# Review of Transco's structure of distribution charges

## Consultation paper

May 2004 101/04

# Summary

This consultation paper is an important part of Ofgem's review of Transco's structure of gas distribution charges. It sets out the statutory duties on Ofgem and Transco which relate to Transco's gas distribution charges, and goes on to discuss Transco's existing distribution charging boundary and distribution charging methods. This is followed by an analysis of these charging arrangements against Ofgem's and Transco's statutory duties, which identifies some issues that might warrant further consideration, including:

- **Issue 1**: Whether Transco's distribution use of system charges should be made more cost-reflective and, if so, what sort of changes would be appropriate;
- **Issue 2**: Whether the capacity / commodity split should be changed;
- **Issue 3**: Whether a more shallow distribution connection charging boundary should be adopted and ongoing distribution charges increased to recover the additional costs of reinforcement;
- **Issue 4**: Whether Transco's Economic Test should be reviewed, for example to consider the potential asymmetry of the test and potential asymmetry of the sharing of efficiency savings when upsizing occurs;
- **Issue 5**: Whether the impact of Relative Price Control (RPC) regulation of Independent Gas Transporters (IGTs) should be considered; and
- **Issue 6**: What are the implications for this review, if any, of the separation of Transco's distribution price control and the potential sale of Transco's Distribution Networks (DNs).

Ofgem would welcome views on the issues identified in this consultation paper and other matters of concern regarding Transco's current distribution charging arrangements.

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# 1. Introduction

## *Purpose of this document*

1.1. This document describes Transco's structure of charges for connection to and use of its gas distribution networks and sets out a number of issues in respect of the structure of these charges. The structure of distribution charges affects a wide range of consumers and it is important that the structure of charges provides appropriate incentives to Transco, shippers, suppliers and consumers.

1.2. It is now timely to undertake a review of Transco structure of distribution charges for several reasons. First, Ofgem undertakes periodic reviews of the structure of these charges with the last review occurring about five years ago and this review now occurring at the mid-point between periodic reviews. Second, Ofgem is considering the potential sale of a number of Transco's DN businesses and it would be prudent to address unresolved issues with the structure of distribution charges before the approach is applied separately to the DNs. Finally, the arrangements for Relative Price Control (RPC) recently introduced for Independent Gas Transporters (IGTs) include a provision that allows IGTs to request disapplication of the RPC arrangements up until 30 June 2005, pending the outcome of Ofgem's review of the structure of Transco's distribution charges.

1.3. Views are invited on the issues discussed in this paper and any other matters that respondents consider should be included within the scope of this review.

## *Background*

1.4. Shippers arrange for the conveyance of gas over the National Transmission System (NTS), Distribution Networks (DNs) and IGT networks to final consumers. Transco is the largest Gas Transporter (GT) and owns and operates the NTS and the DNs. IGTs own and operate separate gas distribution networks that are attached to Transco's (and other IGTs') networks. Typically a distribution network is a monopoly in the area that it serves.

1.5. Transco and the IGTs levy gas distribution charges (included in overall gas transportation charges) on Shippers. The Gas Act 1986 (Gas Act) and the Utilities Act provide for all licensed GTs to be regulated by Ofgem.

1.6. Transco's network is divided into the high pressure NTS and the eight lower pressure DNs, (formerly Local Distribution Zones (LDZs)). The NTS transports gas from the beach terminals and interconnectors to the DNs and large industrial consumers connected directly to the NTS. The DNs distribute gas from the NTS to consumers and to Connected System Exit Points (CSEPs)[1].

1.7. Transco is subject to a regular price control review (typically once every five years) that determines the allowed revenue that can be recovered through its charges. Transco is currently subject to the following arrangements:

- an NTS transmission asset owner (TO) price control[2];
- NTS system operator (SO) incentives[3];
- separate price controls (from April 2004) for each of the eight Distribution Networks; and
- a separate price control for metering and meter reading.

1.8. The distribution price controls establish allowed revenue for each DN to be recovered through gas distribution charges. Transco is then responsible for establishing a set of gas distribution charges in accordance with principles set out in the GT licence.

1.9. Transco's total allowed distribution revenue, determined by its price control, is approximately £2 billion for the financial year 2002/03. Transco's distribution charges account for about 25 – 30 per cent of a typical domestic gas bill. This is a significant percentage of typical energy costs, particularly for customers who find it difficult to pay their bills.

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[1] A CSEP is a point where one gas network is connected to another gas network.
[2] Final proposals for Transco's TO price control were published in the 'Review of Transco's Price Control from 2002' September 2001 (56/01)
[3] Final proposals for the SO incentives were published in 'Transco's NTS SO Incentives 2002-7' in December 2001 (77/01)

1.10. GTs are typically engaged in several activities within the gas industry, including the provision of connections, gas distribution and metering services. GTs can compete to provide connection services to premises without a gas supply and provide a monopoly distribution service to all consumers connected to their networks.

1.11. GTs are generally involved in the following distribution activities[4]:

- the provision or adoption of new gas distribution networks or individual connections, referred to as connection services;
- the ongoing operation and maintenance of gas distribution networks, referred to herein as gas distribution; and
- the provision of services to facilitate competition in the shipping and supply of gas.

1.12. The cost of connection services can be either recovered as an up-front charge to the party requesting the connection, as part of ongoing gas distribution charges, or a combination of the two. This depends upon the extent to which up-front connection charges are deep or shallow. The costs of gas distribution and services to facilitate competition in shipping and supply of gas are generally recovered through ongoing gas distribution charges.

## *Other relevant documents*

1.13. Ofgem published final proposals for the separation of Transco's distribution price control in June 2003 which came into effect on 1 April 2004. Ofgem is also currently consulting on the potential sale of Transco's DN businesses and has published a number of consultation documents and discussion papers, which are available on the Ofgem website. As part of this ongoing consultation, Ofgem is considering the reform of the exit and interruptions arrangements for the NTS and DNs, which could have implications for this review.

1.14. Ofgem recently finalised its review of the charging arrangements for IGTs. The review concluded with final proposals for a Relative Price Control published in

July 2003, linking the level of distribution charges made by IGTs to those levied by Transco. These arrangements came into effect on 1 January 2004.

1.15. The structure of electricity distribution charges is also under review by Ofgem. Initial conclusions for the structure of electricity distribution charges were published in June 2003[5] and an initial decision document was published in November 2003[6].

1.16. In December 2003 Ofgem published its decision to allow NGC to change the electricity transmission connection boundary from essentially shallow to very shallow from April 2004[7]. In April 2003 Ofgem published a paper on competition in the provision of one-off connections to gas distribution networks[8].

1.17. Issues raised during Ofgem's last review of Transco's structure of distribution charges were discussed in a March 2000 paper 'Review of Transco's LDZ charging methodology'. In this paper, Ofgem assessed Transco's distribution charging methods against a set of charging principles and identified certain issues with the then current approach. A number of these issues were addressed in subsequent pricing consultations by Transco, in particular the introduction of an optional short-haul tariff and a separate CSEP charging function.

1.18. Further background information on the development of charging arrangements for gas and electricity networks is provided in Appendix 2.

## *Structure of this document*

1.19. This paper contains the following Chapters:

- Chapter 2 describes key aspects of the regulatory framework within which Ofgem and Transco operate;

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[4] Transco is the only GT that is also involved in transmission activities.
[5]' Structure of electricity distribution charges – initial conclusions' June 2003, paper 43/03
[6] 'Structure of electricity distribution charges – initial decision document' November 2003, paper 142/03
[7] Ofgem's letters on this matter are located on NGC's website (www.nationalgrid.com).
[8] 'Competition in one-off gas connections – consultation' April 2003, paper 28/03

- Chapter 3 describes the existing boundary between Transco's distribution connection charges and ongoing distribution charges;
- Chapter 4 describes Transco's existing distribution charging methods; and
- Chapter 5 discusses a number of potential issues in respect of Transco's structure of distribution charges.

1.20. This paper also includes the following appendices.

- Appendix 1 provides background information on the boundary between connection and ongoing charges;
- Appendix 2 provides background information on the development of charging arrangements for gas and electricity networks ;
- Appendix 3 summarises Transco's current distribution charges; and
- Appendix 4 provides information about Standard Offtake Quantities (SOQs).

## *Timetable for this review*

1.21. Responses to this document will be considered in developing draft proposals for Transco's structure of distribution charges. It is intended to publish draft proposals in the fourth Quarter of 2004. A Regulatory Impact Assessment (RIA) will be undertaken to identify the costs and benefits of any options considered in developing draft proposals.

## *Responding to this document*

1.22. Responses to this consultation should be received **by 18 June2004** and sent to:

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1.23. All responses will be published on the Ofgem website and held electronically in the Research and Information Centre. Respondents should put any confidential material in appendices to their responses. Ofgem prefers to receive responses as a Word document attached to an email.

# 2. Regulatory framework

2.1. The first section below summarises the key pieces of legislation relevant to the economic regulation of the gas industry. The second section sets out Ofgem's statutory duties. The third section highlights specific objectives applicable to Transco in setting its gas distribution charges. The fourth section summarises the existing regulatory framework for the structure of gas distribution charges and invites views on aspects of this framework.

## *Relevant Legislation*

2.2. The Gas Act 1986 (as amended) provides for the regulation of the onshore gas sector and for the separate licensing of transportation, shipping and supply. The Gas Act is the main piece of primary legislation that sets out the duties of each GT in connecting premises and charging for transportation services. The GT licences contain additional regulatory obligations that GTs must comply with.

2.3. Under Section 10(7) of the Gas Act, Ofgem, with the consent of the Secretary of State, may make regulations entitling a GT to levy charges on consumers for the installation of the main used to provide a consumer with a connection to the gas network.

2.4. In 1995 the Gas Act 1986 was amended to allow for the creation of IGTs which develop, operate and maintain local gas distribution networks. IGT networks are connected directly to Transco's system via a CSEP or indirectly to Transco's system via another IGT. There are around 21 million consumers directly connected to Transco's network and around 400,000 consumers are connected to IGT networks.

## *Ofgem's Statutory Duties*

2.5. When carrying out its functions, Ofgem needs to consider its principal objective and general duties. In relation to gas, these are set out in the Gas Act. Ofgem's principal objective is to:

- 'protect the interests of consumers in relation to gas conveyed through pipes, wherever appropriate by promoting effective competition between

persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas so conveyed'[9]

2.6. When exercising this duty Ofgem must have regard to a number of other factors[10], including:

- securing that, as far as it is economical to do so, all reasonable demands for gas are met;
- ensuring licence holders are able to finance those activities which are the subject of Gas Act or licence obligations;
- promoting efficiency and economy by licensees and the efficient use of gas;
- securing a diverse and viable long-term energy supply;
- having regard to the effect on the environment of activities connected with the conveyance of gas; and
- having regard to the interests of individuals who are disabled, chronically sick, of pensionable age, with low incomes or residing in rural areas.

2.7. In addition to the duties arising from the Gas Act Ofgem has received additional guidance from the Secretary of State on social and environmental issues. This guidance focuses on the Governments' targets for reducing fuel poverty and greenhouse gas emissions.

## *Specific Gas Transportation Objectives*

2.8. GTs are subject to obligations arising from the Gas Act and specific conditions within their licences. The majority of licence conditions are standard conditions, which apply to all GTs. At present Transco is also subject to amended standard conditions, some specific standard conditions which at

[9] section 4AA (1)
[10] see section 4AA (2), (3) and (5)

present relate only to Transco and special licence conditions (including its price control condition).

2.9. Section 9 of the Gas Act sets out duties on a GT including:

- develop and maintain an efficient and economical pipeline system;
- subject to the above, comply with any reasonable request, where economical to do so, to connect premises or other pipeline systems to its system and convey gas by means of that system;
- facilitate competition in the supply of gas; and
- avoid undue preference or discrimination in the connection of premises or in the terms for conveying gas.

2.10. In addition to obligations under the Gas Act, standard condition 4A of the GT licence requires Transco to establish a charging methodology that meets the following objectives:

a) '… results in charges which reflect the costs incurred by the licensee in its transportation business'[11];

b) '…so far as is consistent with sub-paragraph (a) …properly takes account of developments in the transportation business'; and

c) 'so far as is so consistent …facilitates effective competition between gas shippers and between gas suppliers'.

2.11. As part of its consultation on the potential sale of Transco's DN businesses, Ofgem is considering the allocation of roles and responsibilities between network owners (NTS and DNs). Ofgem has published a Regulatory Impact Assessment on options for the allocation of roles and responsibilities between transmission and distribution networks in the context of a DN sale. Subject to the outcome of consultation on this RIA and decisions taken by the Authority, Ofgem may consider whether to extend to the DNs the present licence

[11] except where prices in respect of transportation arrangements are established by auction

obligation on Transco to operate the NTS in an efficient, economic and coordinated manner.

## *Principles for the review*

2.12. In summary, the existing Gas Act duties on Transco that are relevant for this review include:

- develop and maintain an efficient and economical system;
- comply with any economic request for connection to its system;
- facilitate competition in the supply of gas; and
- avoid undue discrimination in connection and conveyance of gas;

2.13. The existing GT licence conditions that are relevant for this review include:

- develop cost-reflective charges;
- take account of developments in the transportation business; and
- facilitate competition between shippers and between gas suppliers.

2.14. The existing licence obligations summarised in paragraph 2.13 have proved effective in guiding the development of the structure of gas distribution charges. Nevertheless, Ofgem would not rule out the evolution of these conditions over time and welcomes views on these matters.

# 3. Transco's distribution connection boundary

## *3.1 Introduction*

3.1. This Chapter describes Transco's current approach to defining the distribution connection boundary and the way it sets charges for its connection activities. The boundary has significant implications for the structure and level of distribution charges, and the incentives both with respect to connecting to and use of Transco's distribution networks.

3.2. Transco's GT licence imposes an obligation on it to make connections to the gas network upon request and allows it to recover the reasonable costs of doing so from those seeking the connection. The GT licence condition that governs the method of charging for connection is standard condition 4B. Connection charges are paid by the person requiring the connection to the gas network, which may be a property developer or consumer in the case of a domestic connection, an Industrial / Commercial consumer or another GT.

3.3. Deep and shallow connection charges refer to the extent that the incremental costs of connecting an individual consumer are recovered by an up-front charge from that consumer. A deep connection policy requires consumers to pay up-front for all connection costs, possibly including the reinforcement of the existing network required to distribute the additional gas consumed at their premises. A shallow connection policy recovers only some elements of incremental infrastructure costs up-front, for example the cost of new service pipes, with the reinforcement costs recovered via ongoing charges levied on all consumers.

3.4. Appendix 1 sets out a number of possible definitions of boundaries to separate transportation from connection activities undertaken by a GT, including Transco's present policy. In broad terms Transco's connection charging policy is shallow but there are certain circumstances in which customers will be required to make a contribution towards the cost of deep reinforcement.

3.5. Transco moved from a deep connection policy to its current policy following an Ofgas review of its connection policy in 1996 and 1997. This review concluded that a broadly shallow policy should be applied to all prospective new loads.

## *3.2 Reinforcement*

3.6. Reinforcement is the physical work undertaken to increase the capacity of a part of a gas network if there is insufficient capacity to meet future requirements. It may involve one or more of the following activities:

- adding a new pipe alongside an existing pipe;
- increasing the working pressure of an existing pipe;
- replacing an existing pipe with a new pipe with a larger diameter;
- upgrading an existing pressure source; or
- installing additional pressure source(s).

3.7. Under Transco's existing charging arrangements, the recovery of reinforcement costs is determined by the type of reinforcement undertaken. The two main types are specific reinforcement and general reinforcement.

3.8. **Specific reinforcement** refers to the addition of new capacity to:

- connect a specific new customer or CSEP expected to consume more than 73.2 MWh pa;
- permit an increased flow rate to a specific existing customer or CSEP; or
- enable a specific existing customer to change from interruptible to firm transportation.

3.9. **General reinforcement** refers to the addition of new capacity for load growth associated with individual premises expected to consume up to 73.2 MWh pa and for general load growth that cannot be identified to a specific customer requirement. This type of reinforcement is funded by Transco and recovered through its transportation charges.

## *3.3 The Economic Test*

3.10. The Economic Test (introduced by Transco in 1998) is a financial assessment tool used by Transco to identify whether a customer should pay a contribution towards the reinforcement required for a new connection.

3.11. The Economic Test compares the marginal cost of a new connection with the future transportation income generated by the new load over an appraisal period of ten years for a typical load (under 50 million therms pa) and 15 years for larger loads. The net annual income stream is determined from transportation charges and incremental operating costs associated with the new load. Both income and marginal operating costs are assumed to be constant in real prices over the appraisal period. (i.e. they do not take account of overall prices reducing under the RPI-X control or individual prices changing due to changes in volumes).

3.12. If the marginal cost of reinforcement is greater than the anticipated transportation income, the Economic Test is not met, and the customer requesting the connection has to provide a capital contribution to cover the shortfall if they wish to proceed with the connection.

3.13. Conversely, if the expected transportation revenue exceeds the cost of reinforcement then Transco funds the work and the costs are recovered from all customers via transportation charges. None of the transportation revenue expected from the new connection is used to reduce the connection charge to the customer in this case. Hence, an asymmetry may exist between the case where the Economic Test is met and where it is not met.

3.14. The connection of new loads expected to consume less than 73.2 MWh per annum are not subject to the Economic Test, as discussed below in Section 3.4.

3.15. Transco follows the following broad steps to determine how the costs of connecting all new loads expected to consume in excess of 73. 2 MWh per annum are recovered:

- the most economical point of connection (the Physical Point) is determined, this is usually the closest point on the existing network to the proposed load;

- the point on the network which is deemed to have enough capacity to supply the new load disregarding the existing system load (the Charging Point) is determined through network analysis. The charging point is located by testing different points on the network to determine whether there is sufficient pressure to connect the new load. If it cannot be supported at a particular point, the load is re-tested at intervals further upstream until it can be supported;

- if the charging point and the physical point are the same, then all costs downstream of this point are deemed to be connection costs and are charged in full to the customer;

- if the charging point is upstream of the physical point, then the costs of laying the pipe are apportioned between connection and reinforcement;

- Transco then applies the Economic Test to the reinforcement costs. A load is deemed to be economic and have passed the Economic Test if transportation income for the new load exceeds the reinforcement costs of the new load. In this case, no reinforcement costs are recovered upfront from the customer; and

- where a proposed load fails to meet the Economic Test, the customer will have the option of providing a capital contribution to cover the difference between actual and allowable reinforcement costs if they wish to proceed with connection. Alternatively the customer may opt to connect at a position where sufficient capacity is available.

3.16. For the majority of connections assessed by Transco, transportation revenues are sufficient to meet the costs of reinforcement. Transco has indicated that it funded about £200m of distribution reinforcement in 2002. In addition to this, customers contributed about £4m to reinforcement through specific upfront charges and did not proceed with about £10m worth of uneconomic

reinforcement. Hence Transco would have funded £14m of additional reinforcement schemes in 2002 if the Economic Test did not exist.

3.17. The aim of the Economic Test is to deter inefficient investment decisions. Transco has reviewed the test twice since its implementation in 1998, but no major changes have been made despite subsequent changes made to its allowed rate of return and the unbundling of NTS and LDZ price controls. Transco has identified a number of potential issues with the Economic Test for consideration during this review. These are discussed in Chapter 5.

### *Upsizing*

3.18. Upsizing occurs when Transco decides to undertake additional reinforcement work to that which is required to meet the needs of a connecting customer in order to minimise overall system development costs. Transco may upsize a part of the network beyond the increase in capacity required to connect a new load if the incremental cost of doing so at that time is less than the anticipated cost of reinforcement at a later date.

3.19. Where this occurs the customer pays the cost of any reinforcement required for their connection that is not covered by their future transportation charges (through the Economic Test) and the difference is funded by Transco. Any savings derived from the economies of scale from undertaking specific reinforcement for the new connection together with future general reinforcement initially accrue to Transco, and in due course reduce ongoing distribution charges payable by all customers. This is discussed further in section 5.3.

### *Gas (Connection Charges) Regulations*

3.20. Future customers requiring connection to a relevant main that has been laid for a previous customer may be required to pay a connection charge based on the Gas (Connection Charges) Regulations[12]. These regulations (as amended in 2002) allow a GT to require a person requesting a connection to a relevant main to pay a contribution towards the expenses of laying the main if:

[12] Statutory Instrument (SI) 2001 No. 3267

- the connection to a relevant main is required within 20 years after the laying of the main;
- a person for whom the main was laid has made a payment to the GT in respect of those expenses;
- the amount required does not exceed any amount paid in respect of those expenses by any person previously required to make a payment under these Regulations;
- the GT has not recovered those expenses in full; and
- the GT has made certain information available to the person requiring the connection.

## *3.4 Statutory connections*

3.21. Statutory connections refer to two additional duties placed on GTs. These are known as the 23 metre rule and the 10 metre rule. Each rule is set out below, followed by a discussion of one-off connections.

**The 23 metre rule**

3.22. Under section 10 of the Gas Act 1986, a GT may be required by an owner or occupier of premises not expected to consume more than 2,196 MWh per year to:

- connect those premises within 23 metres of a relevant main of the GT and supply and lay any pipe necessary for that purpose. The owner or occupier may be charged for provision and laying of the pipes but not for the final connection; or
- connect a pipe supplied and laid by the owner or occupier of a premise to a main of the GT. A GT may charge for the final connection to the relevant mains. The pipe supplied by the owner or occupier of the premises becomes the property and responsibility of the GT.

**The 10 metre rule**

3.23. Standard condition 4B states a GT is obliged to provide the connection and first 10 metres of a pipe free in public land to any domestic customer requesting a connection whose premises are within 23 metres of a relevant main. While the value of most connection work is excluded from Transco's price control, an allowance is made in the price control for the reasonable and efficient cost of meeting the 10 metre obligation. Transco is then able to recover these costs through its allowed revenue and distribution charges.

3.24. The 10 metre allowance is only applicable to connections where the supply of gas will not exceed 73.2 MWh pa, which is typical of domestic loads and is therefore mainly applicable to domestic consumers. Business customers of no more than 2,196 MWh pa and within 23 metres of a main are able to receive a Final Connection Allowance from Transco.

3.25. A summary of the applicable connection charges according to the type and location of premises is given below:

- **Small premises (expected to consume no more than 73.2 MWh pa) within 23 metres of a relevant main**: These customers are not subject to the Economic Test and are subject to statutory connections;
- **Small premises beyond 23 metres of a relevant main:** These customers are not subject to the Economic Test or to statutory connections and hence must pay all connection costs;
- **Premises expected to consume between 73.2 and 2,196 MWh pa**: These customers must pay connection costs and reinforcement costs subject to the Economic Test and are charged on a bespoke basis. However, if the premises lie within 23 metres of a Transco relevant main the consumer receives a Final Connection Allowance from Transco towards the cost of connection; and
- **Premises of more than 2,196 MWh pa:** These customers must pay connection costs and reinforcement costs subject to the Economic Test and are charged on a bespoke basis.

### One-off connections

3.26. Transco's obligation to provide the first 10m of a pipe free of charge to any domestic customer whose premises are within 23 metres of a relevant main in its network has made it the dominant provider of one-off connections. This obligation, which resulted in costs to Transco of around £45m in 2002, makes it difficult for other connection providers to compete for such work.

3.27. Ofgem has considered the following three options to address the constraints to effective competition arising from the 10 metre rule[13]:

- introduction of a fixed sum monetarised allowance,
- introduction of a job specific monetarised allowance, and
- removal of the 10 metre rule

3.28. Ofgem intends to publish a further consultation paper on this matter later this year and respondents are asked to reserve their comments on this issue for the forthcoming consultation paper.

[13] Competition in one-off gas connections – Consultation document, April 2003

# 4. Transco's distribution charges

## *4.1 Introduction*

4.1. As discussed in Chapter 3, the connections charging policy used by network businesses will determine the extent to which the costs of constructing and operating new networks are recovered through up-front payments and through ongoing charges. This Chapter considers the approach used by Transco in setting distribution charges (included in overall gas transportation charges)[14]. These charges are levied on shippers and suppliers in the first instance, and are in turn passed on to consumers.

## *4.2 Background*

4.2. Transco uses a 'postalised' system for charging for the distribution of gas across its distribution networks. This results in distribution charges that are not dependent on customer location but are dependent on customer load size, which acts as a proxy for the distribution assets they use. Charges are set on the basis of the expected use made of distribution network assets by various types of customers. This is based on analysis of the average use of the system by different customers, scaled to ensure total revenues do not exceed those allowed for in Transco's price control. The resulting distribution charges currently in place are set out in Appendix 3 of this document.

4.3. Transco levies three types of distribution charges to recover its allowed distribution revenue:

- Distribution use of system (DUOS) charges that recover costs that relate to operation of the network itself;

[14] For a comprehensive description of Transco's current transportation charging method, refer to the Transco publications, "Transco Pricing Consultation Paper - PC68" issued November 2001, and "Gas Transportation Charges – Effective from 1 October 2003", issued on 26 September 2003. Both are available from the Transco website.

- General distribution customer charges (herein referred to as general customer charges) that recover costs that relate to providing general customer-related services; and

- Specific charges for specific services only required by certain shippers.

4.4. Approximately 70 per cent of allowed distribution revenue is recovered through DUOS charges, with most of the remaining 30 per cent recovered through general customer charges. Specific charges only account for approximately 0.2 per cent of allowed distribution revenue

4.5. DUOS charges are discussed in the following section, general customer charges covered in section 4.4 and specific charges in section 4.5.

## *4.3 Transco's distribution use of system charges*

4.6. There are several methods used by Transco to determine DUOS charges, depending on the type and location of connection involved:

- charges to directly connected Single Supply Points (SSPs), where customers are connected directly to Tranco's network;

- charges to Connected System Exit Points (CSEPs), where customers are connected to another distribution network which in turn is connected to Transco's distribution network;

- optional charges for the provision of 'short haul' distribution services; and

- special charging arrangements that apply to interruptible loads.

4.7. Each of these is discussed below.

### *DUOS charges to directly connected supply points*

4.8. This section sets out the way in which charges are calculated for those supply points that are connected directly to Transco's distribution network. This represents the core of Transco's DUOS charging method and accounts for most of its use of system revenues.

4.9. The key principle underlying the method is that charges reflect the expected average use of the distribution network made by customers of a given size, rather than the actual use made by each particular customer. Expected network use is derived from a series of steps that assess the probability of a particular customer type utilising specific components of the network. This, coupled with the costs of operating those components of the network, enables a set of charges to be established that are broadly cost-reflective.

### The capacity / commodity split

4.10. Approximately 50 per cent of the revenue recovered from DUOS charges comes from capacity charges and 50 per cent from commodity charges. Generally capacity charges are applied to the peak-day demand (in pence per peak day kWh per day) and commodity charges are applied to the annual demand (in pence per kWh). For supply points with an annual quantity greater than 732 MWh the unit rates of both charges are determined based on a function of the peak demand (Supply point Offtake Quantity (SOQ)[15].

4.11. The March 2000 paper on Transco's distribution charges identified concerns with the 50/50 split between capacity and commodity charges and this issue is discussed further in Chapter 5.

### Mechanism for calculating DUOS charges for directly connected supply points

4.12. The remainder of this section sets out the specific steps that are taken in deriving capacity and commodity charges. Both capacity and commodity charges are based on charging functions developed by Transco in 2001. This analysis established the costs of using the different tiers of the distribution system and the probability of different load bands being connected to these tiers. This was used to calculate the share of the system costs attributable to each load band. This analysis produced cost data points from which the charging functions for capacity and commodity charges were derived using regression analysis.

[15] See Appendix 3.

***Step 1: Identify pressure tiers***

4.13. The distribution system comprises four pressure tiers as shown in Table 4.1.

**Table 4.1: Distribution network pressure tiers**

| Pressure Tier | Operating Pressure |
|---|---|
| Local Transmission System (LTS) | 7 – 38 bar |
| Intermediate Pressure System (IPS) | 2 – 7 bar |
| Medium Pressure System (MPS) | 75 mbar – 2 bar |
| Low Pressure System (LPS) | Below 75 mbar |

4.14. The Low Pressure System accounts for over 80 per cent of distribution network pipeline and is sub-divided into six further sub-tiers, categorised by pipe diameter as shown in Table 4.2. There are therefore nine tiers in total that are used for allocating network costs.

**Table 4.2: LPS sub-tiers and pipeline diameter**

| LPS1 | LPS2 | LPS3 | LPS4 | LPS5 | LPS6 |
|---|---|---|---|---|---|
| >355mm | 250-355mm | 180-250mm | 125-180mm | 90-125mm | <90mm |

4.15. Analysis undertaken by Transco indicates a significant correlation between customer size and the pressure tier to which they are connected. In general, large customers are typically supplied from higher pressure tiers and small customers from lower pressure tiers. Given that in general gas flows from higher to lower pressure tiers, it is assumed that the smaller the customer, the more distribution assets they would be expected to use and so the higher the unit charge.

***Step 2: Allocate costs to be recovered through capacity and commodity charges***

4.16. The next step in calculating distribution charges is to allocate system costs to each of the nine off-take tiers. This is carried out by using Transco's ABC model

for the larger pressure tiers (LTS, ITS and MPS) and year 2000 replacement cost data for sub-division among the six LPS sub-tiers.

4.17. The costs allocated to each pressure tier are split 50/50 to determine the amounts to be recovered by the capacity and commodity components of the charges. Table 4.3 shows the results of this allocation for Transco's current use of system charges.

**Table 4.3: Allocation of costs to pressure tiers and type of charge**

| Off-take tier | Allocated cost (£m) | Capacity component (50%) | Commodity component (50%) |
|---|---|---|---|
| **LTS** | 196.3 | 98.1 | 98.1 |
| **IPS** | 66.9 | 33.5 | 33.5 |
| **MPS** | 201.4 | 100.7 | 100.7 |
| **LP1** | 96.2 | 48.1 | 48.1 |
| **LP2** | 99.4 | 49.7 | 49.7 |
| **LP3** | 82.2 | 41.1 | 41.1 |
| **LP4** | 123.6 | 61.8 | 61.8 |
| **LP5** | 204.2 | 102.1 | 102.1 |
| **LP6** | 176.8 | 88.4 | 88.4 |
| **Total** | 1247.0 | 623.5 | 623.5 |

4.18. The remaining steps used to calculate the capacity and commodity charge are the same. Calculation of the capacity charge is described below to illustrate the approach.

***Step 3: Calculate the utilisation of each pressure tier***

4.19. For the purposes of this analysis, Transco divides gas consumers into eleven groups based on their annual consumption, as set out in table 4.4 below.

**Table 4.4 Consumption load bands (MWh)**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 – 73.2 | 73.2 – 146.5 | 146.5 - 293 | 293 - 439 | 439 - 586 | 586 - 732 | 732 - 2931 | 2931– 14,654 | 14,654– 58,614 | 58,614– 293,071 | 293,071 + |

4.20. For each of these consumption bands, Transco calculates the probability of a unit of gas passing through each of the four pressure tiers and LPS sub-tiers. Probabilities are based on network analysis and expected entry and exit volumes for each tier. In general the lower the consumption band, the higher is the probability of gas passing through the lower pressure tiers and smaller sub-tiers.

4.21. For Industrial and Commercial (I&C) customers this analysis was undertaken through the '1998 Connection by Pressure Tier Survey' which covered about 1 per cent of total I&C supply points. For low pressure supply points, this analysis was undertaken through the '2000 Low Pressure Tier Connection survey' which covered about 13.5 per cent of distribution supply points.

4.22. The probability of using each tier is then multiplied by the peak day offtake volume for each consumption band. This gives for each consumption band the expected peak day capacity utilisation of each tier.

***Step 4: Calculate the average cost of using each pressure tier***

4.23. The next step in calculating distribution charges is to determine the average cost of using each tier, which is the total cost allocated to each tier (from table 4.4) divided by the total peak day capacity for that tier. The total peak day capacity of each tier is determined by summing the expected peak day utilisation of each tier over all consumption bands.

***Step 5: Calculate the average cost for each consumption band***

4.24. For each tier, the unit cost of its use (from step 4) is multiplied by the probability that the tier is utilised by customers in each consumption band (from step 3). This produces a matrix that details the expected unit cost of a particular load in each consumption band in respect of using each tier. Summing over the tiers gives the average unit cost to be recovered by the capacity charge by customers in each consumption band.

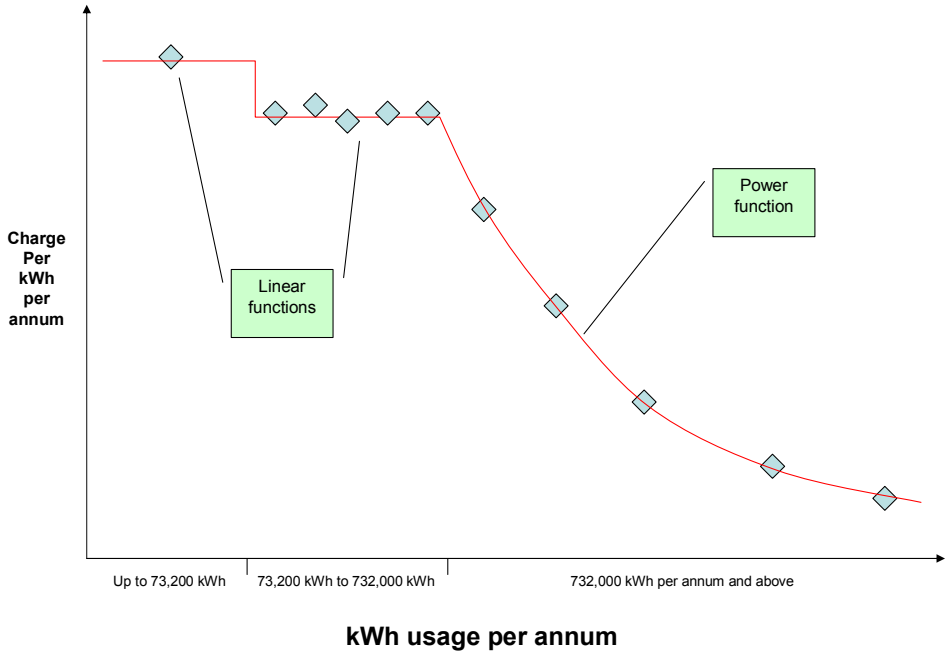
***Step 6: Calculate costs for individual customers***

4.25. The above steps describe the method used to calculate capacity charges by consumption band. In order to determine the basis for deriving charges for

individual customers, total capacity charges are plotted by customer band and functions fitted to these data points.

4.26. For the domestic and small I&C consumption bands, Transco concluded that the functions that best fit this data are linear (as discussed in Transco's analysis set out in pricing consultation (PC) paper 68). For larger consumption bands, Transco concluded that a function of the power of the peak daily load provided the most accurate fit. Figure 4.1 indicates the data points and nature of the derived charging function. It shows that the lower the annual consumption, or estimated peak demand, the higher the unit charge.

**Fig 4.1 Transco charging function by annual gas consumption**




***Step 7: Generate usage charges***

4.27. Steps 3 to 6 are carried out to determine both the capacity and commodity charging functions. In calculating the commodity charge, the calculations are the same as those described above, except that a commodity or annual usage value is used, rather than the peak day offtake value.

4.28. The charging functions determined in Step 6 are then scaled such that the total expected demand on the network recovers the target revenue as determined

through Transco's price control. The resulting charges effective from October 2003 are listed in table 1 in Appendix 3.

## *DUOS charges to connected system exit points (CSEPs)*

4.29. The DUOS charging method discussed above applies to single supply points directly connected to Transco's network. Where gas is transported to a CSEP, a different charging function is derived.

4.30. A CSEP is a point on the system that comprises one or more individual exit points that are not metered supply points. These points include connections to pipeline systems operated by GTs other than Transco. In October 2000 a separate charging function was introduced for transportation to CSEPs, in order to take account of the differences between CSEPs and typical directly connected supply points.

4.31. The method for deriving the CSEP charging function uses the same method described above. However, only a sub-set of data specific to CSEPs is used in the calculation. Where steps 3 to 6 above apply the probability of loads within a consumption band using a particular pressure tier, in deriving the CSEP charge the probability that a tier is utilised by CSEPs within a consumption band is used. The unit capacity and commodity charges are then based on the completed development irrespective of the actual stage of development.

4.32. The current CSEP charging function is provided in table 1 in Appendix 3. Possible issues with the approach used to calculating CSEP charges are discussed in Chapter 5.

## *Optional distribution network charge*

4.33. An alternative to the standard distribution use of system charge is available called the optional LDZ tariff, or short haul tariff. The optional tariff was introduced following Ofgem's last review of distribution charges in 2000.

4.34. The rationale for this charge is that for large loads located close to the NTS, the standard distribution charge can appear to give perverse incentives for the construction of new pipelines to the NTS despite capacity being available on the DN. For example, if a customer was located close to the NTS and also to the

distribution system there may be a financial incentive to connect directly to the NTS system thereby avoiding charges based on average utilisation of the distribution system. This could result in the unnecessary duplication of existing infrastructure.

4.35. The optional charge is based on a power function in the same way as standard charges but with the inclusion of a distance factor. The distance factor is defined as the direct distance from the site boundary to the nearest point on the NTS. The application of this distance factor makes connection to the DN system more cost effective in certain situations.

4.36. The optional charging function this results in is shown in table 1 of Appendix 3.

### *Firm and interruptible transportation*

4.37. NTS network constraints can be addressed in a variety of ways including the interruption of either NTS connected supply points and/or DN connected supply points. DN constraints are managed by interrupting supply points connected to that DN. The majority of interruption occurs on the DNs and the majority of interruptible sites are located on the DNs. Transco currently enters into interruption arrangements with shippers. Shippers then contract with suppliers who contract with customers to meet their interruption obligations.

4.38. All customers connected to Transco's DN systems are defined as either requiring interruptible transportation or firm transportation. Firm transportation arrangements apply to supply points which require a constant gas supply and incur the standard system charges set out above. Interruptible transportation arrangements are available in respect of supply points with Annual Quantities (AQs) above 5,860 MWh per annum and where, given sufficient notice, the gas supply can be interrupted.

4.39. Supply points designated as interruptible are at present exempt from both the capacity component of the distribution use of system charge and the NTS exit capacity charge. Where Transco nominates a supply point to be interrupted for more than 15 days in a particular year (up to a maximum of 45 days), there is a transportation charge credit. The credit is equivalent to 1/15 of the annual distribution standard capacity charge and the annual NTS exit capacity charge

and is payable to the shipper by Transco for each day of interruption over 15 days.

4.40. As part of the ongoing consultation on the potential sale of Transco's DN businesses, Ofgem is considering the reform of the exit and interruptions arrangements for the NTS and DNs.

## *4.4 General customer charges*

4.41. General customer charges reflect general supply point and customer related costs. General customer charges are not levied on CSEP connections (as discussed in section 4.5 below).

4.42. General customer costs are divided into two cost pools; service pipes and supply point emergency work (all emergency work downstream of and including service pipes). Each cost pool is separated into a number of consumption bands. For each consumption band, customer costs are divided by the number of consumers to give an average cost per consumer. Summing the unit costs across the two cost pools for each consumption band gives a total average cost per consumer for that consumption band. Functions are then determined, using regression analysis, that best fit the relationship between total average cost per consumer and consumption band. These functions establish charges for each customer connected to Transco's network.

4.43. The current structure of general customer charges is:

- supply points consuming below 73.2 MWh pa (mostly domestic consumers) are charged on a commodity basis (p/kWh);
- for supply points consuming between 73.2 and 732 MWh pa (generally small I&C consumers), charges are based on capacity plus a fixed charge which varies with the frequency of meter reads (ie monthly read or non-monthly read meters); and
- for supply points consuming above 732 MWh pa, Transco concluded that a charging function based on the power of the peak load provided the most reasonable fit.

4.44. These charges are scaled to recover the target level of revenue for customer charges. The resulting charges effective from October 2003 are listed in table 2 in Appendix 3.

4.45. Transco last considered the structure of general customer charges through pricing consultation (PC) 58 in 2000. Transco noted that general customer charges have discontinuities at 73.2 and 732 MWh and suggested that improvements may be obtained by further disaggregation of these charges.

## *4.5 Specific charges*

4.46. There are other specific charges, included in regulated transportation income, for services which are only required by certain shippers.

4.47. These specific charges include:

- charges for the administration of, and specific services pertaining to, shared supply meter points and interconnectors;
- charges for Transco meter reads in compliance with the network code, including 'must reads' and opening reads;
- charges of pre-Network Code contracts for administration; and
- a CSEP administration charge, levied on CSEPs to reflect the administration costs of servicing these loads. The current level of this charge is £1.20 per final supply point per year.

4.48. To calculate these charges, the ongoing costs of providing the services are assessed by Transco, using its ABC and Transaction models, as set out below:

- all direct costs relating to the specific service are calculated and categorised, including salaries and/or wages and materials costs specifically used for that service; and
- the proportion of indirect costs to direct salary costs (taken from the Transaction model for similar activities) is then used to uplift the direct salary costs to account for all the indirect salary costs, support costs and sustaining costs.

4.49. The current level of this uplift relating to office based activities and based on 2001 costs is 215 per cent. The uplift is applied to direct salary costs[16] to determine the full cost of providing each specific service.

[16] For the method underlying this uplift see Transco's background paper, "Charging for Specific Services – Cost Assignment Methodology", May 1999. The latest level of the uplift can be found in the Transco pricing discussion paper, PD16, Section 5, November 2002.

# 5. Issues for consideration

## *5.1 Introduction*

5.1. Ofgem last carried out a review of the structure of Transco's distribution charges in 1999 and 2000, and published a consultation paper on Transco's distribution charging methods in March 2000. This review raised a number of issues with Transco's charging methods, and proposed several improvements to these methods. A subset of these improvements was implemented, with some issues remaining unresolved. Since 2000 further issues that have been raised by other parties.

5.2. This Chapter sets out the principal areas of concern and discusses some of the issues in more detail. The Chapter begins with a summary of the March 2000 paper. It then considers Transco's distribution charging boundary and distribution charges in light of Transco's charging objectives. Finally it summarises issues that could be considered further as part of this review, and seeks views on whether there are other issues that should also be reviewed.

## *5.2 Issues raised in the March 2000 paper*

5.3. The March 2000 paper focussed on two areas: reviewing the principles of cost-reflective charging and how they apply to Transco, and assessing potential improvements to Transco's charging methods. Within these areas four issues were considered:

- the relationship between costs and charges;
- the capacity / commodity split;
- perverse incentives to bypass the distribution networks; and
- treatment of charges to CSEPs.

5.4. Each of these issues is discussed below, including developments since the March 2000 consultation paper.

## *The relationship between costs and charges*

5.5. Charges which reflect costs are generally more efficient as consumers bear the costs of their decisions to connect to the gas system or to consume gas.

5.6. Use of system charges that vary with location have been introduced for both the gas transmission and electricity transmission networks. For example, Transco recovers its allowed NTS TO revenue through entry capacity auctions and exit capacity charges which reflect the estimated long run marginal cost of developing the system. Entry capacity auctions have been introduced to improve the incentives on Transco to invest efficiently in entry capacity, to ensure capacity rights are sold in an efficient and non-discriminatory manner and to mitigate the risk of stranded assets in the transmission network.

5.7. However, for the gas distribution and electricity distribution networks, use of system charges do not generally vary with location. It may be appropriate to consider whether similar issues (such as stranded assets) may exist on the gas distribution networks and whether it would be appropriate to introduce similar arrangements for the gas distribution networks.

5.8. The cost drivers that were considered most likely to affect Transco's forward-looking incremental distribution costs in the March 2000 paper were:

- the distance gas is transported;
- the tier to which customers are connected;
- geographical factors such as rural/urban location and soil type; and
- whether demand is on or off peak.

5.9. Transco's charging methods are based on average or postalised charges. As explained in Chapter 4 this involves grouping customers together in load bands and averaging costs across them. In general charges are not directly based on how far the gas has travelled, the pressure tier connected to, the topography of the local area or whether demand is on or off peak (although there are capacity charges and some customers have interruptible terms).

5.10. The March 2000 paper considered a number of methods for improving the cost reflectivity of Transco's distribution charging. It considered the cost drivers discussed in paragraph 5.8 and the extent to which they could be better reflected in the charges. The options considered included distance-related charging, based on either actual or notional distances, and charging by pressure tier, which could act as a proxy for distance.

5.11. Ofgem, and respondents to the March 2000 paper, recognised the benefits of increased cost-reflective charging but also the disadvantages. The drawbacks included the administrative costs of establishing and managing a significantly more complicated charging method and conflicts with the Reconciliation-by-Difference (RbD) approach to billing shippers. The March 2000 paper concluded that an average-based charging method offered an appropriate balance between cost-reflective charging and minimising administrative costs and did not recommend a move away from Transco's present approach to averaging. Nevertheless, it did recommend further consideration of the capacity/commodity split, incentives to bypass the distribution networks and treatment of CSEP charges.

5.12. It may be appropriate to consider whether recent developments since the last review suggest that Transco's distribution charges should be made more cost-reflective.

### *Capacity / commodity split*

5.13. As described in Chapter 4 Transco's distribution use of system charges include both a capacity charge based on peak use, and a commodity charge based on gas consumption. The 50/50 split between capacity and commodity charges was considered in the March 2000 paper.

5.14. Since Transco benefits from significant economies of scale, its marginal costs will typically lie below its average costs. If Transco were to set its transportation charges equal to the marginal costs of conveying gas it would not recover the level of revenues it is allowed to collect from its customers under its price control. Two broad options for recovering the shortfall are through a fixed charge per customer or through price-cost mark-ups. In practice it may be difficult to determine the appropriate size of a fixed charge for each customer

without reference to volume. Price-cost mark-ups are calculated by finding a single percentage figure which, when applied to the total long-run marginal costs, generates the total allowed revenue in that year.

5.15. Transco has indicated that it would only recover 38 per cent of total LDZ allowed revenue if it adopted marginal cost pricing. This comprises 37.6 per cent for marginal costs for capacity and 0.4 per cent for marginal costs for commodity. Transco needs a mark-up over its marginal costs if it is to recover its total allowed revenue. A wide range of capacity/commodity splits are possible depending on how these mark-ups are determined.

5.16. Using equi-proportional mark-ups to scale revenue to reflect fixed costs could result in a capacity/commodity split of 99/1. If commodity charges and capacity charges are marked up by equal amounts then the capacity/commodity split would be approximately 70/30. If charges are rebalanced to recover a greater proportion of costs through capacity charges then charges for consumers that use smaller volumes of gas are likely to rise. Transco has estimated the effect on overall transportation charges of changing the capacity/commodity split to 70:30, 90:10 and 99:1. Table 5.1 summarises the estimated impact on transportation charges across load bands and the likely number of consumers affected.

**Table 5.1 Impact of changing the capacity/commodity split**

| Load band | Number of consumers | Average percentage change in transportation charges (based on April 2003 charges) | | |
|---|---|---|---|---|
| | | 70:30 | 90:10 | 99:1 |
| < 73.2 MWh | 20,976,310 | 1% | 1% | 2% |
| 73.2 - 732 MWh | 359,468 | 2% | 4% | 4% |
| 732 - 5,860 MWh | 34,833 | 2% | 3% | 4% |
| > 5,860 MWh Firm contracts | 3,762 | -2% | -5% | -6% |
| > 5,860 MWh Interruptible contracts | 1,557 | -19% | -39% | -48% |

5.17. The impact on charges set out in table 5.1 differs between customers on firm and interruptible contracts. Consumers with interruptible contracts would benefit from more significant reductions as they are not required to pay capacity charges.

5.18. Ofgem is considering reform of the exit and interruptions regime for the NTS and DNs through the ongoing consultation on the potential sale of Transco's distribution businesses. Ofgem considers that the present exit and interruption arrangements may be causing undue discrimination between some firm and interruptible customers and between different types of interruptible customers as the discounts provided to interruptible customers do not necessarily reflect the true value of interruptible services being provided. Ofgem also considers that the interruption arrangements should provide efficient signals to Transco and customers of the value of interruption across networks. This should assist Transco in efficiently trading off the costs of interruption with physical investment, and may also inform customers' locational decisions.

5.19. Reforms under consideration include the form of interruption contracts, the range of interruption services which should be offered and the way in which prices for interruption should be determined. The options under consideration include the introduction of universal firm access rights for all users and the allocation of exit capacity rights through auctions.

### *Incentives to bypass the DNs*

5.20. Incentives to bypass the DN systems and connect to the NTS directly were considered in the March 2000 paper. It was recognised that for consumers who used a large quantity of gas the average-based system of charging might provide incentive for them to connect directly to the NTS rather than to DN. In some cases by-passing the DN would be inefficient. To reduce the incentives to bypass the DN an optional short-haul tariff for larger users connected to the DN was recommended and subsequently introduced.

### *Treatment of charges to CSEPs*

5.21. The March 2000 paper considered whether the charges to CSEPs were cost-reflective and the benefits of a separate charging function. Some IGTs said that

CSEPs, given their diversified load profile, use fewer distribution assets than individual loads of a similar size. A number of approaches were considered and a separate CSEP charging function using the same method applied to single supply points but based on CSEP specific data was recommended.

5.22. Since the introduction of the CSEP charging function IGTs have raised concerns with the approach used by Transco. Specifically, IGTs are concerned that the method used to collect the underlying data may not reflect the tier of distribution assets to which CSEPs are typically connected. In addition, the allocation of costs for some pressure regulation assets between the low pressure and medium pressure may be inappropriate, with higher pressure tiers bearing some costs for equipment used solely by lower pressure tiers.

5.23. The CSEP charging function was introduced to improve cost reflective charging by Transco. However, this separate charging function only benefits a relatively small group of customers. Given the advantages of consistency, transparency and simplicity with respect to charging arrangements, it may be appropriate to review the degree to which the underlying data justifies separate charging functions for CSEPs.

5.24. In addition to the CSEP charging function, Transco levies a CSEP administration charge (discussed in Section 4.5). Ofgem has reviewed this charge in the past due to concerns with its level and whether it was appropriately cost reflective. It may be appropriate to review the extent to which this charge remains cost reflective and the basis and frequency with which Transco keeps this charge under review.

## *5.3 Other issues*

5.25. In this section, some additional issues related to Transco's charging boundary and ongoing distribution charges are considered.

### *Transco's distribution charging boundary*

5.26. Chapter 3 describes the existing boundary between Transco's distribution connection and ongoing charges. The boundary influences the price signals to consumers as to where to locate on the existing distribution system or when and

how much gas to use. The boundary also affects the activities of competing providers of connection services.

5.27. Ofgem has identified several potential issues associated with Transco's distribution charging boundary for further consideration, including:

- whether a more shallow connection boundary should be considered;
- potential asymmetry of the Economic Test;
- potential asymmetry of the sharing of efficiency savings when upsizing occurs; and
- whether the Economic Test should be updated.

5.28. Each of these issues is discussed below.

### Whether a more shallow connection policy should be considered

5.29. Ofgem has recently published a determination on the NTS connection charges to be levied by Transco to the proposed power station at Langage Energy Park[17]. Ofgem determined that the Economic Test was not relevant to the calculation of the connection charge in this case and Transco could not require a customer contribution towards reinforcement to supplement the connection charge. The determination is consistent with a shallow connection policy.

5.30. Ofgem concluded that 'whilst the economic test might show a particular connection is not economic when considered in the context of Transco's total costs and investment programme, it should not be used to supplement the connection charge with a customer contribution. Instead, Ofgem considers that Transco should be able to recover the costs associated with the pipeline reinforcements through its general transportation charges. In this respect, Ofgem notes that the pipeline investments associated with the Langage power station have already been included in Transco's capital expenditure requirements for the current price control…'.

[17] Directions pursuant to Section 21 and order pursuant to Section 27A given to Transco plc in connection with the modification of the Transco pipe-line system for the purpose of conveying gas to the proposed power station at Langage Energy park, 18 February 2003.

5.31. This determination expressed the view that existing users within the same exit zone would also benefit from the reinforcement and should bear some of the costs. It also reflected the view that the application of a shallow connection policy would ensure that connecting parties are not required to pay for reinforcement costs that may benefit future customers.

5.32. Ofgem has also published recommendations for the connection boundary for electricity distribution networks to take effect from 1 April 2005[18]. Ofgem has recommended that electricity distribution connection charges include a shallow element of connection costs and a contribution to reinforcement costs based on a 'reinforcement contribution rule'. This rule will be based on the proportion of the total increased capacity required by the connectee, resulting in a 'shallowish' connection policy. Locational signals will be provided through connection charges, since in general use of system charges do not vary with location.

5.33. In December 2003 Ofgem published its decision to allow NGC to change the electricity transmission connection boundary from essentially shallow to very shallow from April 2004[19]. Choices about where to connect to the electricity transmission network will be influenced by Transmission Network Use of System (TNUoS) charges that vary with location.

5.34. It may be appropriate to consider these developments in reviewing Transco's distribution connection boundary. In considering any changes to Transco's distribution connection boundary, Ofgem would need to consider the impact on the balance of locational signals from distribution connection charges and ongoing distribution charges.

### Potential asymmetry of the Economic Test

5.35. As discussed in Chapter 3, an asymmetry may exist between the case where the Economic Test is met and where it is not met. If the test is not met (ie the expected transportation revenue does not cover the cost of reinforcement), then the customer requesting the connection is required to provide a capital contribution to cover the shortfall if they wish to connect.

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[18] Structure of electricity distribution charges – Initial decision document November 2003
[19] Ofgem's letters on this matter are located on NGC's website (www.nationalgrid.com).

5.36. However, if the test is met (ie the expected transportation revenue exceeds the cost of reinforcement), none of the excess transportation revenue expected from the new connection is used to reduce the connection charge to the customer.

### Potential asymmetry of the sharing of efficiency savings when upsizing occurs

5.37. As discussed in Chapter 3, any savings derived from the economies of scale from undertaking specific reinforcement for a new connection together with future general reinforcement initially accrue to Transco. These efficiency savings may reduce the costs that Transco needs to incur to deliver the expansion of the network as envisaged in the Price Control. However, projections of future levels of capex made at the Price Control will be informed by historic efficiency savings derived from undertaking specific reinforcement together with general reinforcement. It is not clear whether Transco receives a net benefit from these arrangements during the course of the Price Control (which resulted in about £4m of income in 2002).

5.38. At the end of the Price Contol, only efficiently incurred expenditure is added to the Regulatory Asset Value (RAV). Hence any efficiency savings will reduce the costs that are included in the RAV and therefore in due course will reduce the ongoing distribution charges payable by all customers.

5.39. However, since all customers benefit from efficiency gains derived from undertaking specific reinforcement required to connect specific customers together with general reinforcement, there may be an asymmetry of sharing of efficiency gains between different types of customers. New customers may be effectively cross-subsidising existing customers through their contribution to general reinforcement.

### Whether the Economic Test should be updated

5.40. This review of Transco's structure of distribution charges may consider a fundamental change to the way in which Transco determines distribution connection charges. However, if the Economic Test continues in its present form, then it may be appropriate to review the operation of the test.

5.41. The Economic Test has been reviewed twice since its implementation in 1998 but no major changes have been made despite the unbundling of NTS and LDZ price controls and changes to Transco's allowed rate of return. It may therefore be appropriate to consider updating the test to reflect these changes in addition to the impact of the RPI-X price control (and changes in volumes) and to ensure that appraisal periods align more closely with the expected lifetime of a given connection.

## *Transco's ongoing distribution charges*

5.42. Ofgem has identified several additional issues associated with Transco's distribution charges for further consideration:

- Impact of the separation of Transco's distribution price control and potential sale of Transco's DNs; and
- Impact of the RPC regulation for IGTs.

5.43. Each of these issues is discussed below.

### Impact of the separation of Transco's distribution price control and potential sale of DNs

5.44. Transco's charging method should reflect developments in the gas transportation sector. An important development since Ofgem last reviewed Transco's charging method has been the separation of Transco's price control into separate controls for distribution charges, transmission asset owner charges (TO) and transmission system operator (SO) charges.

5.45. Transco's distribution price control has been further separated into eight separate Distribution Network price controls from 1 April 2004. At present Transco's distribution charges are the same across all distribution networks and do no reflect regional differences in the costs of distributing gas. The separation of the distribution price control will result in the gradual introduction of regional differences in distribution charges over a 25 year period.

5.46. Transco has indicated that differential distribution charges will not be necessary from April 2004 since the allowed revenue will be allocated to the DNs in such

a way to reflect the revenue produced by the current level of charges. However Transco has indicated that from April 2005 differential price adjustments between the DNs may be necessary[20]. In the longer term, Transco plans to review the derivation of the distribution charging models. For the retained networks Transco has not yet decided whether the distribution charging functions should be derived in aggregate or individually. Transco plans to determine whether the two methods would produce material differences for individual networks.

5.47. Ofgem is also currently consulting on the potential sale of Transco's DN businesses. The sale of a network would require changes to governance and operational arrangements across transmission and distribution networks, and supply point administration. Ofgem has published a number of consultation documents and discussion papers, which are available on the Ofgem website. These papers discussed a range of operational and governance issues, some of which may have implications for Transco's structure of distribution charges.

5.48. There are a number of benefits of seeking a consistent charging method across networks, regardless of ownership. Disadvantages may arise if different charging methodologies raised costs for participants in the industry beyond any improvements offered by comparative best practice. For example, a number of different billing systems may be required. However, some divergence in charging methodologies between DNs may be permitted in limited circumstances provided that benefits for consumers from these changes clearly outweighed the costs (including any negative impact on competition). Ofgem would not want to prevent the introduction of innovative charging methodologies which would result in clear benefits to consumers.

5.49. It will be important to consider the potential impact of these changes on Transco's distribution charging method.

[20] This is discussed in Pricing Consultation (PC) 80: Introduction of Different Levels of LDZ Charges between Networks.

### Impact of RPC regulation for IGTs

5.50. Ofgem has recently completed a review of IGT charging arrangements and has established a Relative Price Control that formally links IGT charges to Transco's. These new arrangements came into effect on 1 January 2004.

## *5.4 Summary of consultation issues*

5.51. Views are invited on any of the matters raised in this document, including issues identified at the end of Chapter 2 and on the following specific issues:

- **Issue 1**: Whether Transco's distribution use of system charges should be made more cost-reflective and, if so, what sort of changes would be appropriate;
- **Issue 2**: Whether the capacity / commodity split should be changed;
- **Issue 3**: Whether a more shallow distribution connection charging boundary should be adopted and ongoing distribution charges increased to recover the additional costs of reinforcement;
- **Issue 4**: Whether Transco's Economic Test should be reviewed, for example to consider the potential asymmetry of the test and potential asymmetry of the sharing of efficiency savings when upsizing occurs;
- **Issue 5**: Whether the impact of RPC regulation of IGTs should be considered and the CSEP charging function and administrative charge reviewed; and
- **Issue 6**: What are the implications for this review, if any, of the separation of Transco's distribution price control and the potential sale of DNs.

# Appendix 1 : Boundary between connection and ongoing charges

1.1 In each of the gas and electricity network businesses – gas transportation, electricity transmission, and gas/electricity distribution – there is an established boundary between those activities and costs that are considered to relate to connection, and those that are considered to be ongoing. Generally, some proportion of connection costs is recovered through up-front charges to the party requesting the connection, with any remainder recovered over time. Most use of system costs are recovered over time through ongoing charges to the users of the network.

1.2 To encourage the efficient use of the gas distribution system the charges levied for connection and use of system should reflect the costs that consumers impose on the existing system.

1.3 There are two broad approaches used to establish a boundary between connection and ongoing charges. These approaches are:

- **Physical boundary** – which specifies those assets to be included in deriving connection charges and those to be included in setting ongoing charges; and
- **Financial boundary** – which specifies a financial limit on either connection or ongoing charges, with remaining costs recovered through other charges.

1.4 Using a physical boundary, there are five methods that are used to derive charges for connection to a network system. These methods are:

- **Deep connections charging policy** – involves the recovery of the total costs that will be incurred as a result of connecting a new load to the system, including all costs of network reinforcement, through an up-front connection charge;

- **Shallow connections charging policy** – involves the recovery of the costs of connection assets through an up-front connection charge, and the recovery of all reinforcement costs though ongoing charges;

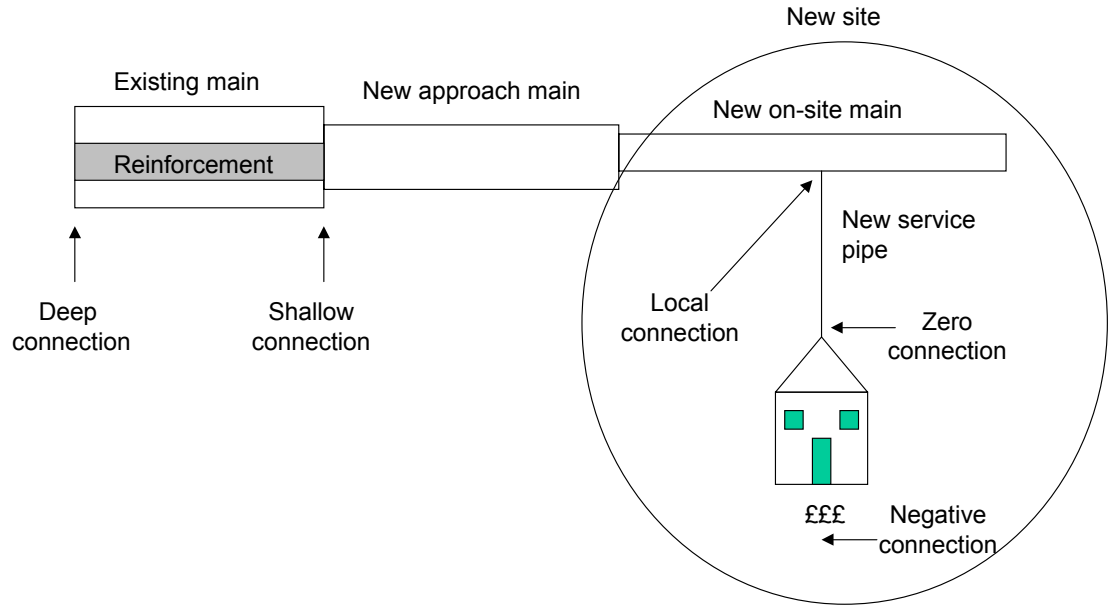
- **Local connections charging policy** – involves the recovery of only the costs of the service pipe required to connect a customer to the system, and excluding the costs of extension and reinforcement of the system, through an up-front charge. The remaining extension and reinforcement costs are recovered through ongoing charges;

- **Zero connections charging policy** – involves the recovery of all connection, extension and reinforcement costs through ongoing charges, with zero upfront connection charge; and

- **Negative connections charging policy** – involves a negative charge for connection (i.e. a payment made to the party requesting the connection), and the recovery of this payment together with all connection, extension and reinforcement costs through ongoing charges. If the payment does not accurately reflect the value of any good or services rendered by the party requesting connection, this practise is not in the interest of the party paying the ongoing charges.

1.5 These five types of physical boundary are illustrated for the case of an extension of the gas distribution network to a new domestic site.

**Figure A1.1: Types of physical boundary for gas distribution extension**




1.6 A shallow connection policy is more likely to result in lower connection charges for consumers and hence result in greater demand for connections to the system. Constraints or bottle-necks in capacity are shared across all consumers because specific reinforcement costs are not charged to the party connecting to the system. However, a shallow policy may provide weaker price signals to consumers to locate connection to the network unless transportation charges are structured to reflect capacity constraints. Developing a transportation charging methodology that reflects capacity constraints and that can influence consumers' decisions may result in a relatively complex charging structure.

1.7 A deep connection policy recovers a greater proportion of connection costs, including reinforcement costs, directly from the party making the connection. A deep connections policy may enable consumers to respond appropriately to price signals which reflect capacity constraints and facilitate a simpler approach to the structure of transportation charges.

1.8 A deep connection policy may need to be structured to prevent free-riding. Free-riding may occur where capacity bottle-necks lead to prohibitive reinforcement costs that deter connection unless a specific consumer is willing to meet these costs. In these circumstances, some consumers may avoid reinforcement costs and connections may not be made because consumers are not able to co-operate to share these costs. Once a customer has paid specific

reinforcement costs, subsequent customers may then connect and benefit by paying less (or no) reinforcement costs.

# Appendix 2 : Development of network charging arrangements

2.1 This appendix provides background information on the development of charging arrangements for gas and electricity networks. The following areas are discussed in this appendix:

- principles supporting network charging arrangements; and
- developments in gas distribution charging policy.

### *Principles underlying network charging arrangements*

2.2 As chapter 2 explains Ofgem's decisions on the structure of charges need to be guided by its statutory duties and the statutory and licence duties that apply to licensees.

2.3 Ofgem's principal duty is to protect the interests of consumers. This requires that the gas and electricity industries are subject to a balanced set of economic incentives. With respect to network charges these incentives have a number of dimensions including:

- charges should provide appropriate economic signals to network operators and network users. Relatively high charges should either reflect that the costs of providing a service are relatively high or that it is necessary to ration demand because of a capacity constraint on the network;
- where there are capacity constraints network operators face appropriate incentives to meet demand for additional capacity in a timely and efficient manner;
- charging arrangements should be reasonably transparent, predictable and not create any undue administrative or regulatory burden; and
- consistency with the development of competition in contestable activities.

2.4 It is also necessary for network charging decisions to be consistent with Ofgem's other statutory duties including, inter alia, having regard to the interests of individuals with low incomes, those residing in rural areas, the effect on the environment and any Social and Environmental Guidance issued by the Secretary of State.

2.5 In practice the balance between these various considerations will vary according to the precise circumstances of each decision that Ofgem makes on the structure of charges. There also needs to be flexibility for charging arrangements to evolve over time. Nevertheless, it is important that charging arrangements form a coherent system across both gas and electricity, and, distribution and transmission networks. Some of the more important decisions Ofgem has made on network charges are explained below.

### Gas Transmission

2.6 The National Transmission System (NTS) transports gas from entry points (beach terminals and interconnectors) to gas distribution networks and large consumers connected directly to the NTS. A system of entry capacity auctions has been developed to provide an efficient mechanism for rationing capacity at entry points to the NTS. Because these auctions allow for the purchase of capacity for a period of up to 15 years then the prices also provide signals as to the pattern of demand in the longer-term. Shippers also pay NTS exit charges.

2.7 The associated regulatory arrangements that were put in place at the last price control review should provide Transco with additional incentives to meet demand for additional capacity in a timely and efficient manner.

### Gas Distribution

2.8 Gas distribution networks take gas from the NTS and deliver it to connected system exit points (CSEPs) and over 20 million consumers across GB. Shippers (and then suppliers) are charged on the basis of the consumers that they serve. Charges to domestic consumers have been averaged across domestic consumers to ensure that consumers in rural areas are not unduly disadvantaged.

## Electricity Transmission

2.9 The electricity transmission systems allow the bulk transfer of electricity from generating stations to centres of demand. Both generators and suppliers pay charges according to their volumes at network entry and exit points. The costs of transmission are largely driven by the pattern of flows across the network. Therefore charging arrangements provide for locational signals designed to ensure that network users significantly contributing toward these flows face relatively high charges.

## Electricity Distribution

2.10 Electricity distribution networks transfer electricity from high voltage transmission networks and distribution network connected generating stations (referred to as distributed generation) to consumers' premises. With the continuing development of Combined Heat and Power (CHP) plant and increasing generation from renewable energy sources there is an increasing level of distributed generation connecting to distribution networks. In response to these trends Ofgem has reviewed the network charging arrangements that should apply to distributed generation. Ofgem published an initial conclusions document on the structure of electricity distribution charges in June 2003, an initial decision document in November 2003 and a further update document in April 2004. The proposals for charging arrangements for distributed generation emphasise the importance of cost reflective charging and include:

- there will be a consistent approach to charging demand and generation for connection to distribution networks;
- generators will no longer pay deep connection charges but will pay use of system charges; and
- in setting generators charges distribution companies should take into account the advantages of predictability and transparency.

2.11 Suppliers also pay use of system charges on the basis of the consumers that they serve. Charges to domestic consumers have been averaged across domestic consumers to ensure that consumers in rural areas are not unduly disadvantaged.

## *Developments in gas distribution charging policy*

2.12 Transco has published a number of pricing consultation (PC) and pricing discussion (PD) papers relevant to the structure of gas distribution charges, which are available on Transco's website. These include:

- PC 38 - Review of LDZ Transportation Charge Functions, May 1999;
- PC 59 - Review of LDZ Transportation Charge Functions, May 2000;
- PC 56 - LDZ short haul tariff, May 2000;
- PC 68 - Review of LDZ Transportation Charges, November 2001;
- PD 14 - Balance of Transportation Charges, November 2001;
- PD 15 - Options for reforming the interruptible regime, November 2001; and
- PC 80 – Introduction of different levels of LDZ charges between networks, May 2004 (under consultation).

2.13 The main proposals of the most recently completed pricing consultation (PC 68) were:

- to improve the data used to calculate charges, by increasing the number of lower pressure sub-tiers from four to six, based on pipe sizes and calculating connection probabilities using AQ (instead of number of supply points); and
- to develop a charging function that better fit the underlying data, that resulted in a three-stage power function.

2.14 The Office of Gas Regulation (Ofgas) published a consultation document on the regulation for Transco's connection and system extension activities in August 1996[21]. This was followed up by a discussion paper in February 1997[22].

[21] 'British Gas Transco: connection and system extensions Regulating for competition' August 1996
[22] 'Transco: connection and system extensions Regulating for competition' February 1997

2.15 The February 1997 paper concluded that 'Ofgas supports a shallow definition of connection for all load additions. In this way, connections to the system can be provided on a non-discriminatory basis. In addition, Transco's transportation charges should be providing the economic signals regarding the cost of incremental capacity...It may be appropriate for Transco to require a capital contribution where it can be demonstrated that a new load is uneconomic. Ofgas supports the development of a transparent and standard method of determining if a load is uneconomic and the capital contribution which would be required.'

# Appendix 3 : Current Transco distribution charges

**Table A3.1: Indicative LDZ Charges – April 2004**

| Single Supply Point (SSP) Charges | | |
|---|---|---|
| MWh per annum (pa) | Commodity (p/kWh) | Capacity (p / peak day kWh / day) |
| < 73.2 | 0.1284 | 0.0481 |
| 73.2 - 732 | 0.1188 | 0.0446 |
| > 732 | $0.7369 \times SOQ^{-0.2121}$ | $0.2115 \times SOQ^{-0.1806}$ |
| Subject to minimum rate of | 0.0112 | 0.0048 |

| Connected System Exit Point (CSEP) Charges | | |
|---|---|---|
| MWh (pa) | Commodity (p/kWh) | Capacity (p / peak day kWh / day) |
| < 73.2 | 0.1284 | 0.0481 |
| 73.2 – 732 | 0.1188 | 0.0446 |
| > 732 | $0.7032 \times SOQ^{-0.2131}$ | $0.2237 \times SOQ^{-0.1939}$ |
| Subject to minimum rate of | 0.0112 | 0.0048 |

| Optional LDZ Charge (p / peak day kWh / day) | |
|---|---|
| Optional | $902 \times (SOQ^{-0.834}) \times D + 772 \times (SOQ^{-0.717})$ |

**Table A3.2: Indicative Customer Charges – April 2004**

| SSP Customer Charges | | | | |
|---|---|---|---|---|
| MWh pa | Commodity (p/kWh) | Capacity (p / peak day kWh / day) | Fixed (p / supply point / day) | |
| | | | Read Frequency | Charge |
| < 73.2 | 0.1430 | | | |
| 73.2 - 732 | | 0.0017 | Non-monthly<br>Monthly | 15.0713<br>16.0476 |
| > 732 | | $0.0366 \times SOQ^{-0.21}$ | | |

Where,
D = Direct distance (km) from site to an NTS pipeline
SOQ = Supply point Offtake Quantity[23]

[23] See appendix 4.

# Appendix 4 : Supply point offtake quantity (SOQ)

### Daily metered supply points

4.1 Supply points where meters are read on a daily basis use the registered supply point capacity as the SOQ. Generally it is only larger non-domestic supply points that are daily metered.

### Non-daily metered supply points

4.2 For supply points which are not read on a daily basis, the SOQ is calculated using the supply point End User Category (EUC). EUCs depend upon the AQ of the supply point, and take into account the ratio of winter to annual consumption for monthly read sites. Each LDZ has multiple EUCs. Within each LDZ each EUC is assigned a generic Load Factor. This Load Factor is then used in the SOQ calculation:

$$\text{SOQ} = \frac{AQ \times 100}{365 \times LoadFactor}$$

4.3 These EUCs, and therefore the proposed demand estimations across the LDZs, are consulted on by Transco annually with final proposals submitted no later than mid August every year, in line with Transco's network code.