges to prospective generators. Some conceptual options for introducing charges for these generators were explored through the Ofgem-led Implementation Steering Group (ISG)[31]. To date no conclusion on a way forward has been reached. We consider that the lack of cost signalling through UoS charges for these generators does not promote economic efficiency. We invite views on how to address this issue.

2.33. As part of DPCR4, a separate revenue driver was created through the DG incentive to accommodate the uncertainty associated with the future volume of DG connections. Currently DNOs are restricted to charging DG based on the revenue provided for through the DG incentive. This means that reflecting benefits of deferred reinforcement to one DG party through UoS charges would mean that other DG would bear the cost of those negative charges (rather than demand customers who are ultimately the beneficiary of deferred reinforcement). We invite views on the framework of the current DG incentive.

[30] "Deep" connection charges applied to generators connected prior to April 2005. This means that they may or may not have paid reinforcement costs depending on whether their connection triggered such costs.
[31] http://www.ofgem.gov.uk/Networks/ElecDist/Policy/DistChrgs/Pages/DistChrgs.aspx

*Summary of distributed generation issues*

2.34. A summary of the issues raised in this section is set out in table 2.1 below. Stepping back, there is also an overarching question about whether the regulatory framework that DNOs operate in is fit for purpose through to 2015, in the expected policy context. There remains a question of whether evolution is appropriate in this context or whether more radical changes to the existing framework are needed to accommodate the likely growth in DG through to 2015 and beyond. We recognise that these developments could impact some DNOs to a greater extent than others. We invite views on the broader policy issues that this question raises.

**Table 2.1 - Summary of issues**

| Issue | Questions |
|---|---|
| DG incentive | ▪ We invite views on the effectiveness of the current DG incentive. |
| Connections | How do we ensure progress is made during 2009 with:<br>▪ A national standard connection agreement<br>▪ Reviewing the proportionality of ER G/59 & ER G/75<br>▪ A national connections process<br>▪ Reviewing the effectiveness of the LTDS for DG and other users of the network. |
| RPZ | ▪ We invite views on the possible extension of RPZ to include demand connections. |
| Active network management | ▪ Are DNOs obliged and/or incentivised to consider non-network solutions before undertaking reinforcement works?<br>▪ Is there a potential conflict for DNOs in an ownership group that includes DG and storage plant? |
| Roles & responsibilities | ▪ Is there a role for DNOs around the interface with transmission? If so, what are the possible developments in this area and how will it interact with DPCR5? |
| Commercial | ▪ We remain concerned about the cost-reflectivity of UoS charges to DG and the barrier this might present to the connection of DG.<br>▪ How do we address the current lack of cost signals to generators that connected pre-April 2005 that currently do not pay UoS charges?<br>▪ We invite views on the framework of the current DG incentive and the possible distortions this is creating on more cost-reflective charges for DG. |

**Heat Networks**

2.35. Given the context set out at the start of the chapter, in particular changes to local planning rules and the drive towards zero carbon homes, we expect an increasing volume of combine heat and power (CHP) local to demand over the coming price control period which, in the main, will be connected to distribution

networks. This is likely to be installed within new build developments and also regeneration areas.

2.36. We have discussed some of the electrical impacts on the distributors' networks from the developments discussed earlier in the chapter and the potential changes necessary to the DNOs' role to ensure that they are best placed to flexibly respond to these changes. In addition some of the developments may be standalone heating schemes which will not impact directly on the distribution network.

2.37. While the majority of DE schemes are currently gas-fired CHP, DE schemes can also be fuelled by low-carbon renewable energy sources, producing significant carbon savings. Even where DE is based on gas or other fossil fuels, CHP technologies can be much more energy efficient as they use the heat produced through electricity generation to heat and cool homes and other buildings. CHP schemes can achieve thermal efficiencies of up to 90 per cent through this means, a significant improvement on electricity-only generation. In addition, supply of low carbon heat to consumers from CHP or other sources through district heating could play a key role in reducing emissions from existing communities. Community-scale CHP schemes can also help tackle fuel poverty.

2.38. Currently heat is not regulated and the future direction of heat networks is an issue that the Government is currently consulting on[32]. However, we recognise that distributors will be key partners in the connection of these new developments and they are in a strong position to support local communities on the electrical aspects of the connection. With the potential social and environmental benefits created by community energy schemes we consider that a more active role for the DNOs' in facilitating the connection of these schemes should be explored. We welcome views in this area.

**Energy Efficiency**

2.39. In June 2007 we engaged with consumers in a public consultation about energy and the environment[33]. A key finding from the research was that consumers' perceived responsibility for action to tackle the environmental impact of energy should be shared equally between Government, industry and consumers. Also, despite reservations about the transparency of Government and industry spending, there was general acceptance that consumers, as citizens, will have to shoulder some of the burden of payment for energy efficiency measures.

[32] http://www.berr.gov.uk/energy/sources/heat/page43671.html
[33] 144/07 "Consumer research on energy and the environment" http://www.ofgem.gov.uk/Sustainability/Environmnt/Policy/Documents1/Stimulating%20World.pdf

2.40. As part of the Consumer Research for DPCR5 we will be looking at consumers' views of the role of DNOs in mitigating their impact on the environment. We also intend to derive some willingness to pay values for environmental measures that could be implemented by the DNOs. We expect to publish our detailed findings in June 2008.

2.41. The role of engaging with customers on energy efficiency is currently largely considered a role of energy suppliers. Can DNOs contribute to providing energy efficiency advice to customers? Should DNOs be incentivised to take a more proactive role with end consumers on energy efficiency, and if so how?

2.42. The current price control includes a kWh revenue driver which is designed to address cost uncertainty related to future load growth on the network. Several responses to the May 2007 DPCR5 Open Letter Consultation identified that this revenue driver is perceived to create incentives to increase the volume of sales, which runs counter to the Government's low carbon economy agenda. We agree that the kWh revenue driver may not be appropriate for DPCR5 as it places an incentive on DNOs to deliver more energy. We need to assess the cost evidence and the level of uncertainty around load growth to consider whether its weighting within the price control is still appropriate. We seek views on the extent to which a kWh revenue driver is still appropriate.

**Metering**

2.43. Responses to the May 2007 DPCR5 Open Letter Consultation suggested that DNOs could facilitate an effective roll out of smart metering. In the 2007 Energy White Paper the Government set out its vision of having smart meters installed for all gas and electricity customers over the next ten years. BERR are currently considering responses to their recent consultation on energy metering and billing, which included possible options for the roll out of smart meters.

2.44. Ofgem is committed to a competitive market for metering in which each energy supplier decides on the metering arrangements to make on behalf of its customers. We think this can deliver smarter metering, better service and lower metering costs than under the previous arrangements of monopoly provision by network companies. As such, we do not consider that regulatory arrangements should be designed to encourage DNOs to play a role in delivering smart meters: the extent of their involvement should be governed rather by their success in competing against other meter operators to provide this service to energy suppliers.

### Reactive power

2.45. Customers with poor power factors[34] increase the required capacity of the network, increase network costs through the need for investment, and this can also increase losses on the network. DNOs levy a reactive power charge to reflect this impact. The basis for the reactive power charge, which is only applied to customers who have kVAr or kVArh metering, is detailed within each DNO's charging methodology statement. In general, the DNOs charge on the basis of the additional network cost that is incurred due to the additional kVArs above a nominal power factor level. Currently revenue collected from charges for poor power factor customers are treated as an excluded service.

2.46. Generally it is cheaper to address the impact of poor power factor at source, i.e. at the customer's site, and this element of the distribution charge exposes customers to the additional network costs enabling them to judge whether to invest in their own correction equipment. The costs of the increased network losses caused by customers with poor power factor are generally accounted for in the loss adjustment factors for the specific site in question.

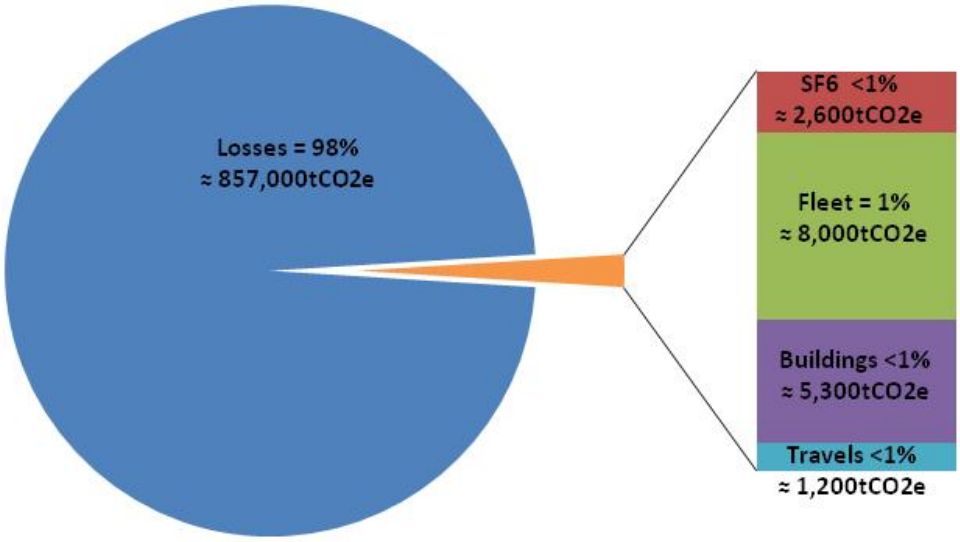
2.47. We consider that it is appropriate for the DNOs to levy a reactive power charge to reflect the costs customers impose on the DNOs' network and determine site specific loss adjustment factors. Following the results from our Consumer Research we note that larger customers were keen to receive more advice and information from DNOs to help them improve their connection power factor. Is there more that DNOs should be doing to encourage efficient use of their network or are the current measures appropriate? For instance is there scope for DNOs to do more to educate their customers on the impact of poor power factor?

## Reducing the DNOs' carbon footprint

2.48. The DNOs activities have a significant impact on GHG emissions. As can be seen from the chart below, based on limited data currently available[35] GHG emissions associated with losses on the distribution system (technical and non-technical) make up the majority of a DNO's carbon footprint. The impact on the environment of the operation of the network and the operation of the DNOs' businesses is discussed in detail below.

[34] A demand with a low (poor) power factor will give rise to higher currents in order to a transfer a given quantity of real power than a load with a high (better) power factor.
[35] Based on data available from two DNOs as reported in internal voluntary reports on carbon footprint management.

**Figure 2.1 DNO GHG emissions by activity**




## Impacts resulting from operation of the network

*Losses*

2.49. Electrical losses are the difference between the amount of electricity generated and that consumed by customers. Losses on the distribution system are significant source of GHG emissions representing approximately 1.3 per cent of total GB GHG emissions[36].

2.50. Recognising the importance of this issue Ofgem has incentivised DNOs during DPCR3 and DPCR4 to reduce these losses. Since 2000 losses have fallen as a UK average from 6.1 per cent to 4.9 per cent on the distribution system[37]. As a result, many of the DNOs are earning significant incentive payments with total payments under the losses incentives being around £100m each year. The question for DPCR5

[36] Based on total GB GHG emissions (2006) reported in Ofgem's Sustainable Development Report 2007 and reported distribution losses (2006-07) published on the Ofgem website. The conversion factor used is DEFRA's GHG rolling average electricity conversion factor available at http://www.defra.gov.uk/environment/business/envrp/pdf/conversion-factors.pdf

[37] Actual losses by DSA are reported by DNOs and are available on the Ofgem website at http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=70&refer=Networks/ElecDist

is to decide whether to continue to provide an incentive to reward overall loss reduction in the same way or whether the effect of the current method of incentive is largely exhausted and now is the time to tackle this issue in a radically different way. We also need to consider whether the environmental impact from losses is sufficiently reflected in the current incentive.

Current treatment of losses

2.51. Under the current price control distribution losses are defined as the difference between the metered units of electricity entering the distribution network and those leaving the network paid for through electricity accounts, whether estimated or metered. This difference is made up of a mixture of physical technical losses and unaccounted for consumption. The latter is normally referred to as commercial losses and arises from several areas including theft, un-billed accounts, estimated customer accounts and errors due to the approximation of consumption by un-metered supplies (such as street lighting). Some aspects of commercial losses adjust over time during the settlement process making real time comparison between electricity entering and leaving the system difficult. Technical losses are the electrical system losses caused by impedance, current flows and auxiliary supplies.

2.52. There is a view from some DNOs that the current losses incentive is flawed as it does not recognise the limited ability of DNOs to influence the level of commercial losses. It therefore does not adequately reward actions taken by DNOs to reduce the technical losses that are within their control as these are masked by the fluctuation in commercial losses within the settlement system. In addition, one DNO has specifically raised concerns with their underlying losses data and the impact they believe this has had on their performance under the losses incentive. As part of DPCR5 we are assessing the issues relating to the settlements data but this particular issue will be addressed with the specific DNO separate to DPCR5.

2.53. Reported distribution losses are the difference between two large numbers (units entering and exiting the distribution system) and are therefore particularly sensitive to inaccuracies in measurement. Nonetheless, reported losses show a general decline since 2000. Many consider that the reduction in reported losses is too great to have resulted solely from investment by the DNOs and changes in the way they operate their networks. The reduction may be the result of actions by suppliers and cleansing of settlements data[38]. We invite views on how much of the

[38] An example of data cleansing is where audits are undertaken to correct errors associated with unmetered supplies. Electricity supply to such things as street lights and bus shelters is unmetered so supplies are approximated. An incorrect inventory of the amount of electricity used by each item connected can result in errors in settlements data. Correction of material errors means that the difference between units on and off the distribution system (losses) will be more accurate.

reduction in losses can be attributed to actions by the DNOs through technical improvements to the distribution network.

2.54. At present there is an inconsistency in the treatment by DNOs in their methods for dealing with the electricity consumed within their substations for heating, lighting and ancillary supplies. Electricity used at substations is unmetered in the majority of cases. Some DNOs pay a supplier for this unmetered consumption. We do not think this is a major issue if the price under the losses incentive scheme is broadly the same as the wholesale price of energy; if a company were to switch to paying for their unmetered supply, on one hand it would reduce their losses resulting in a gain of £48/MWh and on the other hand they would incur a not dissimilar energy charge from their supplier. One way to address this would be to take account of unmetered supply at substations in calculating the losses incentive. We would welcome views on this issue.

Future treatment of losses

2.55. The challenge for DPCR5 is to devise an incentive scheme that encourages DNOs to invest in loss reduction equipment and operate their system where the costs of doing this are at or below the costs associated with losses (including the carbon costs). Losses have reduced over the period from 2000 to a significant extent and it may be appropriate to continue with the existing form of the incentive. Although we note concerns over the effects of fluctuations in the settlement data we expect that over the long run the impact of technical loss reduction will become evident and that the current arrangement does provide an incentive to invest or improve network operation to reduce technical losses.

2.56. There are alternatives to the current incentive which uses the settlement system. One would be to use a technical model of the whole electrical distribution system with load flows calculated from actual individual metered consumption data. It is likely to be necessary to model networks individually as the networks operated by the licensees all have different characteristics and therefore there is not a universal model that can be applied without some significant level of simplification. By modelling the network, rather than using actual metered data, to create a technical representation of the network the DNO would then be rewarded for changes to its network or investment in low loss equipment against this model. While this is technically feasible it would prove to be a very complex task and dependent on the quality of the network data, customer load profiles, metering data all of which would have the potential to introduce error[39].

[39] A similar approach to this is used in gas distribution for shrinkage. However the gas network is considered simpler to model in that it is more generic with fewer variations of equipment types (multitude of variations in cable and transformer specifications) and gas shrinkage is not

2.57. Another option is for DNOs to be encouraged to reduce technical losses by funding for specific loss reduction programmes involving low loss equipment and/or network design and operation, i.e. discrete funding for specific actions. This input based approach has the risk of rewarding investment made rather than the desired outcome achieved.

2.58. It may also be important to consider the current incentives on suppliers to reduce non-technical losses as well as increasing the level of interaction between suppliers and DNOs to improve information flows on losses.

2.59. In setting the losses incentive for DPCR4 we considered some of the environmental costs in valuing the losses incentive at £48/MWh (in 2004-05 prices). For DPCR5 it may be appropriate to consider explicitly factoring in the shadow price of carbon in setting the incentive rate. DEFRA's shadow price of carbon for 2008-09 is £28.50/MWh. If we based the incentive scheme on the current wholesale energy price this will include some carbon pricing through the EU Emissions Trading Scheme (EU ETS). But we could increase the incentive rate to factor in the difference between the social cost of carbon and the EU ETS carbon price. It is essential that any incentive is valued against recognised external benchmarks (such as the shadow price of carbon) and as detailed throughout this chapter we seek views on an appropriate benchmark value. We also invite views on whether the incentive rate should be fixed, variable, or indexed to a recognised index of wholesale electricity prices (with or without a further carbon adjustment) given the potential uncertainty in forward prices for energy and the cost of carbon.

2.60. Given the significant environmental impact from network losses, we are committed to encouraging the DNOs to continue to find ways to improve their performance. We welcome views on the different options discussed above.

*Emissions*

2.61. DNOs are required to report on environmental issues as part of the Quality of Service submission covering emerging trends and trade-offs in performance, details of any reportable incidents or prosecutions and of any Environmental Management System accredited under international standards organisation (ISO) or other recognised accreditation schemes.

2.62. In response to this reporting we now have two years of data from the DNOs regarding management of fluid-filled cables and Sulphur Hexafluoride (SF6). Although it may be too early to assess trends in performance, we can compare the two years in question and consider the potential for further incentives in these areas.

affected by fixed and variable losses due to iron and copper which in part are load related and not linear.

Sulphur Hexafluoride (SF6)

2.63. SF6 is one of the most potent greenhouse gases and is widely used in transmission and distribution equipment as the best available technology for insulation. SF6 is 22,000 times as potent as carbon dioxide.

2.64. We have introduced and will monitor through the Transmission Price Control Review (TPCR) an incentive for transmission companies to reduce the leakage rate of SF6. This is because the SF6 emissions are currently outside the scope of the EU ETS and therefore companies have a weaker incentive to reduce emissions of SF6 relative to other greenhouse gases. As part of DPCR5 we would like to carry out some analysis of environmental considerations and consider whether a similar incentive should be placed on DNOs.

2.65. Since 2005 we have collected data from the DNOs regarding SF6 emissions. DNO losses for 2005-06 and 2006-07 are set out in table 2.2 in comparison to SF6 losses from transmission equipment.

**Table 2.2 - Use of SF6 2005-06 and 2006-07**

| Network Type | Weight of SF6 in service (kg) | | Weight of SF6 lost (i.e. top-ups used ) (kg) | | SF6 lost as percentage of SF6 in service (%) | |
|---|---|---|---|---|---|---|
| | 2005-06 | 2006-07 | 2005-06 | 2006-07 | 2005-06 | 2006-07 |
| Distribution | 156,735 | 197,813 | 989 | 1,060 | 0.6% | 0.5% |
| Transmission[40] | 415,000 | 413,810 | 12,480 | 10,390 | 3.0% | 2.5% |
| Total | 571,735 | 611,623 | 13,469 | 11,450 | 2.4% | 1.9% |

2.66. The scope of the transmission incentive on SF6 emissions is set out in the TPCR Final Proposals[41]. We welcome views from respondents as to whether a similar scheme is required for electricity DNOs and whether there are any reasons why this should differ from the transmission scheme.

Fluid-filled cables

2.67. The use of insulating oil in fluid-filled cables in electricity distribution systems also has an impact on the environment. Fluid filled cables pose an environmental risk as they can contaminate ground water if they leak.

[40] 2005-06: Scottish Power Transmission Limited (SPTL) have reported amongst distribution figures – no transmission figures provided

[41] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=191&refer=Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses

2.68. Discussions with the Environment Agency (EA) at DPCR4 identified the need to avoid leakage particularly in sensitive areas. There is an operating code for the management of fluid filled cables systems between the EA and the Energy Networks Association that promotes a risk based approach to the management of fluid filled cables including effective management of the risks of leaks in sensitive areas. We note that recent incidents of leakage demonstrate the importance of third party damage as a risk factor.

2.69. During discussions on this issue at DPCR4, it was suggested that we should introduce a new mechanism on the removal of fluid filled cables, for example with additional revenue entitlements to DNOs linked to the length of cable removed from service. Our view was that a mechanism based on length of cable removed is unlikely to be appropriate. It would not directly address the environmental concern (which relates to the risk of leakage in sensitive areas) and would be likely to give rise to perverse incentives regarding prioritisation of alternative options for managing these assets.

2.70. Furthermore, at DPCR4 we considered that the level of (or reduction in) overall leakage would not necessarily be an appropriate basis for an incentive mechanism either. This was for two main reasons: first, that the environmental impact is location-specific; and, second, that volumes may be subject to significant measurement error. It was also important to recognise the lack of experience that existed at the time in replacing these assets and in some of the other risk management techniques.

2.71. Ofgem supports improvement in understanding and experience of managing and replacing fluid filled cables and, in particular, supports moves to bring this together in a rigorous asset risk management approach, preferably on an industry-wide basis. At DPCR4, we said that if reassurance could be gained on measurement issues, leakage in (or weighted to reflect) sensitive areas may be worth investigating as the basis for a future mechanism. DNOs have reported environmental data as part of their annual quality of service reporting requirements. The data for regulatory years 2005-06 and 2006-07 is set out in table 2.3 below.

**Table 2.3 - Use of insulating oil in fluid-filled cables 2005-06 and 2006-07**

| Network Type | Fluid-filled cables in use (km) | | Volume of fluid used to top-up cables (l) | |
|---|---|---|---|---|
| | 2005-06 | 2006-07 | 2005-06 | 2006-07 |
| Distribution | 6,640 | 6,600 | 409,329 | 451,939 |
| Transmission | 1,140 | 766 | 50,000 | 48,513 |
| Total | 7,780 | 7,366 | 459,329 | 500,452 |

2.72. Based on the data available, we invite views on whether this is an area where an incentive should be focussed noting that data specific for sensitive areas, which is one of the main concerns regarding fluid-filled cables, is currently not reported to Ofgem by the DNOs.

Undergrounding

2.73. Networks have environmental impacts on the land where they are sited. These include effects on visual amenity through the intrusion of overhead lines in designated areas. Consumer research for DPCR4 showed some evidence that customers value visual amenity and are willing to pay for some improvements through their electricity bills. Ofgem subsequently introduced an allowance for network undergrounding in National Parks and Areas of Outstanding Natural Beauty (AONBs). DNOs are allowed to log up actual capital expenditure on network undergrounding in these areas up to a maximum value[42]. Entitlement to log up costs is subject to the DNO demonstrating that it has taken account of advice from local environmental groups and/or planning bodies in deciding how to best prioritise any expenditure on network undergrounding.

2.74. Feedback we have received from DNOs and designated bodies is that the scheme has been widely adopted and well received by stakeholders. In fact, many stakeholders have expressed a view that there is a need for an early commitment from Ofgem within the DPCR5 process on the continuation of the scheme. This would allow the momentum built up on some projects to continue without interruption and ensure the goodwill and stakeholder relationships already established are not jeopardised. We recognise the importance of an early commitment from Ofgem on the continuation of this scheme and will intend to provide this later this year.

2.75. We consider that there are important benefits of the scheme in terms of visual amenity in protected areas and as a catalyst for improving the DNOs' stakeholder relations. It is also possible that the framework and relationships established could encourage funding from other sources (i.e. EU regional development programmes and Heritage funds) for further undergrounding projects.

2.76. The current caps for this scheme equate to undergrounding 1.5 per cent of the network that is in National Parks and AONBs in each DNO's area at an average cost of £100,000 per km. This approach results in wide variations in potential funding between the DNOs ranging from £0.8 million to £13.6 million. We are aware that some stakeholders are keen for Ofgem to allow further funding for undergrounding as part of this scheme. Respondents should note that allowances at DPCR4 were set based on customer research on willingness to pay and as such do not necessarily provide full funding for a DNOs' programme of undergrounding. As more undergrounding would result in customers paying more for their electricity, we are testing customers' willingness to pay for various levels of undergrounding as part of the consumer research for DPCR5. We will use the research findings to inform our views about an appropriate level of funding for the scheme going forward.

[42] Further details of the capital expenditure mechanism can be found in "Electricity Distribution Price Control Review: Final Proposals" Nov 2004, 265/04

2.77. Should the scheme continue for DPCR5? Should undergrounding be fully funded by the scheme or is it appropriate for DNOs to contribute funds? Should allowances be based on a uniform proportion across all DNOs as now, or is it appropriate to allow some flexibility in these amounts depending on stakeholder buy-in and DNOs' business plans?

Other activities

2.78. It is likely that there are other activities associated with the operation of a DNO's network not identified above that impact on their carbon footprint, such as fossil-fuelled mobile generation. We invite views on what other activities could be considered as an activity associated with the operation of a DNO's network that impacts their carbon footprint.

**DNO business carbon footprint**

2.79. One issue for DPCR5 is whether incentives should be placed on DNOs to reduce the direct carbon footprint of their businesses. The carbon footprint of a DNO's business operations is driven by a number of factors. Non-operational sources of GHG include energy use for the buildings that they occupy, the make-up of the fleet utilised to manage the network as well as how employees choose to travel.

2.80. We understand that all DNOs have been considering this issue albeit their progress so far seems to vary. Some DNOs are still developing their approach and are still gathering the relevant information. Some DNOs have already set up the framework for reporting and managing the impact of their own carbon footprint and data in some cases covers a period of up to five years.

2.81. For example, one DNO has started internal reporting on their environmental performance for DSA(s) (Distribution Services Areas) since 1997 and 2001 respectively. The data collected covers both operational and non-operational sources of GHG: energy usage at the premises, business transport (distinguishing between air, rail and road travels), associated activities (public postal services utilised, internal mail couriers, metering and stores courier services), other sources (gas turbines or diesel generation), system energy use (losses and theft) and SF6 emissions.

2.82. We are keen to understand the existing measures of carbon footprint being used by DNOs and, where appropriate, to reward companies that are already active in measuring and reducing their carbon footprint through any incentive scheme. We have considered publicly available information such as reports on Corporate and Social Responsibility, as well as internal information that some DNOs shared with us, such as dedicated reports and data on carbon footprint management.

2.83. We noted commonality on a basic set of data[43] albeit individual DNOs collected data against additional measures (e.g.: oil leakage from cables, emissions from postal services and internal couriers). We also noted that several DNOs make reference to DEFRA guidelines for the conversion to tonnes of CO2 equivalent[44], although in some cases the reports we analysed expressed the carbon footprint in terms of physical units. From the limited amount of comparable data we observed that operational losses and theft represent the vast majority of GHG emissions, 50 to 100 times greater than any other source of emissions.

2.84. The discussion above suggests that data availability is not homogeneous across DNOs; thus, estimates of the carbon baseline may not be based on solid empirical evidence in some cases. One way of alleviating this shortcoming would be to implement a discretionary reward scheme in the short-term. This might encourage some DNOs to lead on carbon footprint issues.

2.85. Ofgem is intending to host a workshop with the DNOs and other network operators to gain a greater understanding of the work currently being undertaken by the network companies to understand their own carbon footprint, to identify the alternative measures in building up a DNO's carbon footprint and to identify which measures are the most appropriate. While at least some of the DNOs have been collecting data on their carbon footprint, it may be that the measures that are being utilised are not consistent or there might be gaps as well as issues on the allocation of emissions among businesses of the same corporate group. We invite views on these issues.

[43] Broadly speaking: emissions from electrical losses, SF6, business travels, operational vehicles fleet, building energy usage.
[44] Additional guidance and calculation tools may be found in the context of international initiatives, such as the Carbon Disclosure Project (http://www.cdproject.net/index.asp) and the Greenhouse Gas Protocol Initiative (http://www.ghgprotocol.org/).

# 3. Customers

**Chapter Summary**

This chapter discusses the customer issues in DPCR5. It considers the role that the DNOs can play in improving customer service for all customers as well as particular customer groups. It assesses the existing regulatory framework and explores the scope for it to provide stronger incentives for DNOs to respond better to their customers' needs.

**Question box**

**Question 1:** Do the current regulatory arrangements deliver the levels of service that customers expect?
**Question 2:** Is the focus and scope of the current regulatory arrangements correct and are there any gaps that need to be addressed?
**Question 3:** Are DNOs customer focused enough or should they be doing more to improve communication with customers?
**Question 4:** Is DNOs' financial exposure set at the right level and/or do we need to change the emphasis in certain areas?
**Question 5:** Do you think we have identified the right issues and appropriate areas for development with the existing incentives?
**Question 6:** We have raised some detailed questions throughout this chapter. We welcome views on these issues.

## Introduction

3.1. A key objective of the price control review is to protect customers' interests by giving DNOs an incentive to run their networks efficiently and keep network costs reasonable. Customers care also about the quality of service they receive from their DNO and there is a risk that DNOs achieve cost efficiencies at the expense of service quality. The price control places incentives on DNOs to achieve reliability of supply and to address wider customer service issues. This chapter assesses the effectiveness of the regulatory framework in meeting these objectives and explores the scope for it to be developed and provide improved incentives for DNOs to be responsive to the needs of their customers.

3.2. Overall, existing quality of service incentives are working well and have delivered measurable benefits for customers. Nonetheless, we have identified some matters we would like to address as part of DPCR5. These include the service to customers who experience below average reliability of supply and providing incentives on DNOs to be more customer focussed and better at communicating across all their functions and activities. The latter is a particular objective of this price control review, given that energywatch's responsibilities will be transferred into the national consumer council (NCC) in October 2008 and DNOs will need to improve

their ability to communicate with customers or face a high volume of complaints being referred to the Ombudsman[45] - we discuss these new arrangements in more detail below. Given the role that we would like to encourage DNOs to take in tackling climate change, DNOs will also increasingly have to interact with the wider community, for example in exploring options for local demand side management.

3.3. From customer research we have conducted so far it is not clear to us at this stage that it is appropriate to raise the bar on current standards and incentives in all areas. Much of this chapter therefore focuses on widening rather than strengthening incentives.

## Customer Priorities

### Who are DNOs' customers?

3.4. Much of the existing regulatory framework for customer service is aimed at delivering improvements for all businesses and domestic customers nationwide. While DNOs contract directly with the electricity suppliers, the end users of the network consists of:

- domestic customers – both rural and urban,
- industrial and commercial customers – large and small,
- generators,
- IDNOs, and
- communities which depend on the network for local development and achieving policy objectives, for example around small scale renewable generation.

3.5. There are also minority customer groups with particular needs and priorities which need to be addressed within the scope of this review. For example, vulnerable customers that require special advice, information and services during supply interruptions and worst-served customers who may receive below average continuity and reliability of supply because of their location on poor performing circuits. Some of the arrangements in this chapter are specifically aimed at delivering improvements for these particular customer groups who require additional protection.

[45] The Consumer, Estates and Redress Act (CEAR) 2007 requires regulated energy suppliers and networks operators to be a member of an approved redress scheme to investigate and determine complaints relating to energy.

**What do customers want?**

3.6. The reporting mechanisms within DPCR4 and the research we have undertaken provide valuable information on customers' priorities and expectations for DPCR5[46]. Preliminary findings need to be treated with caution but can be broadly summarised as follows:

- customers are showing more resistance to paying for quality of supply improvements than in the past,
- customers place a high priority on receiving good communication during power cuts,
- environmental issues, such as energy conservation, are important to consumers, and
- customers still do not receive the quality of service they require or expect when seeking a connection to the network.

3.7. Some DNOs have started to undertake their own research to gain an understanding of the particular needs of their customers. We welcome this approach and invite DNO and industry respondents to provide details of any research programmes they have engaged in and any relevant findings as part of this review process so that we can obtain a broader view of customers' expectations.

*Apparent resistance to paying for quality of supply improvements*

3.8. The qualitative phase of our Consumer First research for DPCR5 suggested that customers question the need to pay more for a service that they are broadly happy with. Most respondents had experienced few problems with the reliability of their electricity supply and there were very few recent incidents of power cuts cited. In fact, most customers said that reliability had improved over the past three to five years. We will probe customers' willingness to pay for quality of supply improvements more thoroughly in quantitative research that we will publish in June 2008. Until this work is complete, the views from the qualitative research should be treated with care as they may not be representative of all customers' views.

3.9. The price sensitivity shown by customers in our qualitative research for DPCR5 is in contrast to the willingness to pay levels in the DPCR4 study[47], where customers gave high priority to reducing both the number and duration of power cuts in their

[46] Sources of consumer insight currently available to us include the monthly telephony survey, Consumer First research for DPCR5, consumer research from DPCR4 and customer complaints to Ofgem.
[47] For DPCR 4 customer research was used to identify key areas and relative importance of various quality of service attributes. Whilst incentives were strengthened the actual incentive rates adopted for DPCR4 were below those derived from the willingness to pay results given that it was the first time Ofgem had carried out such work.

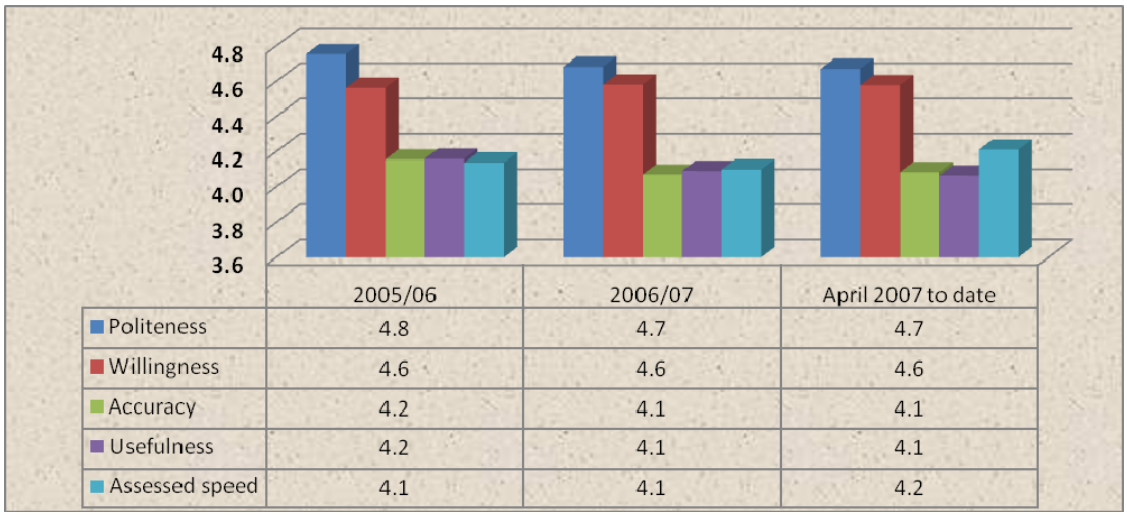
own area. This apparent shift in customers' views over the last four years may suggest that the improvements in performance have now led to a price/service package that customers are broadly content with. We will probe this issue further as part of our quantitative research to assess whether this is the case.

3.10. Our research, together with the DNOs' interruptions performance (explored later in this chapter) demonstrates improvements in customers' quality of supply. Nonetheless, customers located on poor performing circuits may not have benefited from the improvements in overall performance delivered by the incentive scheme. We also note from the DPCR4 study and from the qualitative phase of the DPCR5 study that few urban customers are willing to pay to ensure that rural customers receive a power supply as reliable as theirs. Arrangements for worst served customers merit particular attention as part of this review.

*Importance of good communication during power cuts*

3.11. A key finding of the DPCR4 research is that domestic customers place a high priority on receiving accurate and up to date information during power cuts. We currently use a monthly telephony survey to monitor customer satisfaction with the quality of the information provided by DNOs during power cuts. The findings of the telephony survey are shown in figure 3.1 and show that overall satisfaction with communication during power cuts has remained broadly constant since 2005-06. This matter will require further attention during DPCR5 and is discussed further in the Appendix seven.

**Figure 3.1 - Overall mean scores[48] for assessed attributes since 2005-06**




| | 2005/06 | 2006/07 | April 2007 to date |
|---|---|---|---|
| Politeness | 4.8 | 4.7 | 4.7 |
| Willingness | 4.6 | 4.6 | 4.6 |
| Accuracy | 4.2 | 4.1 | 4.1 |
| Usefulness | 4.2 | 4.1 | 4.1 |
| Assessed speed | 4.1 | 4.1 | 4.2 |

[48] Customers were asked to score the DNOs on a scale of 1 (very dissatisfied) to 5 (very satisfied) based on their experience of the telephone conversation they had with the DNO

*Importance of environmental issues to customers*

3.12. Preliminary findings from our research[49] indicate that environmental issues are important to consumers. Most customers felt they were doing what they could in terms of conserving energy, but had no idea what DNOs (or others in the energy supply chain) were doing in this area. Given the overriding sense that global warming is creating unstable weather conditions, many respondents indicated that they would like to learn what those in the energy supply chain are doing to safeguard the environment and plan for the future,. Respondents also saw benefits to replacing overhead lines with underground cables, particularly in National Parks.

3.13. As part of the quantitative research we will look at consumers' views of the role of DNOs in mitigating their impact on the environment. We plan to assess customers' willingness to pay for environmental measures and this is discussed further in the Environmental Chapter.

3.14. In a separate study in June 2007 we engaged with consumers in a public consultation about energy and the environment[50]. A key finding from the research was that consumers think responsibility to tackle the environmental impact of energy should be shared equally between Government, industry and consumers. Also, there was general acceptance that consumers, as citizens, will have to shoulder some of the burden of payment for energy efficiency measures.

*Connections services are still an issue for some customers*

3.15. Customer complaints to Ofgem and to energywatch provide a useful indicator of the areas of concern for customers. Recent figures in this area indicate that most complaints to Ofgem concern either the costs involved with or the quality of service received when seeking a connection.

**Table 3.1 - Volume and type of electricity distribution complaints to Ofgem (April 2006 until present)**

| Category of complaint | Authority determination | Informal Advice | Referrals to energywatch |
|---|---|---|---|
| DT.1 - Quality of supply | 0 | 1 | 150 |
| DT.2 - Reliability of supply/supply distribution | 0 | 0 | 70 |

[49] "Expectations of DNOs & Willingness to Pay for improvements in service - stage one - qualitative report" December 2007
[50] Consumer research on energy and the environment (144/07) http://www.ofgem.gov.uk/Sustainability/Environmnt/Policy/Documents1/Stimulating%20World.pdf

| Category of complaint | Authority determination | Informal Advice | Referrals to energywatch |
|---|---|---|---|
| DT.3 - Connections/alterations of supply | 11 | 137 | 291 |
| DT.4 - Difficulty or delay in obtaining a connection | 0 | 0 | 200 |
| DT.5 - Excavations/Reinstatement | 0 | 1 | 31 |
| DT.7 - Network safety | 0 | 1 | 11 |

3.16. energywatch has also commented that consumers complain of the poor service they receive when they contact DNOs about obtaining connections and alterations to their supply. After quotes are obtained and paid for, DNOs sometimes fail to communicate effectively, or at all, about the works unless prompted by consumers. energywatch currently plays an important role in handling these matters on behalf of consumers but will cease to exist in October this year. DNOs need to sharpen their communication with customers on connections and other matters if they are to avoid a high volume of complaints being referred to the Ombudsman.

3.17. We invite respondents to share data on the volume and categorisation of DNO complaints from their experience.

## Current arrangements and development for DPCR5

3.18. This section considers the pros and cons of the existing regulatory framework for customer service and seeks to identify gaps which should be addressed. We need to bear in mind changes to customer representation when considering developments for DPCR5. We set out these changes before discussing the possible developments in more detail.

**Table 3.2 - Summary of current incentives and areas for development**

| Incentive | Revenue Exposure | Effectiveness | Issues | Suggested Developments |
|---|---|---|---|---|
| Interruption incentive scheme | +/- 3 % | Effective overall:<br><br>The average number of interruptions has fallen ten per cent and the average number of customer minutes lost has fallen four per cent since 2002. | May not deliver improvements for customers who experience below average reliability of supply.<br><br>Increase in short interruptions.<br><br>Limited incentive to perform well during exceptional events.<br>Different incentive | Possible new mechanisms related to worst served customers and short interruptions.<br><br>Utilise more/better data to set targets.<br><br>Include part of exceptional events in the scheme or raise exceptional event thresholds. |

| Incentive | Revenue Exposure | Effectiveness | Issues | Suggested Developments |
|---|---|---|---|---|
| | | | rates result in different penalties and rewards. | Possibly equalise incentives rates for all DNO, while varying other elements such as the bandwidths. |
| Telephony incentive scheme | +0.05% to -0.25% | Effective overall:<br><br>Improvement in industry average since inception of scheme. | The survey does not cover the large proportion of customers that use automated messaging.<br><br>Opportunity to elicit a wider scope of information.<br><br>No financial weight is applied to the key measures e.g. the number of unsuccessful calls. | Possibly extend scheme to cover customers dealt with by messaging.<br><br>Broaden survey to cover wider aspects of customer satisfaction and streamline existing assessed attributes.<br><br>Possible incorporation of financial incentives on key measures.<br><br>Explore scope for incorporating existing telephony survey into DNO customer satisfaction surveys. |
| Guaranteed standards of performance | N/A | Effective overall:<br><br>Severe weather standards and revised normal weather standards have successfully been tied to exemptions claimed and enabled DNOs to provide clarity to customers regarding compensation levels and eligibility.<br><br>No standard | Business customers consider compensation levels as too low.<br><br>The 18 hour trigger point for the normal weather standard may be too lenient.<br><br>Multiple interruptions less than three hours are not covered regardless of frequency. | Explore business compensation arrangements and the trigger point for compensation associated with supply restoration in normal weather conditions taking into account the results of the quantitative consumer research.<br><br>Possibly introduce a total duration standard.<br><br>Introduction of a standard that |

| Incentive | Revenue Exposure | Effectiveness | Issues | Suggested Developments |
|---|---|---|---|---|
| | | exists for complaint handling as it does in gas. | Complaint handling standard exists in gas and symmetry between the regulatory arrangements between gas and electricity would provide clarity for consumers. | provides timescales and compensation levels for resolving complaints. |
| Connections - Licence condition SLC4F and minimum performance indicators | N/A | Currently monitoring effectiveness:<br><br>Concerns about the pace at which competition is developing<br><br>Concerns about service levels | Emerging competitive market needs support.<br><br>The service that some customers receive is still inadequate.<br><br>Concerns regarding anti-competitive behaviour. | Introduction of financial incentives to respond to requests for connections within a timeframe.<br><br>Extended licence obligations.<br><br>Standard pricing mechanisms to regulate connection charges for domestic customers.<br><br>Possible one-off revenue adjustments/awards for particular leadership in connection related activities.<br><br>Possible structural separation. |
| Customer service reward scheme | Up to +£1m reward per year | Has fostered a variety of programmes and projects in excess of minimum requirements. | Desire to encourage adoption of best practice further. | Incorporation of best practice from DPCR4 into licence conditions.<br><br>Increase awards.<br><br>Bring environmental issues within scope. |

**Consumer redress**

3.19. Recent changes in this area as a result of the new CEAR Act will impact on the consumer engagement process for DPCR5 and may inform respondents' views of the package of quality of service incentives to be developed.

*Redress schemes*

3.20. As a result of the CEAR Act, every network operator may be required[51] to become a member of an approved redress scheme. Consumers may refer complaints to the scheme once the DNO has had an opportunity to resolve them, so that they are investigated and determined by an independent person. Redress schemes are not intended to replace the network operator's own complaints handling service or provide a back-up service for network operators who are unable to provide an adequate complaints handling service themselves. In fact it will be a pre-requisite for membership of an approved redress scheme that the DNO must have effective complaint handling procedures in place. We have recently consulted on the approval of redress schemes in the energy sector[52] and will seek to take forward this work within the remit of that consultation process.

*Complaint handling*

3.21. The CEAR Act also placed a new requirement on Ofgem to set complaint handling standards. We have recently consulted on the scope of the standards[53] and will seek to take forward this work within the remit of that consultation process. Nonetheless, we are interested in respondents' views as to whether the scope of the new redress and complaint handling standards will be sufficient to provide adequate redress to electricity distribution customers. We note that for the gas distribution price control review (GDPCR), a guaranteed standard on complaint handling will be introduced for the gas distribution networks (GDNs) on 1 April 2008 and will prescribe timescales and compensation levels relating to complaint handling. Respondents should consider whether a similar standard is required for DNOs or whether the new arrangements will adequately address DNOs' complaint handling processes.

*Consumer representation*

3.22. With energywatch's responsibilities being transferred to the new NCC, we are conscious of the need to maintain consumer input during the transition period which will take place at a crucial stage of DPCR5. Once the consumer research for DPCR5

[51] By Order made by the Secretary of State
[52] Approval of Redress Schemes in the Energy Sector (247/07)
[53] Complaint handling standards (272/07)

is complete, we see a need for continued consumer insight on the price control process and anticipate a role for a consumer panel in delivering this.

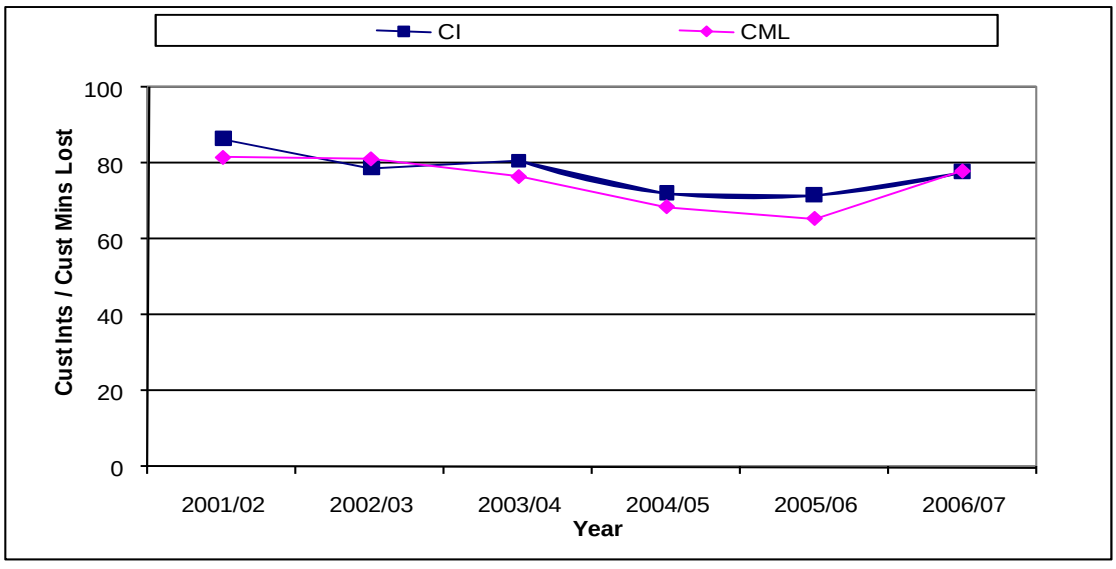
3.23. We are keen to involve customers more widely in the DPCR5 process. We intend to establish a small consumer orientated challenge group of expert consumer representatives to act as an advisor/challenge to the Authority sub-committee on the more technical and complex issues associated with DPCR5.

**Quality of service interruptions incentive scheme (IIS)**

3.24. The IIS has worked well in reducing both the number and duration of interruptions to supply, with the underlying average number of interruptions falling by ten per cent and the underlying average number of customer minutes lost has fallen by four per cent since the introduction of the initial scheme in April 2002. This is shown in Figure 3.2. The development of an "exceptional events" mechanism has enabled the IIS to focus on underlying performance.

3.25. One potential drawback of the IIS is that it does not provide incentives for DNOs to improve service to customers who experience below average reliability of supply. We invite views on whether the IIS could be developed to provide these incentives. A definition of worst-served customers will need to be developed in consultation with industry and then a mechanism could be built around it. Three possible options for the mechanism are explored in Appendix seven.

**Figure 3.2 - Underlying customer interruptions (CIs) and customer minutes lost (CML) performance**




3.26. Under the current IIS many DNOs have been very successful in reducing both the number and duration of interruptions, although in many cases this has led to an

increase in short interruptions[54]. We are keen to get respondents' views on whether this move from longer interruptions to short interruptions is desirable, and if not, what they would like to see altered.

3.27. Under the current design of the IIS the value of an interruption varies across the country, with the highest CI incentive rate per customer being £13.40 and the lowest being £4. One option could be to equalise incentive rates across all DNOs, thereby making an equivalent investment decision deliver the same incentive benefit to all DNOs. This would require another element of the IIS to vary, such as the percentage of revenue exposed to the IIS or the band widths around the targets. Whether it is appropriate to make such a change will be informed by the results of the willingness to pay work.

3.28. We would welcome views on the need and extent to which exceptional events are removed from the IIS. Removing exceptional events from the IIS allows the mechanism to focus on underlying performance, yet it can be argued that it reduces the incentive on DNOs to perform well during exceptional events. On the other hand, the IIS at present does include a significant element of volatility from events which fall below the exceptional events criteria and it is arguable as to the benefits to customers from a greater inclusion of volatility. Including more events going forward would necessitate building these into the targets set for DNOs and this may dampen the incentive to improve day to day performance.

**Quality of telephone response**

3.29. The inception of the telephony scheme in 2001-02 worked well in driving improvements in service levels across the DNOs and in recognition of this at the last price control we altered the form of the scheme into a backstop scheme, which sets a minimum required level of performance. Over the course of this price control period some DNOs have achieved the small rewards available for outperforming, whilst to date only one DNO's performance has fallen below the backstop and resulted in a penalty. Details of rewards and penalties for DPCR4 so far are outlined in the annual Electricity Distribution Quality of Service Reports[55].

3.30. This aspect of the regulatory framework involves Ofgem making over 12,000 contacts per year with DNOs' customers to discuss their satisfaction with information given to them when they have had a power loss or an emergency. We would like to explore the potential for eliciting more information from this contact opportunity. We are interested to hear respondents' views on whether we should amend the scope of the survey to cover broader views and experiences of customer service as opposed to just the quality of call handling.

[54] Loss of supply of electricity where supply is restored in less than three minutes
[55] 2006/07 Electricity Distribution Quality of Service Report (268/07)

3.31. We are aware that GDNs are required to undertake their own customer satisfaction surveys. Currently many DNOs undertake some form of customer satisfaction survey themselves in addition to Ofgem's telephony survey. One option would be to require DNOs to incorporate Ofgem's telephony survey into their own customer satisfaction surveys. We are also interested to hear views on whether there are other ways of encouraging DNOs to communicate well with their customers and local communities.

3.32. In reviewing the scope of the telephony scheme, we invite respondents to consider whether the current scheme provides a clear picture of the quality of DNOs' customer handling. One drawback of the current scheme is that it only surveys customers that have spoken to an agent, yet a substantial proportion of calls (42 per cent across the industry, 80 per cent the highest) make use of automated messaging. Previous attempts have been made to extend the scheme to cover customers dealt with by messaging but these were unsuccessful due to data protection legislation issues. We would welcome views on possible approaches to take in this area (see Appendix seven for fuller discussion).

3.33. Currently DNOs provide Ofgem with data on key measures, including the number of unsuccessful calls as specified in our regulatory instructions and guidance document. To date no financial weight has been applied to these statistics and it is our view that the telephony incentive scheme for DPCR5 should incorporate some physical data, rather than be based entirely on a survey of customers that have spoken to an agent.

**Guaranteed standards of performance**

3.34. The current guaranteed standards cover a range of service areas, as shown in Appendix seven. Key standards include standards for supply restoration under "normal weather" conditions and "severe weather" as well as a standard relating to notification of planned interruption to supply. For each standard there is a trigger and associated level of compensation.

3.35. The introduction of the new severe weather standards and the revised normal weather standard has been very successful both in tying the standards to exemptions claimed under the interruptions incentive scheme and in enabling DNOs to provide customers with clarity regarding compensation levels and eligibility swiftly after events. However, many of the current standards were set before DPCR4 and we would welcome views as to whether they still cover the right areas and offer adequate levels of compensation.

3.36. Also, business customers believe that the current levels of compensation are too low and this is a matter we want to explore in DPCR5. Our historical approach has been that it is not technically feasible to offer alternative levels of service to business and domestic customers who are connected to the same network. Business customers are also felt to be better placed to negotiate directly with their DNO to achieve a level of service more suitable to their needs, without requiring major re-

enforcement of the local network and the potential for smearing the costs across both domestic and business customers. We would welcome views on this matter.

*GS2 Supply restoration – normal conditions*

3.37. At present customers are eligible for compensation for single interruptions lasting at least 18 hours, or four or more interruptions lasting at least three hours each. There is currently no standard covering single interruptions less than 18 hours or multiple interruptions lasting less than three hours. One option could be to introduce a "total duration" standard, which could provide additional protection for customers by compensating them for a set loss of hours over the course of the year, irrespective of the individual duration of those interruptions.

3.38. Initial feedback from the customer research for DPCR5 is that both domestic and business customers believe the current 18 hour trigger point for the normal weather standard is too lenient. The quantitative phase of the research should provide us with clearer views on where customers would like to see this standard set. We should also have a better idea of the levels of compensation that business customers believe to be adequate and their willingness to pay to increase compensation levels.

*Complaint handling*

3.39. Respondents are also asked to consider whether an additional standard is required on DNOs in respect of complaint handling. As noted previously, there will be a new guaranteed standard on gas transporters from 1 April 2008 that will prescribe timescales and compensation levels relating to complaints handling. Under this new guaranteed standard, on receipt of a written or telephone complaint, the gas transporter shall despatch a substantive response to the customer within ten working days from the date of the receipt of the complaint, or pay the customer £20 up to a cap of £100 per customer. Views are invited as to whether such a standard is necessary in electricity to provide individual customers with enhanced protection. From a consumer redress perspective, consistency between the regulatory arrangements in gas and electricity is desirable to provide clarity to customers. We note that network companies will be required to have complaint handling processes in place in accordance with new regulations prescribed by the CEAR Act. Nonetheless, the CEAR standards are designed to improve complaint handling procedures overall and do not provide compensation to individual customers as a guaranteed standard would.

**Connections**

3.40. Ofgem supports competition in connections as a means to provide customers with choice, good service and value for money. Since 2000 we have worked with industry to make competition in connections a reality. DNOs have an obligation to provide non-contestable services such as network reinforcement associated with new connections. We are concerned however, at the pace at which competition is

developing and more importantly, that the service that some customers receive is still inadequate.

3.41. Last year we put in place several measures, including new licence conditions on DNOs, to support competition and to provide a better quality service to customers[56]. We have given the DNOs an opportunity to improve performance under these new measures before taking any further action[57] and will be monitoring performance against the new licence condition and voluntary standards. We are particularly interested to see what progress DNOs make in: making more information available to customers about how their connections request will be managed; informing customers about their choices and options over connections' provider; being more transparent over their costs by providing breakdowns of connections' costs; and taking more responsibility by introducing visible and robust dispute processes when customer raise disputes.

3.42. We seek views on whether Ofgem should progress further connections related changes through DPCR5 to further improve service to customers and support an emerging competitive market. Measures we could introduce include placing specific financial incentives on DNOs to respond to requests for connections within a particular timeframe, introducing more licence obligations (for example on provision of quotations and the completion of connections works) and regulating the level of connections charges for domestic customers (and other customers where effective competition is unlikely to develop) through standard pricing mechanisms.

3.43. If competition proves to be ineffective and concerns regarding anti-competitive behaviour continue to be brought to our attention we may need to consider structural separation of DNOs' connection businesses. That is, the separation of contestable and non-contestable activities into separate ring-fenced businesses.

3.44. More generally there may be scope to provide one-off revenue adjustments or awards to any DNOs showing particular leadership in relation to any connections related activities (including unmetered connections services).

3.45. Related to the development of competition in connections is the treatment of connection costs as part of the price control. Some DNOs have raised concerns with the treatment of costs and customer contributions for contestable connection works. Currently all connection costs are treated in the same manner and added to the

[56] To support competition we: included a standard licence condition (SLC 4F) regarding the provision of non-contestable services; published our decision on measures required to improve the unmetered service level agreement (SLA); set out a number of good practice principles that were designed to improve the way that DNOs manage customer interfaces. For further information refer to
Review of competition in gas and electricity connections: proposals document (26/07).
[57] We will review and publish DNO performance against the new measures in Ofgem's Connections Industry Review (CIR) in August 2008.

regulatory asset value (RAV) net of any customer contributions. This approach in effect strips out margins (if any) charged by the DNO on contestable connections work. DNOs have argued that they should be able to earn a margin on contestable connections as the activity is competitive and competition will limit the extent to which any margins can be included in connection charges. This could be facilitated by excluding these costs and contributions from the price control.

3.46. We have acknowledged that where competition exists, for instance in a particular market segment, a different approach could be adopted within the price control, as proposed through the recent GDPCR. However, the evidence to date and as detailed in our annual Connection Industry Review[58] does not identify any segments of the connections market where competition is effective and our initial thinking would not be to change our approach at this time. Any change may also interact with some of the options identified above and we welcome views.

**Customer service reward scheme**

3.47. This discretionary reward scheme aims to encourage DNOs to improve service in ways that cannot be easily measured or incentivised through more mechanistic regimes. The scheme rewards leading performance, innovation and excellence within the industry and drives innovation and creativity through the promotion of best practice. The focus of the scheme in the current price control period is on priority customer care initiatives, corporate social responsibility and wider communications strategies. Each year there is a total of £1 million reward available across the categories, with entries evaluated by an independent panel.

3.48. This scheme has been successful in bringing about a wide variety of DNO programmes and projects which are over and above the minimum licence requirements and we intend to continue the scheme into DPCR5. Some examples of best practice initiatives that have been widely adopted amongst DNOs are:

- customer support vehicles and winter packs to provide assistance for vulnerable customers during interruption,
- staff participation in educational projects which relate to the industry and its work, and
- work with community groups, MPs and the media to raise customer awareness of the priority services register.

3.49. Tables nine and ten in Appendix seven, set out the rewards that have been made under the scheme so far and some examples of best practice that have been commended by the panel.

[58] Gas and Electricity Connections Industry Review 2006-07 (215/07)

3.50. We intend to review the scope and value of the current electricity reward scheme. DNO's performance in tackling climate change is one area that could be incorporated into the scheme and the amount of reward associated with the scheme might also increase. We note concerns expressed by some DNOs that an extension of the scheme could offer a weak incentive to improve performance and that extending the scheme into other areas may not be in the best interests of customers because rewards are uncertain and investments less justifiable. We are not minded to extend discretionary reward arrangement to replace any existing incentives. We are committed to continue using the scheme to incentivise performance above and beyond the minimum requirement in areas that are less mechanistic.

3.51. The present scheme encourages the adoption of best practice but there may be a desire to raise the bar across all DNOs. This could be achieved by incorporating best practice from DPCR4 into the licence conditions of all the DNOs for DPCR5.

## Way forward

3.52. Following this consultation we will be considering responses alongside findings from our own customer research and wider stakeholder engagement which we will use collectively to develop detailed customer focused incentives. We would like to draw respondents' attention to ongoing work that we hope will provide useful consumer insight for the development of customer incentives.

### Consumer First Research for DPCR5

3.53. In August 2007 we commissioned Accent to undertake a two phase consumer research study. We used the qualitative stage to engage directly with customers to gain an understanding of their expectations and priorities for quality of service improvements and the detailed findings are published on our website[59]. The quantitative stage of the research will use questionnaires and stated preference exercises focusing on key outputs and relative priorities identified at the qualitative stage to gain a detailed understanding of willingness to pay for service improvements.

3.54. We expect to publish the full findings, including the quantitative willingness to pay work by June 2008. Respondents will be invited to provide views on the implications of the research findings. We intend to use the findings to identify consumers' relative priorities and expect to be able to factor this into our decision making on the appropriate strength and breadth of financial incentives. We also expect to make use of this information in assessing the appropriate quality of service

[59] "Expectations of DNOs & Willingness to Pay for Improvements in Service" Stage One: Qualitative Report, December 2007

targets and reviewing companies' forecast expenditure in areas such as resilience and flooding.

3.55. The research findings are not just for Ofgem's use and we encourage DNOs to make full use of them in developing their own forecasts and identifying areas to explore further with their own customers. If the willingness to pay results from this survey are robust there may be scope to strengthen or weaken incentives.

**Further focus groups**

3.56. Following on from the DPCR5 research study, we will be holding additional focus groups to establish whether there have been any shifts in customers' views and priorities that we need to take account of. We intend to conduct these groups in September-October 2008 and again in September-October 2009. The scope and approach of this additional research is yet to be determined, but will be developed in consultation with the Consumer Research Working Group chaired by Ofgem.

3.57. We also see the need for some consumer research focused specifically on the expectations, experiences and priorities of worst-served customers. We intend to hold these groups over the summer and will publish our findings in the December policy paper. The findings from these groups will feed into our work on a possible incentive mechanism for worst-served customers.

**Quarterly connections reports**

3.58. Under standard licence condition 4F we are receiving quarterly reporting from DNOs against the specified performance targets. The licence condition is an annual performance measure. For 2007-08 the licence condition will be in force for part of the year only.

# 4. Networks

**Chapter Summary**

In this chapter we discuss the current incentives placed on DNOs to build, maintain and develop their networks efficiently, provide our preliminary assessment of the current arrangements and the issues facing networks over the next price control period before setting out our ideas for assessing costs and incentivising efficiency in DPCR5. We also provide guidance on the timetable and approach we expect DNOs to follow in developing their forecasts for the next price control period, including the role that DNO stakeholder engagement should play in these forecasts.

**Question 1:** Have we captured all the key lessons learnt from DPCR4 regarding cost assessment?
**Question 2:** Is our approach to cost assessment appropriate?
**Question 3:** Are there alternative approaches to cost assessment that we should be considering?
**Question 4:** How might our approach to benchmarking be improved?
**Question 5:** Have we captured all the key issues for "networks"?
**Question 6:** Is our building block approach to forecasting appropriate?
**Question 7:** What is the scope for developing additional outputs measures and how can these be incorporated into the price control?
**Question 8:** What is the best way for DNOs to gain stakeholder input to their forecast business plans and how should Ofgem facilitate/incentivise this?
**Question 9:** Is the IQI and capex rolling incentive the best way to ensure realistic forecasts and efficient investment?
**Question 10:** How might the IQI and capex rolling incentive be improved or what additional measures could supplement them?
**Question 11:** Should we aim to equalise incentives on network investment and business costs and how could this be achieved?
**Question 12:** Is the timetable realistic?

## Introduction

4.1. The main role of the electricity distribution network is to carry electricity from the transmission systems and some generators that are connected to the distribution networks to industrial, commercial, and domestic users. As operators of the electricity distribution network, the DNOs are required to ensure that the network is efficiently built, maintained and developed to take account of customer needs and environmental issues.

4.2. In this chapter, we discuss the current incentives placed on DNOs to build, maintain and develop their networks efficiently. We provide our preliminary assessment of the current arrangements and the issues facing networks over the next price control period. We then set out our ideas for assessing costs and incentivising efficiency in DPCR5. We also provide guidance on the timetable and approach we expect DNOs to follow in developing their forecasts for the next price control period, including the role that DNO stakeholder engagement should play in these forecasts.

## Background

4.3. Each DNO currently has a base revenue allowance which we built up during DPCR4, in part, from assumptions on the capital and operating expenditure required to deliver their required outputs.[60] Capex in general refers to investment in network assets (whether to handle increased load or to replace old assets or assets that are performing poorly) whereas opex refers to the day-to-day operating costs of the network.

4.4. The average annual DPCR capex allowance for all DNOs is £1.4 billion (in 2006-07 prices) and the average annual opex allowance is £665 million (in 2006-07 prices). We arrived at the base allowances following an assessment of:

- costs directly related to the maintenance, replacement and reinforcement of network assets (direct costs), and
- other costs associated with running the business (indirect costs).

4.5. We have developed rules to determine the proportions of these costs that are capex, which are recoverable over the life of the asset and opex, which are recoverable in the year in which they are incurred. Capex is entered into the RAV, a measure of the value of the regulated business, based on past investment[61]. We use the cost reporting process each year to determine an indicative RAV for each DNO.

4.6. The companies are incentivised to realise capex efficiencies by allowing them to keep a proportion of any cost savings from spending less than the capex allowance over a five year period (and vice versa), regardless of when in the five year period this occurred. In addition DPCR4 incorporated an IQI to encourage more realistic forecasts from the companies. It does this in two ways - by giving additional income to DNOs who forecast spend close to our assessment and by providing these DNOs with a higher incentive rate than those DNOs with higher capex forecasts, thereby increasing their rewards for outperformance. To incentivise the companies to realise

[60] Financial costs such as pensions and taxation are also key components of determining required revenues and are discussed in more detail in the financial issues chapter. There are also a number of costs that are outside the direct control of the DNOs and are therefore given pass-through treatment in the price control. These include licence fees, network rates and transmission exit charges.

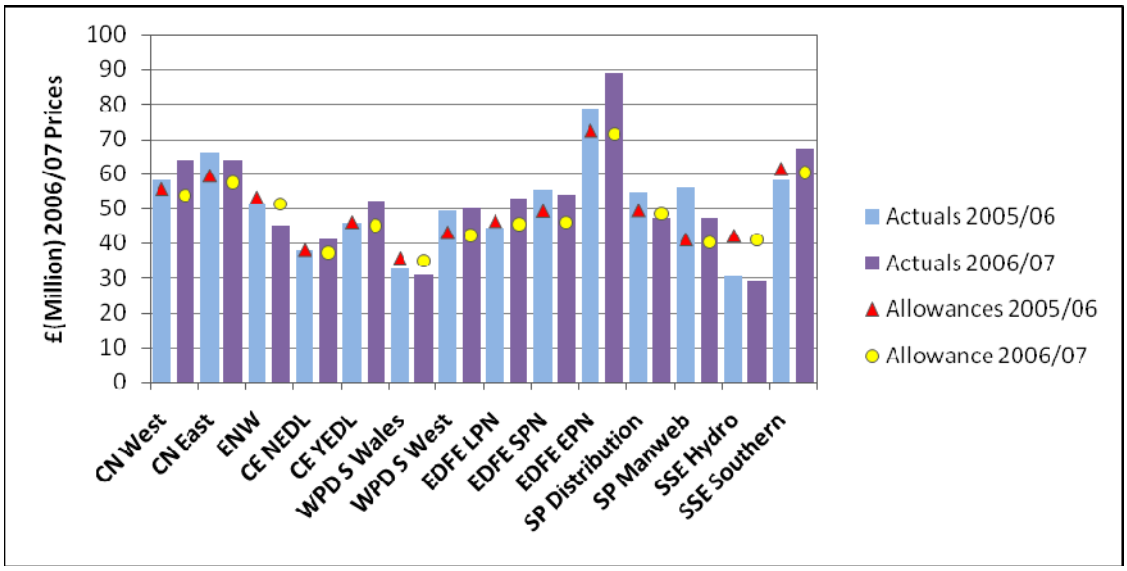
[61] In DPCR4 we have allowed the following categories of costs to be included in the RAV:
a)100 per cent of net non-fault operational capex;
b)23.5 per cent of opex plus fault costs;
c) 57.7 per cent of pension costs, and no part of other costs.Net non-fault operational capex includes all direct investment costs and 38 per cent of indirect costs. Opex plus fault costs included 100 per cent of fault costs, non-operational new assets and replacement costs, inspection and maintenance costs and tree cutting costs, and 62 per cent of indirect costs.

opex efficiencies they are allowed to keep any opex underspend but have to bear any overspend during the price control period.

4.7. We collect data from DNOs on an annual basis through Regulatory Reporting Packs (RRP). So far in this price control period (since April 2005) DNOs have in general underspent against their capex allowances and overspent against the opex allowance. This is shown in the diagrams below. Further details are provided in the annual cost report[62].

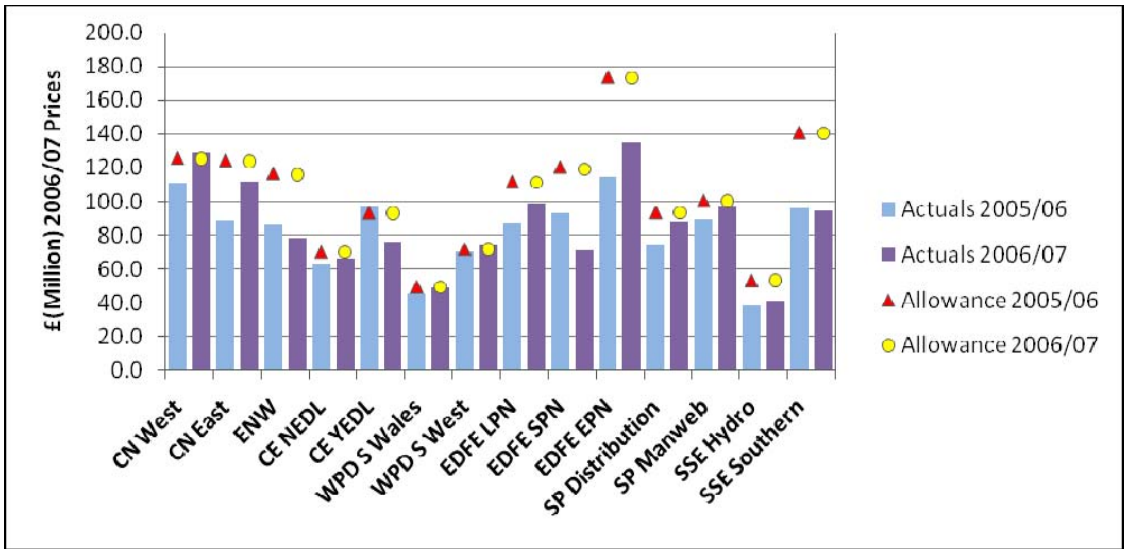
4.8. The DNOs' explanation of the capex underspend is that they have faced delays in mobilising resources to implement investment plans. They expect their capex to ramp up over the remaining three years of this period. The DNOs argue that opex overruns are due to low levels of allowances in DPCR4 and rising input costs and they expect this trend to continue over this price control period.

**Figure 4.1 Opex performance against DPCR4 allowances**




[62] 2006-07 Annual cost report
http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/CostRep/Documents1/Elec%20Dist%20Cost%20Review%20200607%20ref%2028907.pdf

**Figure 4.2 Capex performance against DPCR4 allowances**




## Key network challenges in 2010-2015

4.9. When assessing the DNO cost requirements in DPCR5 we will have regard to the challenges the networks are likely to face over the period from 2010 to 2015 and to the plans that DNOs have in place to deal with these challenges. Challenges fall into 3 main categories:

- cost and delivery,
- customer driven, and
- environmental and policy.

4.10. We set out below our initial understanding of the key challenges.

### Cost and Delivery challenges

4.11. The cost and delivery challenges that DNOs have highlighted during the annual RRP visits suggest that DNOs capex and opex requirements might increase over the next price control period. The challenges include:

- increasing levels of required investment across the sector (primarily to replace ageing assets),
- scarce resources (internal and in the contracting market),
- increasing material and labour costs,
- difficulties in obtaining planning permission,
- the age profile of workforce,
- long lead times for manufacturing capacity,
- outage constraints, and

- the increasing impact of copper theft.

4.12. As part of their submissions we will look to DNOs to explain more fully the nature and impact of any cost and delivery challenges that are facing their businesses. We will also look for details of any mitigation measures that have been employed, or that are being implemented, and information about their effectiveness.

4.13. In DPCR4 the DNOs made a compelling case for significant increases in allowances, mainly due to an increased replacement programme as a result of an ageing asset base. DNOs have highlighted that they have experienced difficulty in ramping up network investment due to a number of factors including: shortage of skilled labour (internal and external), delays in mobilising the contractor base, delays to major reinforcement projects due to planning issues and adverse weather conditions diverting resources. The DNOs will require a considerable increase in expenditure to get close to the allowances provided for in DPCR4. We will need to take past performance in delivering investment into account, as well as the need for future asset replacement when considering cost requirements in DPCR5.

**Customer-driven challenges**

4.14. Changing requirements of network users also have a major impact on the network and required level of investment. The key issues for the upcoming control period are:

- connection of DG,
- changes to demand profiles (such as summer peaking demands etc.),
- connection of offshore wind generation,
- energy efficiency and demand side management (DSM) and reducing demand for other reasons (in some parts of the country),
- possible requirements for active networks to manage DG and DSM, and
- accommodating bi-directional flows on the network.

4.15. In some cases (for example lower demand) these factors might reduce costs on the network while in others they may entail higher network costs (for example movement of demand may increase reinforcement costs even if overall demand is static).

4.16. We expect DNOs to have a clear idea of the magnitude and impact of these factors on their networks, which in part will have been formed from engaging with local stakeholders, and to distinguish between those factors that they can control and those which they cannot.

4.17. Ofgem recognises that there are areas of network investment where there is a high level of uncertainty, particularly for user driven investment such as new connections. Where appropriate, we will look to introduce revenue drivers to reduce volume risk but retain efficiency incentives for unit costs. Revenue drivers can be used to flex revenues according to actual loads, customers or other user driven requirements. Triggers can also be used to allow additional costs at predetermined

levels of the driver. Use of revenue drivers reduces the risk to customers and DNOs that the outturn is based on factors that are materially different from the assumptions used in setting the allowances.

**Environmental and policy challenges**

4.18. There are a number of physical and environmental challenges which may also impact on networks such as:

- extreme weather impacting network performance (e.g. storms and flooding),
- reduced maintenance and construction windows due to changes in weather patterns, and
- changes in ambient temperature impacting equipment ratings, ground conditions, tree growth and leaf cover.

4.19. In addition there are a number of environmental policy issues with network impacts which we discuss in Chapter 2:

- the connection of DG and the increased use of DSM,
- management of fluid filled cables, transformer oil and SF6,
- expenditure on improving visual amenity,
- loss reduction, and
- carbon footprint of network activities (e.g. the use of temporary generation).

4.20. In DPCR4, there were a number of uncertain costs created by changes in legislation such as the changes to the ESQCR. We introduced a reopener mechanism into the licences to reduce the risk to DNOs and customers due to the uncertainty regarding future costs. The reopeners provide for an assessment of the costs associated with changes in legislation which is then used to revise DNOs' allowed revenue.

4.21. We recognise that there are likely to be a number of sources of uncertainty during the next price control period including the speed at which new generation capacity is connected to distribution networks and the general trend in electricity demand. We will consider whether this is best dealt with by volume drivers or trigger mechanisms, reopeners or allowing DNOs to log up expenditure for Ofgem to consider at the end of the price control period.

## Approach to cost assessment in DPCR5

4.22. We have a number of objectives for our cost and outputs work in DPCR5, mainly based on the lessons learned from the last price control review. These are to:

- improve the incentives faced by DNOs to make efficient investment,
- remove distortions in the current control,

- make best use of the data we have collected through our annual Regulatory Reporting Packs, and
- increase the capacity for the price control to reflect the specific business needs, strategies and objectives of each DNO.

4.23. We discuss these objectives in a little more detail before discussing our approach to cost and output work in DPCR5.

**Objectives**

*Improving investment incentives*

4.24. The price cap does not determine the level of capital expenditure DNOs make. That is driven by business needs taking into account statutory obligations, environmental and social impacts. DNOs can overspend against the allowance set at DPCR4 and must do so if required to meet their statutory and licence obligations but they will bear a proportion of the cost of this overspend based on the strength of the efficiency incentive. These arrangements were put in place to encourage DNOs to make the investments that are required to meet their licence and statutory obligations/responsibilities both now and in the future. But the evidence on capex, for example actual expenditure to date relative to the forecasts made at DPCR4, suggests that DNOs may still have an incentive to over-forecast and/or beat capex allowances rather than making efficient investments.

4.25. Ofgem recognises the importance of good asset stewardship. Central to this is ensuring that DNOs are not encouraged to make short term efficiency gains at the expense of securing efficient investment that addresses the long term needs of the network. We have emphasised the importance of good asset stewardship, for example through our encouragement of PAS55[63] certification. We will look to develop this further in DPCR5. In DPCR5, we will consider whether there are alternative, more suitable incentives that can be applied to encourage efficient network investment. One aspect of this will be our work to further develop suitable network output measures related to network investment. This is discussed in more detail below.

*Removing distortions*

4.26. Different categories of costs are entered into the RAV in different proportions. There is an incentive on DNOs to report costs in a way that maximises the amount of costs that can be entered into the RAV (increasing one measure of the business value) and to minimise the value of opex (thereby appearing relatively more

[63] BSI-PAS 55 is a certification scheme (in some cases through self-certification) demonstrating the attainment of certain minimum standards in asset management.

efficient). For example, DNOs may seek to maximise RAV by reporting faults costs as asset replacement or indirect costs as direct costs. This may be partially offset by incentives to obtain a sustainable opex allowance going forwards as reporting rules are clarified.

4.27. The incentive to capitalise costs may also create a perverse incentive on DNOs to undertake activities that have a higher proportion of capex (such as outsourced activities) where opex might have been more efficient. In DPCR5, we will aim to remove these distortions particularly by reconsidering how costs are categorised and the consequent incentives.

*Use of cost reporting data*

4.28. As a direct result of difficulties experienced during DPCR4 in obtaining consistently reported historical levels of expenditure we required DNOs under SLC 52 to report their costs on an annual basis instead of providing these data every five years through the price control review. The cost data is captured now via a regulatory report pack (RRP) which includes both spreadsheet data and a written narrative. The main objectives of the annual cost reporting are to:

- develop consistent costs reported at an appropriate level of detail to allow for comparative efficiency analysis at DPCR5,
- compare performance against DPCR4 allowances,
- determine an indicative RAV value on an annual basis,
- gather information on ongoing investment plans,
- gather consistent network data to inform modelling,
- publish annual cost data, and
- gather financial data.

4.29. The cost reporting work is focussed on improving the consistency of the cost data, getting a better understanding of the cost data and carrying out an indicative roll forward of the RAV. We have not assessed the efficiency of historical capital expenditure as part of this work.

4.30. We have made significant progress to date in terms of identifying and resolving inconsistencies in the cost reporting data. A number of DNOs have raised concerns that in some cases costs have not been reported in accordance with the RRP rules. Ofgem takes compliance with SLC 52 very seriously. The time for "bedding in" of RRP has passed and we will now look to recommend enforcement action to the Authority where we believe costs have not been reported in accordance with the RRP rules.

4.31. The annual cost reporting data has provided the opportunity for improved benchmarking and for modelling that was not possible at DPCR4. Our initial ideas on how to use this data are included below.

*Increasing scope to reflect specific business needs and strategies*

4.32. In DPCR4, we asked the DNOs to submit base case forecasts, based on assumptions provided by Ofgem. This placed too much emphasis on Ofgem's base case and provided limited scope for the DNOs to develop individual plans according to their particular network characteristics, risk management strategies, business plans, customer base and regional factors.

4.33. We will look to address this in DPCR5 by giving DNOs more opportunity to come forward with forecasts based on their own business strategy that take into account the needs and aspirations of their local stakeholders. Where necessary, Ofgem will set out common assumptions for specific types of costs as discussed further below.

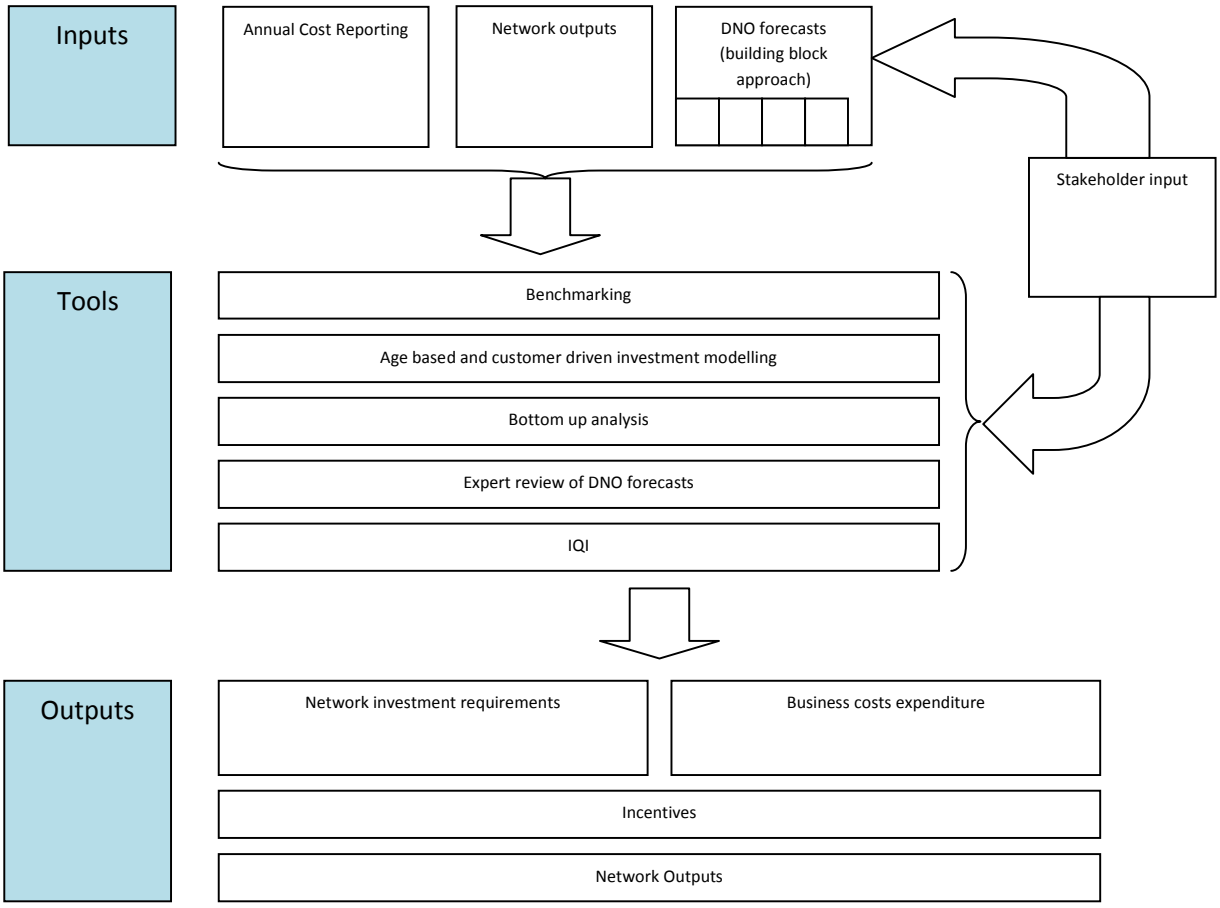
**Overview of cost and output assessment for DPCR5**

4.34. To meet these key objectives we have designed an approach to cost and output assessment which:

- relies on **inputs** that reflect the business needs and strategies of DNOs and which clearly set out the outputs which are associated with the strategies DNOs wish to apply,
- involves analytical **tools** that make use of the improved cost data, and
- results in **outputs** that incentivise DNOs to make efficient investment and removes the distortions in the current arrangements.

4.35. The diagram below illustrates the overall approach. We end this chapter with a discussion of the inputs, tools and outputs.

**Figure 4.3 - Overall approach for cost and output assessment for DPCR5**




## Inputs

4.36. As with previous price controls Ofgem will collect forecast business plans through the use of Forecast Business Plan Questionnaires (FBPQs). These are discussed in more detail below along with our thoughts on the stakeholder engagement that will inform them.

### Building block framework

4.37. DNOs will be required to provide their forecast network and business costs using a building block framework. The framework will consist of several individual costs elements or "building blocks" that have clearly identifiable boundaries in terms of costs and assumptions. In addition, for each building block, the DNO will need to quantify the outputs delivered.

4.38. This approach will allow DNOs to make the most appropriate business decisions, and reflect the requirements of their networks whilst retaining a broad structure which allows both the use of industry wide assumptions, comparisons across DNOs and against our investment models, and where appropriate, other comparators.

**Proposed building blocks**

4.39. The proposed building blocks can be grouped into four categories:

- load-related investment,
- non-load related investment,
- network operating costs,
- engineering overheads, and
- business costs.

4.40. Further guidance on the building block framework and the individual building blocks is provided in Appendix eight.

**Information requirements**

4.41. For each building block, it is key that the DNO quantifies the assumptions used, the estimated cost and most importantly the justification for the level of investment in terms of the outputs delivered. DNOs will also need to provide information on other options considered and sensitivities to changes in assumptions and required outputs, including the impact of any stakeholder engagement.

4.42. We expect the DNOs to initially provide a high level business plan, which may still contain ranges, but contains enough detail for Ofgem and other stakeholders to form a view and provide feedback. In developing their plans we would expect DNOs to consider a full range of options including non-network solutions for meeting constraints on their networks and to explain the relative benefits to customers of their proposed strategy.

**Stakeholder engagement**

4.43. In DPCR4, we developed the IQI to place more weight on company forecasts. We plan, where possible, to develop this further to allow us to place more emphasis on DNO forecasts for DPCR5. To increase Ofgem's confidence in the robustness of their forecasts, DNOs will need to consult more widely on their plans, provide greater visibility of their assumptions and justify their forecasts based on the outputs they will deliver.

4.44. In practice, this will require DNOs to engage more widely with their stakeholders in developing their plans. Much of our work on developing the commercial regulatory framework since DPCR4 has involved encouraging the DNOs

to engage more with their stakeholders. Some progress has been made, although we are keen to develop this further in DPCR5.

4.45. We do not want to prescribe how DNOs should go about engaging with stakeholders but are keen to use this price control review as a way of identifying effective methods of engagement and the issues stakeholders are most responsive to. As a minimum, we expect DNOs to:

- identify stakeholder groups and the issues on which they want to engage each group,
- make available their plans in a user friendly format,
- present stakeholders with a range of investment options including both high and low cost sensitivities as well as their base case expenditure and identify any tradeoffs both in terms of costs and outputs in order for stakeholders to make informed contributions possibly via regional consultations or workshops,
- engage with users or potential users of the networks (including those looking to invest in distributed generation, new demand or demand side management) to better understand future requirements for network capacity, and
- engage with input manufacturers and contractors to understand any delivery issues and how this may impact on their plans.

4.46. We do not expect the DNOs to duplicate the research Ofgem is currently undertaking as part of the consumer first project in relation to consumer willingness to pay.

4.47. It is important that DNOs are able to show how stakeholder views have impacted their plan in a quantified way. This should include any changes to assumptions, impact on investment options and changes to the level of outputs delivered.

4.48. When considering stakeholder views it is important that DNOs are still able to show the benefits to customers as a whole and that the plan still reflects the DNO's best view in making the trade off between different stakeholders who may have conflicting views.

4.49. Ofgem recognises that some aspects of DNOs' plans might be more suitable for stakeholder engagement than others, such as the level of incremental investment that should be targeted at specific outputs (e.g. how much investment should the DNO make to increase flood protection or improve environmental performance relative to existing levels).

4.50. We see DPCR5 as the first step in developing stakeholder engagement and would expect the experience gained as part of this review to inform the RPI at 20 review when it assesses alternatives such as making more use of constructive engagement during price control reviews.

4.51. We have already met with a number of DNOs to discuss their approach to stakeholder engagement for DCPR5 and are encouraged by the approaches and

strategies that have been discussed. We would welcome further discussions with DNOs or interested stakeholders.

### Long Term Electricity Network Scenarios (LENs)[64]

4.52. Ofgem has committed to look at a range of future scenarios for electricity networks that could arise as a consequence of market and policy developments. The main objective of this work is to facilitate the development of a range of future electricity network scenarios for Great Britain for 2050. This will help facilitate discussion between stakeholders on longer term electricity network development issues.

4.53. There will be no direct link between the output of the LENs project and DNOs' business plans. Instead, we envisage that the project will facilitate subsequent strategic thinking for the sector concerning the medium to longer term which will help inform discussions on the short term investment requirements for DPCR5.

### Network outputs

4.54. In setting price controls, developing allowances and developing incentives, it is important that the regulator, customers and companies understand what levels of output are required. There is currently a range of network output measures and requirements in place on the DNOs through statutory and licence obligations. These include:

- customer focused network reliability measures such as the number of CIs and CMLs,
- survey results on the quality of telephone response to customers calling their DNO during a supply interruption,
- Guaranteed Standards of Performance (GSOPs), and
- compliance with technical and safety requirements such as those set out in Engineering Recommendation P2/6, the ESQCR and the Distribution Code.

4.55. The combination of customer focused output measures and associated financial incentives provide strong incentives for DNOs to deliver improved levels of performance to customers. However, there is a lack of output measures quantifying what actual and forecast investment are expected to deliver, particularly with respect to asset-driven investment.

[64] Further information on the LENs project is provided on the Ofgem website http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/lens/Pages/lens.aspx

4.56. A possible extension of output measures relates to asset risk management. The DNOs are all implementing processes for the collection of asset condition information based on health indices. These indices are at different stages of development and levels of complexity reflecting different approaches taken by the DNOs. Changes in the distributions of the asset health indices may give a measure of change in overall system risk. In addition, some DNOs are developing measures of criticality for each asset on the system. When combined with asset health information, this may allow the development of a measure for overall system risk for some networks.

4.57. Another possible extension of output measures relates to utilisation of network assets. In their RRP submissions, the DNOs report detailed information on substations loaded to greater than 80 per cent of their firm capacity and information on overall levels of transformer utilisation, which may be useful as indicative measures of network risk being delivered through load related investment strategies.

4.58. We will be looking to the DNOs, as part of their forecast business plan submissions, to provide greater clarity on the outputs that their plans will deliver and how they will be able to quantify the impact of this work over forthcoming price control periods.

**Timetable for FBPQ**

4.59. DNOs will be required to provide initial high-level plans in building block format by 15 August 2008. This will enable detailed discussion to take place as part of the annual RRP cost visits.

4.60. Following Ofgem feedback and further stakeholder input a more detailed business plan will be required by 23 January 2009. We expect DNOs to have engaged stakeholders in the development of both their high-level and detailed plans.

**Table 4.1 Timetable for the cost work**

| | |
|---|---|
| April - August 2008 | DNOs develop high level business plans informed by stakeholders where possible |
| 15 August 2008 | DNOs submit high level business plans in building block format |
| Summer - Autumn 2008 | DNOs undertake further stakeholder engagement and regional workshops |
| September - October 2008 | High-level plans discussed as part of the annual cost visits |
| October 2008 | Ofgem to publish further details on requirements for detailed Plans and form of the IQI incentive |

| | |
|---|---|
| 23 January 2009 | DNOs submit detailed plans |

## Tools

4.61. The keys tools and techniques Ofgem will be using in assessing forecasts and setting allowances are:

- benchmarking including both top-down and bottom-up analysis, where "top-down" involves comparing the costs in particular categories across companies and "bottom-up" involves analysing the work required and unit costs of the inputs,
- customer driven investment modelling,
- age based replacement modelling,
- a review of the DNOs' methods for deriving their forecasts and the associated assumptions including the use of stakeholder input, and
- the application of incentives such as the IQI.

4.62. We will make use of customer driven investment modelling and age based replacement modelling similar to the models used in DPCR4 and the more recent TPCR4. We will complement this with bottom up analysis of individual investment schemes and programmes as presented by the DNOs.

4.63. We will also employ the IQI as an incentive to DNOs to provide realistic forecasts.

*Approach to benchmarking and use of data*

4.64. At DPCR4 we undertook a variety of benchmarking but focused on the results generated from top-down analysis based on Corrected Ordinary Least Squares (COLS) regressions. Since then we have undertaken the cost reporting work to improve the quality and consistency of the cost data both across companies and over time. During the recent GDPCR we used a mixture of top-down and bottom-up benchmarking.

4.65. Data improvements provide an opportunity to progress our approach to benchmarking. There are a number of developments we will be exploring including:

- disaggregating costs and performing more detailed (bottom-up) analysis,
- determining more relevant cost drivers to costs,
- using time series data in the comparative analysis,
- using alternative benchmarking techniques, such as Data Envelopment Analysis (DEA),
- carrying out more integrated analysis that considers the interactions between different network activities such as network investment and network operating costs or business costs, and
- examining the relationships between costs and quality and other network outputs.

4.66. We have engaged an economic consultancy to advise us on the application of benchmarking techniques during DPCR5. The work is incomplete but we expect the recommendations to cover the use of top-down and bottom-up regressions together with the use of DEA. The consultant will also advise us on the use of international comparators. Costs for similar companies in U.S and other European countries are available and we will review their comparability with the DNOs' cost bases.

4.67. We expect to draw on a range of benchmarking results to reach a judgement about future efficiency savings that might be achievable by the DNOs.

4.68. We have been working with the DNOs on a bi-lateral and multi-lateral basis to determine the appropriate cost drivers for the benchmarking work and we foresee this work continuing for some time. We are also considering how best to undertake benchmarking for costs that do not lend themselves to regression analysis, or similar review. These costs include particularly IT & Telecoms but also Property Management.

## Outputs

4.69. Key outputs of the cost assessment work are:

- a package of revenue,
- incentives, and
- network outputs.

4.70. The required level of network investment and business costs are fundamental to calculating allowed revenues and are key outputs of the cost assessment work. Equally important are the incentives around the network investment and business costs as well the required network outputs or what is delivered by the network.

*Removing distortions*

4.71. We will seek better integration of what has been traditionally described as opex and capex allowances and incentives, to reduce accounting distortions, encourage beneficial trade-offs and remove artificial boundary issues such as those impacting on RAV calculations during DPCR4.

4.72. To help achieve this we are proposing to categorise costs in a slightly different way for DPCR5. The proposed categories are:

- network costs,
- business costs,
- financial costs such as pensions and taxation, and
- other pass-through costs.

4.73. Network costs refer to expenditure on network assets including:

- investment in new or replacement network and system assets,
- expenditure on inspecting, maintaining and repairing network and system assets,
- costs incurred undertaking network policy, network design and engineering, project management and engineering support, and
- expenditure incurred in operating the network such as control centre costs

4.74. Network costs include all costs that have been previously defined as direct capex but also include all other expenditure on the network assets such as inspection and maintenance (I&M), fault repairs and tree cutting. Network costs also include activities required to deliver the investment such as network policy, network design and engineering and project management, which have previously been defined as indirect costs.

4.75. One way to equalise the strength of incentives on network costs is for all network costs to have consistent RAV treatment.

4.76. Business costs refer to the general costs of running a business and certain DNO specific costs including:

- logistical support such as stores and vehicles and transport,
- IT & Telecoms,
- property management,
- HR, safety and training,
- finance and regulation,
- corporate services,
- system mapping, and
- customer call centres.

4.77. Consistent RAV treatment could also be extended to some business costs although there are questions on the appropriateness of earning a return on some of these costs.

4.78. Although the form of network regulation may change post 2015 as discussed in Chapter 1 we will seek to ensure that cost incentives in the DPCR5 period are not distorted by such changes.

*Application of the IQI under a building block framework*

4.79. The application of the IQI approach requires a baseline level of costs to be determined against which the DNOs' forecasts are compared. This could be based on historical costs, Ofgem modelling or benchmarking or a combination. The determination of such baselines may be more practical for certain areas of costs such as non-load related capex and load related reinforcement. It may be more difficult for additional areas of spend such as network resilience or flooding where there may be more uncertainty over levels of expenditure. As such, it may be appropriate to base the IQI on a certain number of building blocks but apply the results in terms of strength of incentives to all areas of costs. As we are seeking to better integrate incentives across different areas of costs it may be appropriate to apply the IQI more

widely, for example to network operating costs and engineering overheads. We would welcome views on the scope of the application of the IQI.

*Network outputs*

4.80. As part of the overall price control settlement, and as network data improves, it may be appropriate for DNOs to commit to a wider package of outputs. We would welcome views on the scope and nature of outputs measures and how these can be incorporated into the price control. We would also welcome feedback on what measures we should take if DNOs do not meet the package of outputs to which they have committed and that which underpin their cost allowances.

# 5. Financial issues

**Chapter summary**

In developing our policies in this area we will take account of our duty to consider the need for efficient DNOs to be able to finance their activities in carrying out their statutory and licence obligations. We will aim to provide incentives for companies to make efficiency savings and to enable customers to benefit from those savings.

**Questions**

**Question 1:** Should Ofgem use its traditional approach to calculate the cost of capital or should other approaches be considered in order to provide the necessary incentives to invest?
**Question 2:** In particular, should measures to protect DNOs from debt market volatility be considered, such as indexation of the cost of debt, or the use of reopeners at "trigger" levels of interest rates?
**Question 3:** Should Ofgem make financeability adjustments or is this a matter for DNOs once the cost of capital is set?
**Question 4:** Is it appropriate for Ofgem to be making commitments on investment and its financeability over the longer term?
**Question 5:** Should a mechanism for ex-post adjustments for major changes in the tax regime be introduced and, if so, how?
**Question 6:** Do respondents support the publication of a fully populated financial model?
**Question 7:** Should we calculate the DNOs' allowed revenues in a way that creates a smooth revenue profile over the course of the price control period and seek to reflect the level of costs expected in the last year of the control in order to reduce price changes from one control to another?
**Question 8:** What factors should we take into account when determining the level of gearing to assume?
**Question 9:** Do respondents agree with the proposed treatment of net debt and gearing in ex post adjustments to tax allowances?
**Question 10:** What are acceptable alternative approaches to calculating RAV additions; and, following recent market transactions, does RAV continue to reflect the underlying enterprise value of the business?

5.1. In developing our approach to financial issues, we will draw on the responses to the joint Ofwat/Ofgem discussion paper "Financing Networks" issued in February 2006[65]. The responses were summarised and published in August 2006[66]. That paper discussed the way in which the regulatory framework deals with issues linked to risk allocation, investment incentives, gearing and the financing of regulated businesses.

[65] http://www.ofgem.gov.uk/Networks/Policy/Documents1/14864-133_06.pdf
[66] http://www.ofgem.gov.uk/Media/PressRel/Documents1/12894-ofgem9.pdf

5.2. In responding to our May 2007 Open Letter, stakeholders indicated they want:

- a regulatory regime that sustains investor confidence so DNOs can finance the investment under DPCR5 and beyond;
- that all aspects of the distribution business should be fully funded; and
- that Ofgem should include early consideration of the cost of capital.

5.3. This chapter considers our approach to calculating the cost of capital and regulatory asset values, financeability, financial modelling, the treatment of taxation and pensions.

## Cost of capital

5.4. The cost of capital is the return expected by investors. Regulators have typically made an allowance for the efficient financing costs that a company will incur by calculating a return on the value of the capital employed in the business (the RAV) at least equal to the company's estimated cost of capital. The cost of capital is a pivotal decision in determining allowed revenue under a price control. At 31 March 2007, RAVs of the DNOs totalled £14.6 billion and a 0.1 per cent change in the weighted average cost of capital (WACC) increases or decreases DNOs revenues by £14.6 million annually. As part of this price control we will consider the main factors affecting the cost of capital and the issues surrounding the required calculations.

5.5. At DPCR4 and at subsequent price controls, TPCR4 and GDPCR, we moved to a post-tax approach to the cost of capital which requires the tax allowance to be calculated separately and refers to the cost of capital after all corporate taxes. We intend to maintain this approach at DPCR5.

5.6. Traditionally, the cost of capital of an entity has been presented as the WACC which is the average of the expected cost of equity and the expected cost of debt, weighted for the gearing ratio.

**Table 5.1 - Recent Cost of Capital decisions**

| | DPCR4 (Dec-04) | TPCR4 (Dec-06) | GDPCR (Dec-07) |
|---|---|---|---|
| Cost of debt | 4.10% | 3.75% | 3.55% |
| Cost of equity | 7.50% | 7.00% | 7.25% |
| Gearing | 57.50% | 60.0% | 62.5% |
| Vanilla WACC | 5.55% | 5.05% | 4.94% |
| Post-tax WACC | 4.84% | 4.38% | 4.27% |

### Cost of Debt

5.7. Since DPCR4 the average cost of debt has fallen. Long-term averages have continued to fall, even through recent capital market fluctuations arising from the "credit crunch". We noted at GDPCR that, where utilities are continuing to raise debt, it is at rates often considerably below the costs of debt we have allowed. Market conditions continue to point to a lower cost of debt than at DPCR4 and it is likely that DNOs are outperforming the current cost of capital.

5.8. While credit spreads have widened substantially over recent months, the effect on investment grade corporate bond yields has been broadly offset by a fall in the yield on benchmark Government bonds[67]. This reflects the flight to quality observable in the wake of the credit crunch and it is open to question whether current Government bond yields can be regarded as sustainable beyond the short term. There is an argument[68] that the level of uncertainty about the future level of bond yields, and the sharp reduction in new issuance that has continued since the turn of the year, require any estimate of the expected cost of debt to include a premium for these risks, although the CAA's recent decision on BAA's cost of capital retained the cost of debt recommended by the CC in 2007. We will monitor developments but we are currently concerned that the actual cost of raising new debt for DNOs may therefore increase from current levels.

### Cost of Equity

5.9. The cost of equity can either be assessed by determining the risk-free rate, an equity risk premium for the market and an equity beta (which represents the systematic risk variability of a company relative to the market as a whole), or by an aggregate return on equity, as used in DPCR4. Work carried out for Ofgem in 2003[69] and 2006 has demonstrated the difficulty of assessing a stable beta over the long term for utility networks in general. In the final proposals for TPCR[70] we noted that beta estimates had varied substantially since privatisation. As a result the aggregate return approach of DPCR4 was given greater weight in TPCR and GDPCR. Moreover, it is difficult to find evidence of betas for DNOs specifically, due to the lack of publicly listed stand-alone DNOs in the UK. Use of international data is problematic because the risk faced by regulated utilities can depend significantly on the regulatory regime under which they operate, which can vary from country to country. Our aggregate returns approach has been based on very long-term average rates of returns of 6.5

[67] Evidenced by the paper from CEPA annexed to British Airways plc's (BA plc) submission to the Civil Aviation Authority's (CAA) review of British Airports Authority's (BAA) price control, January 2008)
[68] See for example BAA's submission to the CAA: http://www.caa.co.uk/docs/5/ergdocs/heatgatnov07/baa_a.pdf
[69] Wright, S., Mason, R., and Miles, D. (2003), A study into certain aspects of the cost of capital for regulated utilities in the UK, Smithers & co Ltd
[70] Transmission Price Control Review final proposals, Ofgem 206/06, December 2006

to 7.5 per cent, but it is too soon in the process to determine whether this is an appropriate range for the cost of equity for DPCR5.

5.10. In their response to the GDPCR consultation, CEPA suggested that the use of market asset ratios (MAR) could provide useful additional information about a company's "real" cost of capital which could be used to inform rate setting. MARs reflect prices paid in the market which includes a premium for corporate control and other factors, including, potentially, regulatory error in setting WACC. MARs may lean towards overstating the cost of equity. Setting an appropriate risk/reward challenge may mitigate this risk. We are interested in obtaining views on how, if at all, we should take account of MARs in setting the cost of capital.

5.11. Since the last price control there have been several sales of regulated utilities at significant premiums to their RAV. Determining the reasons why an acquirer has paid a substantial premium is not straightforward. This could be evidence that the overall regulatory package is too generous (or that specific elements such as the cost of capital are too generous), but it may also be that winning bidders have overpaid for the DNO.

5.12. These transactions (and valuations) have often been supported by financial structures with much higher gearing than assumed by Ofgem when the cost of capital was set. They have also often been based on index-linked debt. Some market evidence of the returns required by certain investors is provided by these recent transactions, albeit often in highly geared structures. This may indicate that, within a stable and mature regulatory environment investors seeking relatively stable, long duration income streams to match long-tail liabilities are willing to trade off lower returns.

5.13. The risks in these transactions are for the buyer, not consumers. We will consider:

- the risks these deals have and the impact for consumers,
- what may happen in capital markets over the period to 2015 and beyond, and
- how applicable the messages from these events are for DPCR5.

**Gearing**

5.14. At DPCR4, we assumed a gearing ratio of net debt to RAV of 57.5 per cent. At TPCR this was set at 60 per cent and at GDPCR was 62.5 per cent, consistent with previous controls. The acquisition finance for the recent sale of United Utilities Electricity plc, amongst other sales of regulated utilities, resulted in a higher level of gearing than our previous levels. Average actual net debt to RAV for all DNOs in 2005-06 was 49.8 per cent and 44.8 per cent in 2006-07, with a spread from 19.4

per cent to 75.3 per cent[71]. We are interested to obtain views on what is the appropriate level of gearing to assume, whether it should be increased or decreased, that is suitable to maintain an investment grade credit issuer rating and the impact this may have on financeability. While higher levels of gearing can reduce the WACC increasing gearing may increase the risk of financial distress (or in extreme circumstances administration); conversely, DNOs may seek higher returns in order to maintain credit ratings.

**Relative Risk**

5.15. One of the areas for review is the risk relative to GDNs and Transmission networks and what impact the price control itself has on risk they face. Relative risk analysis was used at GDPCR (and proposed at TPCR4) to inform the assessment of the cost of capital. There appears to be a case for considering the impacts of non-systemic risk (especially cost and revenue variance risk) separately from systemic risk. We intend to develop this work at DPCR5.

**Our approach to Cost of Capital**

5.16. Conceptually, the appropriate cost of capital for a DNO depends on the overall balance of risks and rewards contained in the price control package. We do not think it would be appropriate to settle the final cost of capital until we have determined the level of risk that we want DNOs to face through the rest of the price control package. We will draw on the work carried out on the components of the cost of capital for both GDPCR and TPCR4 and update this work where appropriate. The cost of capital is inter-dependent with other areas of the price control under review including gearing, depreciation lives, incentive mechanisms, calculation of and regulatory commitment to RAV, allowances; and the ability of DNOs to outperform these.

5.17. We intend to review whether the current approach provides the necessary incentives to invest in order to deliver large capital programmes; and how to satisfy our obligations with respect to the ability of efficient network companies to finance their activities. As part of this process, we will review total financial performance in DPCR4 in assessing whether the overall package achieved its objectives.

5.18. On balance, we consider that our current approach is still appropriate. However, there are options raised in the Financing Networks paper we wish to explore whilst maintaining a consistent and predictable regulatory environment. We are interested to obtain views on whether and how we should evolve our approach to setting the cost of capital or whether we should continue with our current approach. Respondents are requested to address the following:

[71] These percentages vary from those published in the annual Cost Reviews as they include inter-company working capital balances in net debt.

- Debt indexation – of all or part of allowed revenues to a benchmark interest rate. We considered the use of debt indexation at GDPCR but concluded that it was a complex policy decision requiring consideration outside GDPCR. We consider that this consultation provides a suitable opportunity to seek views in the context of DPCR5. Is now the right time to visit this? If so, what are stakeholders' views? One of the benefits could be to match revenue allowances more closely to the evolution of the market cost of debt. Currently we make fixed, ex ante cost of debt allowances for the full five years of a control period. The debt indexation route could cause DNOs to feel that their decisions on their capital structures were being constrained? The CC rejected indexation for BAA as practically too difficult to identify an observable risk-free rate or total cost of debt, and had concerns about how to account for the likelihood that some of BAA's debt would be at fixed rates.

- Debt triggers: we seek views on whether it may be appropriate to consider lower levels for the cost of debt and introducing protection by establishing trigger levels of debt that trigger a resetting of the cost of debt. This was considered during the GDPCR consultation[72], and we undertook to consult on it further. The inclusion of cost-of-debt triggers was suggested by CEPA[73]. They come into play if spot rates rise above allowed rates to the point where they pull gearing below comfortable investment-grade levels. The trigger would increase allowed revenues automatically to offset increased debt costs, at least with respect to incremental debt. They should reduce the allowed cost of debt if rates fell equally far below the price control assumption. Do recent transactions, particularly the sale of UUE, together with uncertainty in the markets, suggest that triggers may now be appropriate? The introduction of a trigger mechanism could affect the gearing and cost of equity, which, in theory reflect financing cost risk.

- Embedded debt: should we revise our approach to average cost of debt to take account of embedded debt costs or actual gearing in DNOs? In its recommendations on the BAA charges review, the CC advocated reference to current market rates in setting cost of debt allowances, and, if necessary, making an explicit adjustment to reflect the higher (or lower) cost of existing debt incurred by the BAA. In considering such an approach we would need to take account of any reduced incentives to finance efficiently that may arise from tailoring part of the cost of debt to each DNO's embedded debt costs.

- Split cost of capital (i.e. a lower rate of return for expenditure on assets that have been confirmed by the regulator as part of RAV): respondents to the Financing Networks consultation considered this would not lead to reduced risk and was not then favoured. In particular, investors were strongly opposed because the split cost of capital was considered to undermine their expectations of the returns they would receive on their investment. In our view, this may only

[72] http://www.ofgem.gov.uk/Networks/GasDistr/GDPCR7-13/Documents1/GDPCR%20Updated%20Proposals%20Final.pdf
[73] "The allowed cost of capital - Ofgem: GDPCR 2008-2013", CEPA, 2007

be appropriate where a differential cost of capital could be applied to large projects. Such clearly defined projects are not usually part of investment in electricity distribution networks. Unless the right circumstances arise this approach is unlikely to be appropriate at DPCR5.

- Equity injections (rights issues): these have not been favoured in recent years, even though the evidence clearly shows that utility rights issues are at a negligible discount to market price. Nevertheless, equity injections may be the most appropriate means of alleviating any financing strain associated with rapid RAV growth arising from increased levels of new investment to increase network capacity and/or replace ageing assets. Do we need to assess whether we need to facilitate equity injections? Or is this dealt with when setting the cost of capital so that only greater regulatory commitment and transparency is all that is required? Does this remain an issue given recent market transactions and the message to investors from our remaining listed network companies, where evidence indicates investors positively want to invest in RAV growth (one of the factors underlying the high MARs)?

- As part of the work on reviewing debt triggers and indexation, we will examine the merits of moving from our current approach, (i.e. using the sum of an estimate of the equilibrium level of the risk-free rate and a ten-year trailing average of spreads on ten-year term A/BBB UK utility bonds) to, for example, a ten year trailing average of the yields on a suitable basket of utility bonds. That basis is an explicit market based approach. Adopting it to a large extent achieves the same objectives as indexation. In particular it may remove much of the 'headroom' which, it is alleged, regulators have built into their cost of debt estimates, but would be much simpler and would avoid the incentive problems of indexation. It would also reflect reasonably closely the manner in which companies generally have financed their RAVs. It would, however, increase the risk to licensees from inflexions in the interest rate cycle. Over time (between one and two complete interest rate cycles), the resulting gyrations should generally even out (assuming interest rates are mean-reverting), but there could be fairly extended periods when the ten-year average continues to trend down as interest rates are rising (and vice versa). This may add to pressures on financing and an explicit approach to embedded debt, as recommended by the CC, may therefore be appropriate to the DNOs' circumstances.

## Financeability and financial modelling

5.19. This section sets out responsibilities and potential approaches to financeability and financial modelling given the potential alternative approaches to cost of capital and RAV.

5.20. Ofgem and licence holders have duties and obligations with respect to the financing of companies. In setting price controls, the main high-level financial issues that we need to consider are that:

- an efficient, well run company should be able to earn a return on its RAV that is at least equal to the expected cost of capital, and

- well run, efficient DNOs should be able to raise finance from the capital markets readily and on reasonable terms and thereby avoid passing unnecessary costs to consumers.

5.21. We will review whether a DNO can access funds at a reasonable cost to meet their investment requirements. In previous price control reviews we examined whether the price control proposals were consistent with the ability of a licence holder to maintain a credit rating that is comfortably investment grade. We will consider whether this remains the most appropriate approach. In forming a view on how to assess financeability we will build on the joint Ofwat/Ofgem Financing Networks discussion paper.

**Impact of accelerated depreciation**

5.22. At DPCR4, we increased regulatory depreciation rates above accounting depreciation rates to mitigate the effect of the post-vesting "cliff face", where assets held at privatisation became fully depreciated, which would otherwise have led to a significant fall in DNOs allowed revenue. As part of our review, we will analyse the effects of asset lives and regulatory depreciation rates becoming materially out of line. This could, for example, lead to a revenue shortfall in the long term if asset replacement reaches a steady state. We may look to re-set depreciation rates accordingly. However, reducing the rate of allowed depreciation, especially if investment is increasing may have implications for financeability that we will need to consider.

**Financeability adjustments**

5.23. Our current view is that as long as we set an appropriate cost of capital there should be no need to make or consider adjustments to allowed revenues for financeability reasons. Ofwat thinks it is possible in its forthcoming review to avoid the need for increasing allowed revenue while ensuring that a company can finance its functions[74]. Nevertheless, there are issues around financeability adjustments commonly applied by regulators, on which we are interested to obtain views.

- Under what circumstances, if any, should the regulator be making financeability adjustments?
- Are depreciation adjustments to accelerate cashflow appropriate and are they sustainable to meet our financeability goals over the long term?
- Is it appropriate for Ofgem to be making commitments on investment and its financeability over the longer term?

[74] Page 49 - http://www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/AttachmentsByTitle/pr09_methodologypaper181007.pdf/$FILE/pr09_methodologypaper181007.pdf

**Financial Modelling**

5.24. We will be developing a financial model and we will discuss financial modelling issues with DNOs and other relevant parties during the course of the review. At DPCR4 we tested the financial model for each of the DNOs against three key ratios: Funds From Operations (FFO)/Interest, Retained Cash Flow (RCF)/Debt, Debt/RAV. While we recognise the value of using consistent benchmarks for financeability we also need to consider whether this approach remains the best indicator of the financeability of the price control settlement. We will discuss financeability with credit rating agencies.

5.25. It is important as part of a price control to have a transparent process. In our view, the transparency of the price control process would be facilitated by publication of a full, populated financial model as at GDPCR. We will use this approach, except where it can be demonstrated that to do so would cause significant harm to the commercial interests of DNOs.

5.26. Subject to the feedback on the consultation process, we are currently planning to issue a draft financial model at initial proposals.

**Profiling**

5.27. Profiling is used to smooth revenues over the individual years of a price control. Without revenue profiling, allowed revenues vary annually in accordance with our estimate of the DNOs' efficient costs plus the allowed return on capital. Revenue profiling adjustments have some merit, as well as reducing the extent to which charges vary year on year, profiling can provide an easy method for explaining publicly the revenue impact of our proposals and enables us to express baseline price control allowances using a simple formula. Profiling adjustments are net present value (NPV) neutral, so that customers pay the same amount over the period of the control overall regardless of whether profiling occurs.

5.28. The disadvantage of profiling is that it may introduce a discrepancy between DNOs' expected costs and their allowed revenues in any given year. In particular, it may lead to a significant difference between the allowance for costs in the final year of a price control and the actual level of costs on which revenue allowances in the subsequent control period will be based. Such a discrepancy would lead to a large $P_0$ change in allowed revenue.

5.29. Features that have the potential to increase variability include revenue drivers, incentive schemes, re-openers and pass through items. Overall we need to find a reasonable balance between having charges that are stable and comprehensible, charges that reflect DNOs' costs, and appropriate incentive mechanisms.

5.30. At GDPCR, we consulted on the approach to profiling in the third consultation document. Respondents' views were mixed. We smoothed revenues at DPCR4, but not at GDPCR, where in any case the adjustments would have been small. We would welcome views on the pros and cons of profiling as part of DPCR5.

**Protecting against financial failure**

5.31. The current licence arrangements for protecting against financial failure were put in place at DPCR4 and subsequently rolled out to all network licensees. We would welcome views in particular on whether the financial ring fence and the special administration regimes are expected to be, or will prove, adequate in the event of financial distress or the collapse of a network operator or of a controlling undertaking. We intend to consult on and then publish further guidance on the existing licence and compliance arrangements and what would happen in the event of financial distress or failure in the next few months.

## Treatment of taxation

5.32. At the last three price controls our approach has been for ex ante tax costs with an ex-post adjustment where actual level of gearing exceeded our gearing assumption underpinning the cost of capital assessment. We will maintain this approach.

5.33. In modelling the categorisation of capex to the main capital allowance pools, we have adopted different approaches across our price controls, influenced by changing data availability over time and between licensees. At DPCR4 we adopted a generic approach, rather than actual, to allocating capex to individual tax pools as our primary criterion was for consistency across DNOs. At GDPCR and TPCR4 we used actual allocations but the circumstances were different. For TPCR4 there were few companies and consistency across time within a licensee was the main criterion. In GDPCR there was a lack of tax history following the sales of GDNs by National Grid. We will maintain the generic approach consistent with DPCR4.

5.34. Through the annual cost reporting process we have collected tax data. As final tax liabilities in practise are determined some years after returns are submitted we intend using this data only after review of both closed and open tax positions. We also intend eliminating the benefits of any group tax effects. Our approach is to avoid gaming affecting the setting of allowances.

5.35. From 1 April 2005, non-operational capital expenditure on assets used in the distribution business but owned by a related party have been treated as distribution business costs in determining additions to RAV. For symmetry, we will consider these costs when modelling capital allowances. Assets owned by a related party prior to that date and subsequently transferred to the DNO will follow the normal tax rules but are not allowed when computing RAV additions. This treatment removes any practical issues in separately identifying their cost and annual capital allowances.

5.36. At DPCR4 some incentives were set pre-tax and some post tax. In the interests of consistency, for DPCR5 we are minded to quantify all incentives at pre-tax values. For the avoidance of doubt, we consider it important to define the tax treatment of incentives.

### Claw back of tax benefits of excess gearing

5.37. The ex post adjustment claws back from DNOs any revenue benefit they obtain from lower tax costs where the DNO has exceeded its DPCR4 gearing assumption and incurred interest costs. It is our intention to maintain this approach.

5.38. This gearing adjustment, if triggered, will affect DNOs' future revenues through the ex post adjustment. There are several practical issues we will address when assessing this adjustment arising from developments in financial reporting and financial engineering and which were not specifically addressed at DPCR4. We are reviewing these and will publish our proposals separately as these will also be applicable to transmission and gas distribution licensees.

### Treatment of major changes in tax regime

5.39. In previous controls, we have set allowances based on the legislation enacted at the time of the control and the risk from future changes in the tax regime has been for the DNOs.

5.40. From 1 April 2008 the capital allowance regime changes and the headline rate of corporation tax is reduced from 30 per cent to 28 per cent. This reduction and the new regime and rates of capital allowances will lower DNOs' overall tax costs in the final two years of DPCR4 providing them with returns not forecast at DPCR4.

5.41. We are interested to obtain views as to whether a mechanism for ex post adjustments for major changes in the tax regime should be introduced for DPCR5. This may benefit consumers or could increase revenues. Do respondents view this as increasing regulatory uncertainty; and are ex post adjustments appropriate in any circumstances?

### Stakeholder engagement

5.42. We intend discussing our approach to modelling tax at an early stage with stakeholders, specifically DNOs; and to seek meetings with HM Revenue and Customs.

## Regulatory Asset Value

5.43. We intend examining options for the calculation of RAV additions to balance the incentives between capital expenditure and operating costs. In assessing the basis to adopt we will consider the treatment of RAV additions and their relationship to the cost of capital, financeability and the other issues raised in this chapter. It is not our intention that any basis adopted should divorce the RAV from the underlying value of the business. We are interested to obtain views on alternative approaches to RAV and whether RAV, following recent transactions referred to above, continue to reflect the underlying value of the business.

### Treatment of excluded services

5.44. At DPCR4, in modelling costs and regulated revenues, where there was no clearly identifiable cost, revenues from certain excluded services e.g. reactive power, were used as a proxy for costs. Such revenues were forecast by DNOs and, to take account of the variation between those forecasts and actual revenues, there is an adjustment whereby an element of RAV additions are reduced by the difference between forecast and actual revenues (used as a proxy for costs). We are minded to consider other methodologies to deal equitably with this provided that consumers are not adversely affected, and seek views on alternative approaches.

### Finalising DPCR4 RAV

5.45. As part of DPCR5, we will finalise the annual DPCR4 additions to RAV from the indicative values we have published annually. As part of that process we will resolve several ongoing matters of interpretation and treatment.

### Revenue adjustment

5.46. At DPCR4, in the Final Proposals[75], we indicated then that in the event that actual 2004-05 RAV additions turned out to be materially different to the estimate of RAV additions used for that year in setting revenues, where the difference was not due to genuine efficiencies that could not reasonably be foreseen at the time the forecast was provided we may decide to claw back the benefits of any under-spend in 2004-05 RAV additions relative to the estimate used in those proposals at this review. It is our intention to apply this claw back and we will adjust revenues for 2010-2015. A similar adjustment for 2009-10 forecast RAV additions will be considered subject to the operation of the capital expenditure rolling incentive.

## Treatment of pensions

5.47. We set out our pension principles[76] in the Developing Network Monopoly Price Controls consultation and in DPCR4 consultations and have continued to apply them in both TPCR4 and GDPCR. There have been significant developments since, including the introduction of the Pensions Act 2004 and the Pensions Regulator and changes in mortality and investment yield assumptions, and we have observed a sharp rise in employer contribution rates. There is also a potential for stranded pension surpluses to arise, i.e. a very high level of contributions could, in the future, result in a surplus in pension funds which is unavailable to consumers in the medium-term, since Trustees may be unwilling to accept reduced contribution levels or returns of surplus at future reviews. We will update our principles to cover these.

[75] Paragraph A1.29 of Appendix 1 to DPCR4 Final Proposals
[76] Published at TPCR4 in appendix to Final Proposals

5.48. After one full round of price controls it is now appropriate to review the working of the principles. There will be a separate consultation on them as any changes will affect not only DPCR5 but also subsequent transmission and gas distribution price controls. We intend issuing a pension consultation paper later this year.

# 6. Process and timetable

**Question 1:** Do you agree with the range of consultation approaches we intend to use throughout DPCR5?
**Question 2:** Do you believe that we should utilise a consumer orientated challenge group to inform DPCR5?
**Question 4:** Are there any other ways in which we should look to consult with interested parties?
**Question 5:** Do you agree with our approach to publish specific impact assessments for key "important" decisions?
**Question 6:** Are there any other key milestones that you believe we should consider for DPCR5?

6.1. This chapter describes the process and timetable that Ofgem proposes to follow over the course of DPCR5, including its use of Impact Assessments (IAs). We will run a transparent process which allows adequate time for interested parties to express their views and which provides a clear rationale for the decisions Ofgem takes.

## Proposed process

6.2. In our open letter consultation[77] we outlined our intention to reduce the number of formal documents published as part of DPCR5 and instead focus on providing longer consultation periods and an increased number of workshops, working groups and meetings with interested stakeholders.

6.3. Ofgem's proposed consultation process makes use of a variety of forms of communication:

### Consultation documents

6.4. We intend to publish four documents as part of the DPCR5 process (including this one). This initial consultation document will be followed by a policy paper, initial proposals and final proposals. The broad objective of each document is to outline our views on the work completed to date and the views received as well as to allow interested parties the opportunity to make representations on issues. The papers will document our decision making progress.

6.5. As outlined in chapter one, we believe that there are three key themes that run through DPCR5. These relate to, environmental issues, customers and networks. As with this document, we intend to use these themes as key chapters within each of our formal documents. In addition to these we will also continue to include a section

[77] DPCR5 - looking ahead an initial consultation letter (119/07)

on financial issues and several appendices, including a summary of the details of cost and outputs measures.

6.6. The publication dates, core content and objectives for each document are summarised below.

*Initial consultation document*

6.7. This document sets out the key objectives for DPCR5 and invites views on high level issues relevant to each key theme. We have also provided a summary of the responses received to our open letter consultation (Appendix five).

6.8. The 12 week consultation period will allow for interested stakeholders to consider their responses in detail and to attend Ofgem-led workshops to discuss key issues.

*Policy paper - December 2008*

6.9. We will aim to present our initial recommendations on the main policy issues based on stakeholder engagement to date, including the Ofgem-led workshops and the responses to the initial consultation document. We will also summarise our views on the potential need for licence changes required to implement our suggestions.

6.10. For environmental issues we will outline our recommendations on high level policy issues and consult on these. We expect to include impact assessments for both customer service and environmental issues within the policy paper.

6.11. Within the customer theme, we will present the findings of the extensive consumer research commissioned by Ofgem. We will consult on the conclusions that should be drawn from these results as well as the views received from other stakeholders, but will set out our initial views on appropriate ranges for quality of service, connections and other customer service measures.

6.12. For networks, we will provide a summary of the high level forecasts submitted by the DNOs and present our initial views including an update on our approach to cost assessment. We will summarise the stakeholder engagement undertaken to date and provide further details on the analysis we will undertake to develop the initial proposals document.

6.13. For financial issues we will look to summarise the outcomes of our consultation on pensions, our proposed approach to tax and will consult on our thoughts for how to calculate WACC. We will include appendices showing updated details of relevant costs and outputs measures and will include a summary of responses received to the initial consultation document.

*Initial proposals - June-July 2009*

6.14. We will publish our initial proposals document at the end of June or early July 2009. We will present a substantive set of proposals for policy issues and to include final impact assessments. The document will include draft licence modifications where possible. We will also present our initial views on allowances and provide ranges on relevant incentives. The costs and outputs appendix will outline the detail behind the proposals put forward for policy, financial issues and cost assessment work.

*Final proposals - November/December 2009*

6.15. We will present our final proposals on all outputs and incentives based on further development since publication of the initial proposals document. We will also outline, in detail, the results of our financial modelling and our final views on allowances, RAV roll forward and cost of capital.

*Update paper*

6.16. We are not proposing to publish an update paper in September 2009 between initial and final proposals. We received several responses from the DNOs expressing concern at the loss of this document. However our revised approach allows for a significant amount of discussion and negotiation of the issues raised throughout DPCR5. In particular, the DNOs will have the opportunity to meet with the Authority Sub-Committee between initial and final proposals and will be able to put forward their final views then. We will only publish an update letter (or document) between initial and final proposals if we feel that this is necessary for example, due to there being unresolved policy matters or unexpected issues (arising for example from receipt of 2008-09 data) between initial and final proposals that we had not previously had the opportunity to consult on.

**Ofgem-led workshops**

6.17. We intend to hold two sets of workshops that will be open for all interested parties to attend. These will be held during the consultation periods for this document and for the policy paper.

6.18. The aim of the workshops is to engage with all interested stakeholders, provide clarity on issues raised within each document and encourage discussion to inform responses. Whilst we will plan to give a presentation at the start of each workshop summarising the key issues and outlining further details, we invite interested stakeholders to give their own presentations outlining their perspectives and the main focus and issues for them during DPCR5 to help stimulate discussion.

*May 2008*

6.19. We will hold two workshops during the consultation period for the initial consultation document. The aim is to allow interested stakeholders to discuss the key issues raised. The first workshop will cover networks and financial issues. The second will focus on customer service and environmental issues. We will split the workshops in this way to make them more manageable and to take account of the grouping of stakeholder interests.

6.20. Parties interested in either giving a presentation or attending the workshops should respond to DPCR5.reply@ofgem.gov.uk by 5pm on Wednesday 30 April 2008.

*February 2009*

6.21. During the 12 week consultation for the policy paper we will again hold two workshops at which interested stakeholders will be able to discuss the key issues raised in the policy paper and give their initial views. As with the previous workshops, the first will cover networks and financial issues while the second will focus on customer and environmental issues.

6.22. Further details on the arrangements for these workshops will be provided in the December 2008 policy paper.

**Working groups**

6.23. Previous experience on price control reviews has shown that a series of working groups can be very useful in progressing and developing our views on policy issues. We already attend several working groups and expect to use these to input into DPCR5. These include the electricity connections steering group (ECSG), the quality of service working group, the consumer research working group, the distribution charging methodologies forum (DCMF) and the distribution working group (DWG).

6.24. We also intend to set up some working groups focussed on specific issues, particularly those related to customer service and environmental issues. The number of groups and attendance will be dependent upon the responses received to this document and the issues raised.

**Bilateral meetings**

6.25. We will set up meetings as we deem appropriate with specific stakeholders including, but not limited to, each of the DNOs, BERR, energywatch and the NCC and other interested parties.

### Authority sub-committee

6.26. During DPCR4 and GDPCR we provided the companies with the opportunity to meet with a committee of the Authority prior to taking key decisions. We propose to continue this format, as outlined in the open letter consultation, and will hold two rounds of meetings to take place prior to publication of both initial proposals and final proposals.

### External consultants

6.27. Our objective is to use internal resources wherever possible and to seek independent audits and advice from external consultants where this is useful and will add value. We are currently receiving benchmarking advice from CEPA and are looking to recruit other consultants for specific issues such as the auditing of financial models.

### Consumer research and consumer panel

6.28. In preparation for DPCR5 we have commissioned a significant consumer research project to understand what customers want from network providers and their willingness to pay for enhanced services. The results of this project will be delivered in June 2008 and so we will look to use these to inform our policy paper. We will also discuss the findings and their potential use at relevant working groups and bilateral meetings.

6.29. We are keen to involve customers more widely in the DPCR5 process. We intend to establish a small consumer orientated challenge group of expert consumer representatives to act as an advisor/challenge to the Authority sub-committee on the more technical and complex issues associated with DPCR5. We will publish further details of this group in due course.

6.30. We are interested in views on how we can best involve consumers in DPCR5.

### GDPCR lessons learnt

6.31. Ofgem carries out a lessons learnt exercise at the end of each price control review. This helps to improve the way in which we carry out price controls. We are currently starting work on the lessons learnt exercise for GDPCR which will seek both internal and external feedback. This process will include an open letter seeking responses from industry and consumer groups and discussions with key external parties. We will use the findings from this exercise to help us in finalising the process for DPCR5.

## Impact assessments

6.32. Ofgem has a statutory duty to carry out impact assessments (IAs) in certain circumstances concerning decisions that it considers to be "important". This is set out in section 5A of the Utilities Act 2000. If we decide that it is not necessary to publish an IA then we must publish a statement explaining the reasons for our decision.

6.33. During DPCR5 we will be making decisions in relation to important issues. We plan to adopt the approach used in GDPCR and so publish specific impact assessments relevant to each important issue, such as the introduction of new incentives. This will mean that assessments are focussed on the specific impacts of a policy change or development. It will also allow parties to concentrate on those issues relevant and/or of interest to them and so focus their consultation responses. We believe that our approach will allow us to focus on capturing the real issues that could arise as a result of our specific policy decisions.

6.34. We do not consider there is a need to publish an IA looking at DPCR5 more broadly as the review is a continuation of an existing policy rather than the introduction of a new policy and an IA on the overall price control review would potentially increase the workload of Ofgem and industry without any significant benefit.

## Cost reporting

6.35. For DPCR5 we need to obtain a clear understanding of DNOs' historic and future costs and to be able to compare them with one another in terms of performance and efficiency in order to set appropriate allowances.

6.36. Through DPCR4 we introduced annual cost reporting for each of the DNOs. The intention of this was to allow an ongoing assessment of costs and to reduce the amount of work required during the price control process to review historical data. The data is collected via a RRP which we develop through consultation with the DNOs. The RRP approach allows us to ensure consistency in reporting and to gather information on DNOs performance against the allowances set under DPCR4. We publish a cost report in December each year, summarising the results of the cost reporting.

6.37. We also need to consider and assess DNOs' forecast costs. We propose to use a "building block" approach for DNOs to present their business plans for DPCR5. This is different to the base case approach used for DPCR4. Details of the revised approach are provided in chapter two, networks.

### DNO-led consultation

6.38. We have made it clear that we expect the DNOs to consult with local stakeholders on their draft forecasts and business plans ahead of submission of final

forecasts in January 2009. Further details on our expectations for this are included in Chapter 4.

## Timetable

**Table 6.1 - Timetable for DPCR5**

| | |
|---|---|
| **2008** | |
| March | **Publish initial consultation document**<br><br>Cost data - issue RRP to DNOs |
| April | Forecast data - DNOs start to develop high level business plans in building block format |
| May | Ofgem workshops |
| June | Consultation closes for initial consultation document<br><br>Forecast data - DNOs to consult stakeholders on business plans, possibly via regional consultations or workshops (throughout Summer and Autumn) |
| July | Cost data - DNOs first submission of 2007-08 data |
| August | Cost data - DNOs revised submission of 2007-08 data<br><br>Forecast data - DNOs first submission of business plans |
| September | Cost visits to DNOs - including discussion of business plans |
| October | Cost visits to DNOs - including discussion of business plans<br><br>Forecast data - Ofgem to publish requirements for detailed business plans (FBPQs) |
| November | Cost data - DNOs final submission of 2007-08 data |
| December | **Publish policy paper**<br><br>**Cost data - Publish cost report for 2007-08** |
| **2009** | |
| January | Forecast data - DNOs to submit detailed business plans |
| February | Ofgem workshops<br><br>Cost data - statutory consultation on RRP |

| | |
|---|---|
| March | Consultation closes for policy paper<br><br>Cost data - issue full RRP and mini RRP to DNOs<br><br>Forecast data - DNOs to submit revised business plans |
| April | |
| May | |
| June | Cost data - DNOs submit 2008-09 data (mini RRP)<br><br>Forecast data - DNOs to review and revise business plans |
| July | **Publish initial proposals (June/July)**<br><br>Cost data - DNOs submit 2008-09 data (full RRP)<br><br>Forecast data - DNOs to review and revise business plans |
| August | Cost data - Ofgem complete review of mini RRP data for 2008-09<br><br>Forecast data - DNOs to review and revise business plans |
| September | Consultation closes for initial proposals<br><br>Cost visits to DNOs |
| October | Cost visits to DNOs |
| November | |
| December | **Publish final proposals (November/December)**<br><br>**Publish draft licence modifications** |
| **2010** | |
| January | |
| February | **Publish statutory notice for licence modifications** |

# Appendices

**Index**



**Index - Supplementary appendices**

# Appendix 1 - Consultation Response and Questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by 23 June 2008 and should be sent to:

DPCR5 Response
Electricity Distribution

Ofgem
2nd floor,
9 Millbank
London
SW1P 3GE

020 7901 7026

DPCR5.reply@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Any questions on this document should, in the first instance, be directed to:

Nicola Cocks
Programme Management, Electricity Distribution

9 Millbank, Ofgem, London, SW1P 3GE

020 7901 7036
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**Chapter 2 - Environmental issues**

**Question 1:** Do you think that evolutionary or revolutionary changes are required to the role of the DNOs to ensure that distribution networks remain fit for purpose? If the latter, in what specific areas does this apply?
**Question 2:** Do you think that we have identified the key areas where DNOs can facilitate activities that have a positive impact on the environment?
**Question 3:** How do we ensure progress is made on the issues identified with the connection of DG? Should progress be facilitated through a working group or should more formal obligations be developed?
**Question 4:** Do you agree that DNOs should have stronger financial incentives to reduce their carbon footprint? Do you think that we have identified the key areas where it may be possible to do this?
**Question 5:** How can the Long Term Development Statements be made more useful for DG and other users of the network?
**Question 6:** Is the current regulatory framework constraining a DNO's ability to facilitate low/zero carbon technologies and if so, what could be done to address this?
**Question 7:** We have raised more detailed questions throughout the chapter. We welcome views on these issues.

**Chapter 3 - Customers**

**Question 1:** Do the current regulatory arrangements deliver the levels of service that customers expect?
**Question 2:** Is the focus and scope of the current regulatory arrangements correct and are there any gaps that need to be addressed?
**Question 3:** Are DNOs customer focused enough or should they be doing more to improve communication with customers?
**Question 4:** Is DNOs' financial exposure set at the right level and/or do we need to change the emphasis in certain areas?
**Question 5:** Do you think we have identified the right issues and appropriate areas for development with the existing incentives?
**Question 6:** We have raised some detailed questions throughout this chapter. We welcome views on these issues.

**Chapter 4 - Networks**

**Question 1:** Have we captured all the key lessons learnt from DPCR4 regarding cost assessment?
**Question 2:** Is our approach to cost assessment appropriate?
**Question 3:** Are there alternative approaches to cost assessment that we should be considering?
**Question 4:** How might our approach to benchmarking be improved?
**Question 5:** Have we captured all the key issues for “networks”?
**Question 6:** Is our building block approach to forecasting appropriate?
**Question 7:** What is the scope for developing additional outputs measures and how can these be incorporated into the price control?
**Question 8:** What is the best way for DNOs to gain stakeholder input to their forecast business plans and how should Ofgem facilitate/incentivise this?
**Question 9:** Is the IQI and capex rolling incentive the best way to ensure realistic forecasts and efficient investment?

**Question 10:** How might the IQI and capex rolling incentive be improved or what additional measures could supplement them?
**Question 11:** Should we aim to equalise incentives on network investment and business costs and how could this be achieved?
**Question 12:** Is the timetable realistic?

**Chapter 5 - Financial issues**

**Question 1:** Should Ofgem use its traditional approach to calculate the cost of capital or should other approaches be considered in order to provide the necessary incentives to invest?
**Question 2:** In particular, should measures to protect DNOs from debt market volatility be considered, such as indexation of the cost of debt, or the use of reopeners at "trigger" levels of interest rates?
**Question 3:** Should Ofgem make financeability adjustments or is this a matter for DNOs once the cost of capital is set?
**Question 4:** Is it appropriate for Ofgem to be making commitments on investment and its financeability over the longer term?
**Question 5:** Should a mechanism for ex-post adjustments for major changes in the tax regime be introduced and, if so, how?
**Question 6:** Do respondents support the publication of a fully populated financial model?
**Question 7:** Should we calculate the DNOs' allowed revenues in a way that creates a smooth revenue profile over the course of the price control period and seek to reflect the level of costs expected in the last year of the control in order to reduce price changes from one control to another?
**Question 8:** What factors should we take into account when determining the level of gearing to assume?
**Question 9:** Do respondents agree with the proposed treatment of net debt and gearing in ex post adjustments to tax allowances?
**Question 10:** What are acceptable alternative approaches to calculating RAV additions; and, following recent market transactions, does RAV continue to reflect the underlying enterprise value of the business?

**Chapter 6 - Process and timetable**

**Question 1:** Do you agree with the range of consultation approaches we intend to use throughout DPCR5?
**Question 2:** Do you believe that we should utilise a consumer orientated challenge group to inform DPCR5?
**Question 4:** Are there any other ways in which we should look to consult with interested parties?
**Question 5:** Do you agree with our approach to publish specific impact assessments for key "important" decisions?
**Question 6:** Are there any other key milestones that you believe we should consider for DPCR5?

# Appendix 2 – The Authority's Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. The Authority also has other statutory duties in respect of the environment, as set out in various other Acts[78]. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[79]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[80].

1.4. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[81]; and

[78] For example, the Environment Act 1995 and the Countryside and Rights of Way Act 2000
[79] Entitled "Gas Supply" and "Electricity Supply" respectively.
[80] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.
[81] Under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.

- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[82]

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- Promote efficiency and economy on the part of those licensed[83] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- The effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- The principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- Certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[84] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

1.9. The Authority has regard to all of its duties when carrying out its functions.

[82] The Authority may have regard to other descriptions of consumers.
[83] or persons authorised by exemptions to carry on any activity.
[84] Council Regulation (EC) 1/2003

# Appendix 3 - Glossary

**A**

### Areas of Outstanding Natural Beauty (AONB)

An AONB is an area of countryside with significant landscape value that has been designated by the Countryside Agency. The purpose of the designation is to conserve and enhance the natural beauty of the landscape; ANOBs rely on planning controls and practical countryside management.

**B**

### British Airways plc (BA plc)

A company operating international scheduled airline services based in the UK.

### British Airports Authority (BAA)

The CAA was formerly known as British Airports Authority.

### Department of Business Enterprise and Regulatory Reform (BERR)

**C**

### Civil Aviation Authority (CAA)

The regulator for the financial affairs and safety responsibilities of UK airlines and airports.

### Capital Expenditure (Capex)

Expenditure on investment in long-lived distribution assets, such as underground cables, overhead electricity lines and substations.

### Competition Commission (CC)

This is an independent public body which conducts in-depth inquiries into mergers, markets and the regulation of the major regulated industries.

### Consumers, Estate Agents and Redress Act 2007 (CEAR Act)

The CEAR Act 2007 requires regulated energy suppliers and networks operators to be a member of an approved redress scheme to investigate and determine complaints relating to energy.

### Cambridge Economic Policy Associates (CEPA)

An economic and financial policy advisory business that advises governments on the role of the private sector in public policy.

### Combined Heat and Power (CHP)

The simultaneous generation of usable heat and power (usually electricity) in a single process, thereby discarding less wasted heat.

### Customer interruptions (CIs)

The number of customers whose supplies have been interrupted per 100 customers per year over all incidents, where an interruption of supply lasts for three minutes or longer, excluding re-interruptions to the supply of customers previously interrupted during the same incident. It is calculated as:

$$\frac{\text{The sum of the number of customers interrupted for all incidents} * 100}{\text{The total number of customers}}$$

### Connections Industry Review (CIR)

Ofgem publishes an annual CIR which aims to highlight trends in the market for gas and electricity connections (including connections for distributed electricity generation) and to monitor the development of competition.

### Customer minutes lost (CMLs)

The duration of interruptions to supply per year – average customer minutes lost per customer per year, where an interruption of supply to customer(s) lasts for three minutes or longer, calculated as:

$$\frac{\text{The sum of the customer minutes lost for all restoration stages for all incidents}}{\text{The total number of customers}}$$

### Corrected ordinary least squares (COLS)

Corrected ordinary least squares is a form of benchmarking in which the frontier is estimated (rather than calculated) using statistical techniques. A functional form for the production / cost function is specified and this is estimated using ordinary least squares techniques. The calculated line of best fit is then shifted to the efficient frontier or relevant benchmark by adding the absolute value of the largest negative estimated error to that of the other errors (for a cost function).

### Composite Scale Variable (CSV)

A method of combining a number of different cost drivers into a single driver for regression analysis using fixed pre-determined weights.

**D**

### Department for Communities and Local Government (DCLG)

### Distribution Charging Methodologies Forum (DCMF)

The DCMF meets every six to 12 weeks to consider and progress policy relating to the network operators' use of system and connection charging methodologies. Further details are available from the Energy Networks Association's website.

### Distribution Connection Use of System Agreement (DCUSA)

The DCUSA provides a single centralised document which relates to the connection to and use of the distribution networks.

### Distributed Energy (DE)

Any generation which is connected directly into the local distribution network.

### Data envelope analysis (DEA)

Data envelopment analysis is a non-parametric method of benchmarking that uses linear programming to determine (rather than estimate) the efficiency frontier of the sample. Under this approach, an efficient firm is one where no other firm – or linear combination of firms – can produce more of all the outputs using less of any input.

### Department for Environment, Food and Rural Affairs (DEFRA)

### Distributed Energy Working Group (DEWG)

A working group set up by Ofgem and BERR to discuss the commercial, environmental and regulatory issues arising in the context of small, low carbon generation, and potential solutions to these problems.

### Distributed Generation Incentive (DG / DGI)

The DG incentive is a 'hybrid' incentive scheme that provides for partial pass-through treatment of reinforcement costs incurred in providing network access to DG and a £/kW revenue driver to incentivise connection of DG. The 'hybrid' incentive sought to combine incentives for efficiency (via the incentive rate) with protection against cost uncertainty (via the cost pass through). An additional element to the incentive was created to provide ongoing network access (availability). The allowances were set based on the DNOs' expectations of likely DG connections and the costs associated with those connections.

### Distribution Network Operators (DNOs)

A DNO is a company which operates the electricity distribution network which includes all parts of the network from 132kV down to 230V in England and Wales. In Scotland 132kV is considered to be a part of transmission rather than distribution so their operation is not included in the DNOs' activities.

There are 14 DNOs in the UK which are owned by seven different groups.

### Distribution Price Control Review 4 (DPCR4)

Distribution price control review 4. This price control runs from 1 April 2005 until 31 March 2010.

### Distribution Price Control Review 5 (DPCR5)

Distribution price control review 5. This price control is expected to run from 1 April 2010 until 31 March 2015.

### Distribution Services Area (DSA)

A geographic area in which DNOs are obliged by their licence to provide specific electricity distribution services.

### Demand side management (DSM)

Demand Side Management (aka Load Management) is any mechanism that allows a customer's demand to be intelligently controlled in response to events on the power system. Such events would include lack of network capacity or insufficient generation.

### Distribution Working Group (DWG)

The DWG is a sub group of the ENSG. The ENSG provide advice to BERR, Ofgem DEFRA, the Scottish Executive and the Welsh Assembly on issues associated with the development of the distribution and transmission electricity networks. The DWG examines issues associated with the integration of generation onto the distribution network.

**E**

### Environment Agency (EA)

### Electricity Connections Steering Group (ECSG)

Electricity connections steering group. This is a working group chaired by Ofgem and is attended by industry stakeholders. The group advises Ofgem on measures that are required to support the development of competition in the electricity connections market.

### Embedded Debt

A utility's actual historic debt portfolio.

### Energy networks association (ENA)

### Electricity, Safety, Quality and Continuity Regulations 2002 (ESQCR)

The ESQCR specify safety standards, which are aimed at protecting the general public and consumers from danger. In addition, the regulations specify power quality

and supply continuity requirements to ensure an efficient and economic electricity supply service to consumers.

European Union Emissions Trading Scheme (EU ETS)

A cap and trade scheme in which EU Member State Governments are required to set emissions limits for all installations in their country covered by the scheme. It is an administrative approach used to reduce the cost of pollution control by providing economic incentives for achieving reductions in the emissions of greenhouse gases.

**F**

Forecast business plans (FBPs)

Forecast business plan questionnaire (FBPQ)

Expenditure information requested by Ofgem from the licensees relating to the period from 2008-09 to 2014-15.

Funds From Operations (FFO)

This is one of a number of ratios used currently by credit rating agencies to assess financeability.

**G**

Gas distribution networks (GDNs)

GDNs transport gas from the National Transmission System to final consumers and to connected system exit points. There are currently eight GDNs in Great Britain which comprise twelve local distribution zones.

Gas Distribution Price Control Review (GDPCR)

The review of the price control applying to gas distribution networks. The review extended the existing price control for the year 2007-08 and reset the control for the period commencing 1 April 2008.

Greenhouse Gas Emissions (GHG)

Guaranteed Standards of Performance (GSOPs)

Guaranteed Standards set service levels to be met in each individual case and are established by a Statutory Instrument. If the licence holder fails to provide the level of service required, it must make a payment to the customer affected subject to certain exemptions.

**H**

### Historical business plan questionnaire (HBPQ)

Expenditure information requested by Ofgem from the licensees relating to a historical period.

### High impact low probability (HILP)

Electricity distribution networks are designed and built to ensure supply continuity for most customers during planned outages and faults that are considered to be credible events. There is a small risk that a more extreme event occurs that has a very high impact on the ability of the distribution system to provide supply continuity. Such an event could result in extended periods of supply interruption for a significant number of customers and is referred to as HILP.

**I**

### Inspections and maintenance (I&M)

The activities of both:
- Inspections - the visual checking of the external condition of assets, and
- Maintenance - the invasive ('hands on') examination of plant and equipment.

### Impact Assessment (IA)

Ofgem has a statutory duty to carry out IAs in certain circumstances concerning decisions that it considers to be "important". This is set out in section 5A of the Utilities Act 2000. If we decide that it is not necessary to publish an IA then we must publish a statement explaining the reasons for our decision.

### Independent distribution network operators (IDNOs)

### Innovation Funding Incentive (IFI)

The IFI is intended to encourage DNOs to invest in appropriate research and development activities that are designed to enhance the technical development of distribution networks (up to and including 132 kV) and to deliver value (i.e. financial, supply quality, environmental, safety) to end consumers.

### Interruptions Incentive Scheme (IIS)

On 1 April 2005 Ofgem introduced a revised interruptions incentive scheme which provides financial incentives to DNOs with respect to the average quality of service they provide in terms of:

- the number of interruptions to supply; and
- the duration of interruptions to supply.

DNOs may be rewarded or penalised by up to 3 per cent of revenue, depending on performance relative to their interruptions targets in each year of the scheme.

### Information Quality Incentive (IQI)

The IQI mechanism incentivises DNOs not to inflate their forecasts. It does this in two ways – by giving additional income to companies who forecast spend close to our assessment and by providing these companies with a higher incentive rate than those companies with higher capex forecasts, thereby increasing their rewards for outperformance.

### Implementation Steering Group (ISG)

The ISG was an Ofgem chaired charging forum that dealt with a number of charging issues which affected DNOs and other stakeholders. This group has since been replaced by the Distribution Charging Methodologies Forum (DCMF), led by the ENA.

### International Organization for Standardization (ISO)

ISO is the world's largest developer and publisher of International Standards.

**K**

### Kilovolt-ampere / Kilovolt-ampere hour (kVAr / kVArh)

Kilovolt-ampere reactive is a measure of the reactive power. Kilovolt-ampere hour is a measure of total energy (real and reactive).

### kiloWatt hour revenue driver (kWh)

A revenue allowance based on units distributed (kWh).

**L**

### Load related expenditure (LRE)

The installation of new assets to accommodate changes in the level or pattern of electricity or gas supply and demand.

### Long Term Development Statements (LTDS)

LTDS' provide information about a DNO's network that allows qualified parties to make initial assessments of connection opportunities. In 2002, Ofgem introduced a licence change that required all DNOs to produce them annually.

**M**

### Market Asset Ratios (MAR)

The MAR represents the ratio between the market value of a regulated business and its regulatory asset value.

### Megawatt-hour (MWh)

A measure of energy production or consumption equal to one million watts produced or consumed for one hour.

**N**

### National Consumer Council (NCC)

In October 2008, NCC will merge with Postwatch and energywatch to form a new, enhanced consumer representation and advocacy body. The new organisation, which will operate on a statutory footing, is being created as part of the Consumers, Estate Agents and Redress Act 2007.

The Act also provides for the establishment of new consumer redress schemes in the gas, electricity and postal services markets. This will improve consumers' access to out-of-court resolutions in the case of complaints with their service providers.

### National Grid Electricity Transmission (NGET)

NGET owns and maintains the high-voltage electricity transmission system in England and Wales.

### Non load related expenditure (NLRE)

The replacement or refurbishment of assets which are either at the end of their useful life due to their age or condition, or need to be replaced on safety or environmental grounds.

### Non-systematic risk

The risk that is particular to an asset or a portfolio, i.e. the extent to which its returns fluctuate independently of the market.

### Net present value (NPV)

Net present value is the discounted sum of future cash flows, whether positive or negative, minus any initial investment.

### Net present value (NPV) neutral

Alternative revenue profiles are net present value neutral if they have the same NPV. We usually use this term in the context of spreading revenues over time (i.e. a price control period) where the costs that they represent have already been incurred, or in comparing different profiles of allowed revenue.

**P**

### Publicly Available Specification 55 (PAS55) certification

PAS 55 is the British Standards Institution's "Publicly Available Specification" for the optimised management of physical assets and infrastructure. Certification is a

formal recognition that an organisation's asset management system is in line with PAS 55.

**R**

### Regulatory asset value (RAV)

The value ascribed by Ofgem to the capital employed in the licensee's regulated distribution or (as the case may be) transmission business (the 'regulated asset base'). The RAV is calculated by summing an estimate of the initial market value of each licensee's regulated asset base at privatisation and all subsequent allowed additions to it at historical cost, and deducting annual depreciation amounts calculated in accordance with established regulatory methods. These vary between classes of licensee. A deduction is also made in certain cases to reflect the value realised from the disposal of assets comprised in the regulatory asset base. The RAV is indexed to RPI in order to allow for the effects of inflation on the licensee's capital stock. The revenues licensees are allowed to earn under their price controls include allowances for the regulatory depreciation and also for the return investors are estimated to require to provide the capital.

### Retained Cash Flow (RCF)

This is one of a number of ratios used currently by credit rating agencies to assess financeability.

### RPI-X

The form of price control currently applied to network monopolies. Each company is given a revenue allowance in the first year of each control period. The price control then specifies that in each subsequent year the allowance will move by 'X' per cent in real terms.

### Registered Power Zone (RPZ)

RPZ is a mechanism to encourage DNOs to develop and demonstrate new and more cost effective technologies for connecting and operating generation on their distribution systems. Where a DG connection meets the requirements and is registered as a RPZ the DNO receives an additional incentive over and above the main DG incentive.

### Regulatory reporting pack (RRP)

The price control review information submitted annually to Ofgem under standard licence condition 52 in accordance with (and in the form and content prescribed by) the price control review reporting rules.

**S**

### Sulphur Hexaflouride (SF6)

One of the most potent greenhouse gases and is widely used in transmission and distribution equipment.

### Service Level Agreement (SLA)

A voluntary arrangement intended to improve the service level for unmetered services that local authorities receive from DNOs.

### System Operator (SO)

NGET is the electricity system operator, responsible for managing the operation of the electricity transmission system. They balance supply and demand ensuring the stability and security of the power system and the maintenance of satisfactory voltage and frequency.

### Systematic risk

The extent to which an asset's returns fluctuate with the market, relative to the average.

**T**

### The Transmission Arrangements for Distributed Generation Group (TADG)

Working Group established by Ofgem in July 2006 to review and develop high level options for change to the existing transmission arrangements with respect to distributed generation.

### Traffic Management Act (TMA)

The Traffic Management Act was introduced in 2004 to tackle congestion and disruption on the road network. The Act places a duty on local traffic authorities to ensure appropriate movement of traffic on their road networks. It gives authorities additional tools to manage the coordination of street works85.

### Transmission Price Control Review (TPCR)

The TPCR will establish the price controls for the transmission licensees which will take effect in April 2007 for a 5-year period. The review applies to the three electricity transmission licensees, National Grid Electricity Transmission, Scottish

85 Department for Transport:
http://www.dft.gov.uk/pgr/roads/tpm/tmaportal

Power Transmission Limited, Scottish Hydro-Electric Transmission Limited and to the licensed gas transporter responsible for the gas transmission system, NGG.

**U**

### Use of System (UoS charges)

Charges paid by generators and demand customers, usually via suppliers, for the use of the distribution network.

**W**

### Weighted Average Cost of Capital (WACC)

This is the weighted average of the expected cost of equity and the expected cost of debt.

# Appendix 4 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

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