February 2001

Review of Transco's price control from 2002

Initial thoughts consultation document

Executive Summary

This document sets out Ofgem's initial thoughts on the framework for new price controls to apply to Transco from April 2002.

Ofgem published an initial consultation document on this price control review in May 2000 and an update paper in November 2000. Both documents were followed by a seminar to discuss issues raised. The proposals in this consultation document draw on the responses to those documents and on comments made at those seminars.

This price control review involves a number of challenges for Ofgem. First, the new price control framework needs to reflect the different roles performed by different parts of Transco's business. Ofgem is proposing to develop separate price controls for Transco's national transmission system (NTS) and local distribution zones (LDZs) and this document seeks views on Ofgem's proposals for the form and structure of those price controls. Ofgem is proposing that a single price control should apply across all the LDZs, although this document sets out a framework for the development of separate price controls for individual LDZs during the next price control period. Ofgem is working to facilitate competition in the provision of metering and meter reading services, and hopes to be able to remove price controls in these areas in the near future. However, this document invites views on Ofgem's proposals for the form and structure of controls in these areas, should they be required.

Second, while the RPI-X model of price controls has so far been successful at delivering both improved cost efficiency and a high quality of service from Transco and other price-controlled utilities, there are concerns that in the future cost savings may be made at the expense of quality of service. Therefore it is important that the new price controls provide improved incentives on Transco to deliver an agreed level and quality of service to its customers. Ofgem will shortly be publishing in a separate document proposals to strengthen the incentives on the NTS. This document invites views on Ofgem's proposals for a framework for the development of output-based incentives for Transco's LDZs and the monitoring of Transco's performance. It also invites views on Ofgem's proposed approach to the development of guaranteed and overall standards to be implemented under the Utilities Act 2000.

Third, there is some evidence that the current form of RPI-X price control has encouraged companies to delay capital expenditure until the end of the price control period, to under estimate the potential for future efficiency savings and to delay operating expenditure savings

until after the completion of a periodic review. This document summarises information supplied by Transco on its historic and projected future costs which tend to support these concerns. In setting a price control, Ofgem must assess the costs that would be incurred by an efficiently managed business and this document sets out Ofgem's approach to assessing the efficiency of Transco's current and projected cost levels.

Lastly, at the end of the last price control review Ofgem's predecessor Ofgas signalled the need to review the regulatory valuation of Transco's existing assets. The price control must also allow Transco to earn an appropriate return on investment in its regulated business and this document sets out Ofgem's approach to assessing Transco's cost of capital and the regulatory valuation of Transco's assets. In particular, views are sought on whether a "focused" or "unfocused" approach should be used to value investment in Transco's regulated business up to 31 December 1991. This decision will have an impact on Transco's regulatory value of up to £2,010 million.

Ofgem's approach to assessing Transco's required cost of capital will be consistent with the approach used during the electricity distribution and NGC transmission business reviews. Ofgem assumed a pre-tax real weighted average cost of capital for NGC of 6.25 per cent, which was at the top of a range of 5.5 to 6.25 per cent set out in the draft proposals for that review. It may be appropriate to assume a cost of capital below the top of this range for Transco.

Ofgem is inviting views on any of the issues discussed in this document, but in particular on:

- the form and scope of proposed NTS, aggregate LDZ, metering and meter reading price controls, including a process for consultation on the development of separate LDZ controls;
- a framework for improved output-based incentives to apply to the LDZs and potential areas to be covered by guaranteed and overall standards;
- its approach to assessing the future level of efficient operating and capital expenditure; and
- its approach to the financial issues, including whether a "focused" or "unfocused" approach should be used to value investment in Transco's regulated business up to 31 December 1991.

Ofgem will take account of responses to this document in deriving draft proposals for new price controls which will be published in June 2001. Final proposals for new price controls will then be published in September 2001.

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1. Introduction

1.1 In May 2000, Ofgem published an Initial Consultation Document[1] on the review of Transco's price controls to apply from April 2002. A seminar to discuss the issues was held on 9th August 2000. In November 2000 Ofgem published an update paper[2] and held a further seminar on 11th December 2000 on the development of the outputs framework for the price control.

1.2 The responses to the November 2000 update paper are summarised in Appendix 1 and the issues raised at the December seminar are summarised in Appendix 2.

1.3 In the light of views expressed during the consultation process, Ofgem is proposing to set separate price controls for different parts of Transco's regulated business.

1.4 This document sets out Ofgem's initial thoughts on the scope of these individual controls and their form and structure taking into account the views expressed. It also sets out how Ofgem intends to resolve certain financial issues including determining the most appropriate approach for establishing Transco's regulatory value at the start of the next price control period.

1.5 In August 2000, Ofgem appointed accountants Mazars Neville Russell as consultants to advise on efficient levels of capital and operating costs for the Transco business over the next control period. Mazars have appointed Petroleum Development Consultants as technical consultants and Europe Economics as economic consultants to assist them in this task.

1.6 In Autumn 2000, Ofgem prepared a Business Plan Questionnaire (BPQ) to collect information from Transco on its historic performance and its business plans, including cost forecasts, for the period to 2007. Transco returned the BPQ on 18 December 2000, and subsequently has been asked to respond to a number of supplementary questions. Ofgem's consultants are also holding a series of meetings with Transco in order to resolve detailed issues.

1.7 Transco has prepared a summary of its BPQ response and this is in Appendix 6.

[1] Review of Transco's price control from 2002, Initial consultation document, Ofgem, May 2000
[2] Review of Transco's price control from 2002, Update paper, Ofgem, November 2000

1.8 During 2000, Ofgem and Transco established a framework for the monitoring of capital expenditure. In December 2000 Transco published its variance report[3] on its capital expenditure in the years 1997, 1998 and 1999; in February 2001, Ofgem made available the report of the audit work carried out by its consultants[4] on Transco's variance report. The issues arising from this audit are discussed in chapter 6 of this paper.

1.9 The objective of the Transco price control review project is to produce new price controls for implementation from 1 April 2002 which will:

- protect the interests of Transco's customers while providing Transco with the resources it should need to meet its licence obligations to its customers in an efficient manner;
- be structured so as to facilitate the introduction of competition where desirable;
- provide incentives to promote efficient use and development of the gas transportation system;
- reflect the impact of the New Gas Trading Arrangements (NGTA) and other expected future developments in this area; and
- recognise Transco's different roles and activities such as system operator and emergency service provider.

Rationale

1.10 In large areas of Transco's business, it has a monopoly or an effective monopoly. The best way of protecting customers and giving incentives to Transco to operate efficiently may vary from one activity to another. One of the methods is to set price controls and Ofgem believes that these will continue to have an important role to play.

1.11 In 1999/2000, Transco's allowed revenue from gas transportation charges was £2.9 billion. For domestic customers, transportation charges represent 35% to 40% of end-user tariffs, with a somewhat lower percentage applying to industrial and commercial

[3] Capital investment outputs monitoring, 1997 – 1999, Outputs Variance report, Transco, December 2000, available on Transco's website, www.transco.uk.com
[4] Report of the Auditor to Ofgem under the Transco Capital Expenditure Monitoring framework for the period 1997 – 1999, February 2001, available on the auditor's website, www.mazars-nr.co.uk

users. They form a significant element of cost for households, particularly for those who find it difficult paying their bills.

Structure of the document

1.12 This document describes Ofgem's initial thoughts and future programme of work on the following issues:

- Chapter 2: the form and structure of the transportation price controls including discussion of National Transmission System (NTS) outputs;
- Chapter 3: the form and structure of the metering and meter reading price controls;
- Chapter 4: the Local distribution zone (LDZ) outputs framework for the next price control period. This will have three main elements:
  - output measures incentivised through the price control
  - output measures to monitor delivery between reviews; and
  - regular reports on the medium–term performance of Transco's LDZ networks (a similar report also to be prepared for Transco's NTS);
- Chapter 5: the guaranteed and overall standards which should apply from April 2002;
- Chapter 6: operating and capital costs, including frameworks for monitoring expenditure and efficiency; and
- Chapter 7: financial issues including establishing Transco's regulatory value.

1.13 Chapter 8 then sets out the timetable and way forward.

Responding to this document

1.14 If you would like to comment on these issues, please respond by 6 April 2001. Written responses should be send to:

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Electronic replies should be sent as an MS-Word document or else in the main body of the e-mail message. Please mark your comments clearly if you consider that they must be regarded as confidential. Ofgem would prefer that responses are provided in a form that can be placed in the Ofgem library.

2. Form and scope of transportation controls

Introduction

2.1 This chapter sets out Ofgem's proposals for price controls to apply to Transco's gas transportation business.

2.2 The present price control was set in 1997, and initially covered Transco's transportation, metering and daily metered meter reading activities. In May 2000 Ofgem published proposals for separate price controls on metering and daily-metered meter reading activities[5]. These were implemented through a licence modification[6] in January 2001. Proposals for the future of price controls in these areas are set out in chapter 3, while this chapter focuses on Transco's transportation activities.

2.3 This chapter builds on Ofgem's proposals in the May 2000 consultation document and the November 2000 update paper and the responses to those papers. Ofgem's November 2000 update paper discussed the structure of the Transco transportation price controls to apply from April 2002, taking account of the different roles of the National Transmission System (NTS) and the Local Distribution Zones (LDZs), as well as the system-wide services of system operator and the emergency service.

2.4 Ofgem considered that the differing roles of the NTS and LDZs make it appropriate to separate the price controls for these two activities. The NTS provides bulk transportation and is a hub for gas marketing and balancing, whereas LDZ demands are driven by the aggregate demand of individual end users. This is reflected in the different capacity regimes which have evolved. Separate price controls within Transco's Gas Transporter (GT) licence will allow incentives to be set which are appropriate to the different roles.

2.5 Ofgem has also investigated the introduction of a separate control for the system operator (SO) activity within the NTS. Separation of transmission asset owner (TO) and SO controls has the potential to provide clearer incentives for each activity; however operational issues would need detailed analysis.

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[5] Securing effective competition in gas metering and meter reading services - The Director General's final proposals, Ofgem, May 2000

2.6 Ofgem wishes to incentivise performance whilst not hindering any proposals which Transco may have to restructure its business, where such restructuring is in the interests of customers. Ofgem also supports the concept that different business areas within Transco should be set appropriate management incentives.

2.7 The Business Planning Questionnaire requested that all data associated with the LDZs to be provided on an individual LDZ basis. Collecting this information on a disaggregated basis will allow variations in the nature and performance of individual LDZs to be identified. However, Ofgem expressed concerns in the November paper over the feasibility of introducing separate price controls for each LDZ by April 2002.

2.8 These concerns related to possible geographical variations in LDZ charges that may result from separate controls and that, under common ownership, Transco may have incentives to restrict the performance of the most efficient LDZs to prevent their performance from leading to tougher cost targets for less efficient LDZs.

Responses to November 2000 update paper

2.9 In its May and November 2000 papers, Ofgem invited views on the appropriate forms of transportation control. Respondents identified imperfections in the RPI-X form of control, but recognised its success in driving down operating costs. Some respondents noted that additional mechanisms might be appropriate to deal with capital expenditure incentives. Generally there was support for a five year duration for the next price control.

2.10 There was general support for splitting the NTS and LDZ controls alongside concerns about possible increased risks and complexity for shippers and suppliers.

2.11 In response to the November paper some respondents felt that more information should be shared on the implications and costs and benefits of individual LDZ controls. Generally there was support for an aggregate LDZ control, although some felt that more progress should be made towards the introduction of separate LDZ controls.

2.12 The detailed points made by Transco are summarised below.

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[6] Securing Effective Competition in Gas Metering and Meter Reading Services - Modification of Transco's Public Gas Transporter Licence, Ofgem, January 2001

Transco response to November 2000 update paper

2.13 In response to the May consultation, Transco had supported the RPI-X mechanism as a means to create incentives to operate and maintain networks efficiently, while recommending the consideration of alternative approaches where significant capital programmes are involved.

2.14 In response to the November paper, Transco made the following points regarding the setting of individual LDZ controls:

- it was unclear as to why separate price controls would have a negative impact on incentives to improve performance relative to the present arrangements;
- Transco welcomed views on the level of variation in LDZ charges arising from separate controls which would be regarded as unacceptable. It stated that its own modelling had shown that price control formulae could be set for each LDZ such that unit transportation charges at the beginning of the next period would be unchanged. This would be achieved by using unchanged charges as the basis for apportionment of the Regulatory Value (RV); and
- Transco stated that internal costs would not change as a result of separate price controls as its business was already managed on this basis. It also stated its view that a move to separate price controls would have parallels with the present structure of the electricity and water industries, and that the regulatory burden has not to its knowledge been raised as an issue implying the need for a different structure in either industry.

2.15 Transco also felt that the hypothecation of total LDZ revenues to individual LDZs would be a second best approach. It felt that an unambiguous and transparent revenue line is important in developing incentives on managers.

2.16 A subsequent paper put forward by Transco stated the following further views:

- it believes that the way to ensure that performance benchmarks are efficient is to encourage performance competition between LDZs. It also believes that ultimately this can be brought about only though separate ownership of a number of LDZs;

- as a step towards this, Transco proposes separate controls within a single licence to encourage managers to seek out growth opportunities where the benefits outweigh the costs. Transco considered that this management focus would not be possible where managers have control of costs but not revenues;

- the possibility of regional divergence and league table competition in service standards is desirable where this reflects the wishes of regional communities;

- in the event of separate ownership of LDZs, industry co-ordination in the event of an emergency would be provided by the National Emergency Co-ordinator with Transco's head of System Operation continuing to take this role;

- Transco's modelling has indicated that the individual LDZs remain financially sustainable under a range of levels of actual performance; and

- the clarity delivered by separate controls will ease the regulatory burden in the future.

2.17 Transco recognised that where the introduction of cost reflective charges would lead to different levels of charges between LDZs, it would probably be appropriate to levelise charges through reallocation of costs (while the LDZs remained within single ownership).

Ofgem initial thoughts

Scope of transportation controls

2.18 Ofgem proposes that separate controls should apply to the NTS and the aggregate LDZ activities of Transco. In making these proposals, Ofgem has taken into account the views expressed to it by Transco and others. It has noted that Transco has not indicated so far its practical readiness to implement separate LDZ controls and, for example, has been unable in a number of areas to provide data at an individual LDZ level.

2.19 However, Ofgem recognises the potential benefits from separate LDZ controls, especially if this facilitates the potential for regulation through comparative analysis. Ofgem therefore proposes to enter into discussions with Transco to explore the measures necessary for the introduction of separate LDZ controls during the course of the next price control period. Any such proposals would be taken forward through

consultation with customers and the industry alongside a level of transparent reporting at the LDZ level by Transco to inform the consultation process.

2.20 If it were considered appropriate, separate LDZ controls could then be implemented in the same way that separate metering and meter reading controls were implemented during the present price control period, with no adjustment to the aggregate level of Transco's revenues.

2.21 However, Ofgem considers that before separate LDZ controls could be introduced two conditions must be met:

- there must be sufficient consultation with shippers, customers and other interested parties on the implications of separate controls, including any impact on price differentials between regions; and

- Ofgem must be confident that it has reliable data on the costs, performance and investment requirements that will allow it to set and enforce separate controls. This information should also be available to inform consultation on the implications of separate controls.

2.22 If Transco accepts Ofgem's final proposals for the aggregate LDZ price control to be published in September, it should be possible to consult on the introduction of separate LDZ controls in Autumn 2001 and early 2002. If it were then concluded that it was desirable to set separate LDZ controls, the earliest date by which it might be possible to implement separate controls would be April 2003, although further work is necessary to establish whether this is a realistic target. In any case, implementation of separate controls would depend crucially on the availability of reliable data on LDZ costs and performance. If Transco is unable to provide data of sufficient quality to inform this consultation process it may be necessary to delay any consultation on the implementation of separate LDZ controls until a proven track record of LDZ costs and performance is available.

Form and duration of transportation controls

2.23 Ofgem has concluded that the RPI-X approach creates strong incentives for efficiency in the ownership and maintenance of network assets. However, it recognises that incentives can be stronger on operating costs than on capital expenditure, and that

there may be incentives on the company to delay investment to the end of the price control period or into the next period.

2.24 It is also difficult to forecast accurately capital expenditure in advance for the full five year price control period. This is particularly so where volumes are uncertain (due to unclear supply/demand patterns, for example). Nevertheless, Ofgem believes it is possible to address these issues within an RPI-X framework by establishing clearer links between the price control and Transco's performance in meeting pre-defined output measures.

2.25 As regards the current price control review, Ofgem therefore proposes that the RPI-X form of control over a five year period should be applied to both the NTS and the aggregate LDZ transportation activities of Transco, but with strengthened links between these price controls and pre-defined output measures.

Structure of transportation controls

2.26 The present transportation price control links allowed revenues to a volume-based revenue driver with a deadband range. Fifty percent of Transco's revenues are fixed and fifty percent are determined by volume flows measured in kilowatt hours outside the deadband. The price control also distinguishes between volumes supplied to large loads (such as power stations) and those supplied to medium-sized or smaller loads. This is because larger loads, which are often directly connected to the NTS, impose lower incremental costs on Transco. The existing price control has therefore been structured so that a change in volumes transported to large loads has a lower impact on Transco's revenues.

2.27 In developing the structure of future price controls, Ofgem has taken into account the separate drivers of costs in the NTS and LDZs.

NTS incentives

2.28 Ofgem proposes that, in the NTS control, a link is introduced to the achievement of specific outputs. The primary outputs of the NTS are entry and exit capacity.

Entry capacity

2.29 Ofgem is consulting separately on the entry capacity regime[7]. The implications for the price control are discussed below.

2.30 One output measure may be the level of entry capacity which is made available at each terminal. Sufficient entry capacity would need to be included in the aggregated outputs to meet forecast 1-in-20 peak demand. The outputs regime may also define levels of capacity for months of the year where demands are below peak levels, such as October and July.

2.31 The setting of the initial outputs to be sold at the primary auctions will be determined through a consultation process.

2.32 Ofgem is proposing that if entry flows are expected to grow during the price control period, Transco's decisions to invest at one or more entry points should be made in response to the signals received from the auctions of long-term (up to five years ahead) entry capacity. For example, Transco may accept bids for quantities above those in the initial outputs. To the extent that it accepts these bids and therefore decides to provide capacity, Transco will retain the revenues from the bids for additional capacity during the price control period. At the end of this period, the efficient costs of providing the associated assets would be added to Transco's NTS regulatory value, after allowing accrued depreciation related to the expected useful life of the asset as a gas transportation medium, (which may be shorter than its design life).

2.33 There is also a possibility that capacity requirements could turn out to be lower than forecast at some terminals. This could lead to the bids for capacity being below the marginal cost associated with the provision of incremental capacity. In this case, Transco would still be required to auction capacity up to the pre-defined level of output, but could choose not to invest and instead incur the costs of buying capacity back.

2.34 As an additional measure, allowed revenues could be corrected where customer requirements fall below the level of the initial outputs.

[7] Long term signals and incentives for investment in transmission capacity on Transco's National Transmission System. Conclusions on the Framework, Ofgem, December 2000

Exit capacity

2.35 Ofgem will be consulting on new proposals for the gas exit regime shortly. Ofgem is considering a reform of the NTS Exit Capacity arrangements, so that Transco would provide firm access rights to all NTS loads. Ofgem proposes that the current interruptible transportation contracts would be replaced. Instead, Transco would enter into appropriate option contracts for interruption as part of its overall constraint management.

2.36 It is proposed that the price control would therefore be set based on the investment levels to provide such firm access rights to all customers. Transco would then use its discretion to provide efficient and adequate capacity, to exercise its interruption options rights or to purchase liquefied natural gas (LNG) storage output (see LNG storage section below). The role of the SO in this process as the gas day approaches would require further consideration.

2.37 Where possible, customers will be able to offer interruption contracts to Transco to assist transportation and system operation. Ofgem envisages that if customers need firm capacity then they will strike an interruption option contract at a high price. Transco will then use its discretion to determine whether it is more economic to provide physical capacity rather than purchase the interruption option. Transco will therefore decide how to manage NTS constraints based on commercial signals from the market place. The true value of transportation exit capacity will be determined, and will inform the value of constrained LNG storage (CLNG).

2.38 An alternative proposal for the exit regime is for participants to buy access rights only up to the level of exit capacity that is physically available. This would require similar arrangements to the NTS entry regime.

Exit code

2.39 The introduction of separate price controls will require the development of an Exit Code to govern the interface between the NTS and the LDZs and potentially other NTS customers (for example, power stations and other networks).

2.40 LDZs will need to participate in access to NTS exit capacity and the governance of this will require an exit code to be developed. This will need to cover, for example, the

provision of diurnal storage by the NTS for use in LDZ system balancing. Such a code would need to be developed to ensure that there would be consistent treatment of the LDZs and other loads which are directly connected to the NTS.

2.41 It is anticipated that the development of this code could take a substantial period of time. Ofgem is therefore proposing to discuss an interim code with Transco which would apply only to the NTS/LDZ interface from April 2002, with this being developed in consultation with shippers and other interested parties after April 2002. This may need to be implemented through a separate licence condition.

LDZ incentives

2.42 As explained above, Ofgem intends to set a single overall LDZ price control from 1 April 2002, while pursuing the development of performance measures which would be applied to individual LDZs. These performance measures could have an incentive element within the overall price control. Ofgem believes that Transco's business managers could be encouraged to respond to these incentives through the hypothecation of total LDZ revenues to individual LDZs by Transco.

2.43 In setting this price control, Ofgem will attempt to establish the efficient level of costs for each LDZ, and will develop a framework for measuring the performance expected of each LDZ. This information could be used to inform the development of individual LDZ controls at some future date if this were felt to be appropriate.

2.44 Ofgem also considers that Transco's performance in meeting specific output performance levels in respect of interruptions to supply should incentivised. The introduction of this regime will require the development of robust reporting arrangements as early as practicable; it is not anticipated that the incentive arrangements could be implemented before 2004. Ofgem will be working with Transco to develop a firm timetable for this. Further detail on Ofgem's proposals for this regime are set out in chapter 4. Views are invited on the introduction of such a refinement to the RPI-X regime.

Revenue drivers

2.45 Costs on the NTS are driven by exit capacity requirements, determined mainly by peak demand, and by entry capacity requirements, which are determined mainly by offshore

gas availability and price. Under the proposals described above, Transco will be incentivised to provide entry capacity through the auction process, and will be incentivised to provided exit capacity under proposals which are being developed seperately. It is not therefore proposed to retain a separate revenue driver within the NTS price control.

2.46 Capacity in each LDZ is driven by peak capacity requirements which, given the stable load factor of LDZ demand year-on-year, can be represented by the level of annual LDZ demand. It is therefore proposed to retain a revenue driver within the LDZ control which allows for the changes in annual LDZ demand. Ofgem intends to examine further the relationship between LDZ demand and costs. Ofgem anticipates that this analysis might suggest that the revenue driver should apply to less than fifty percent of LDZ revenues.

2.47 As explained above, the present price control distinguishes between large loads (generally those connected directly to the NTS) and other loads. Since NTS connected loads will not be covered by the LDZ price control, it may not be necessary to retain this distinction in the LDZ price control.

Cost-pass through

2.48 There are some areas of transportation costs over which Ofgem considers that Transco has little or no control. It may be appropriate to allow Transco to pass these costs through to its customers. These costs would still need to be allocated appropriately between the price controlled activities.

2.49 Ofgem considers that it may be appropriate for the following operating costs incurred by Transco to be passed through to customers:

- formula rates: the level of the rates is set by central government (DETR), and is levied on the basis of a rateable value and a charge rate multiplier; and
- licence fees: these are set by Ofgem. In October 2000, Ofgem and the Department of Trade and Industry issued a consultation paper[8] on the approach to setting and collecting licence fees. Ofgem will need to take the outcome of this consultation into account before deciding on the appropriate treatment of licence fees.

Network reliability

2.50 It is proposed that the NTS and LDZ price controls will be supported by an ongoing regime of expenditure and network health monitoring, as discussed in Chapter 4.

Emergency service

2.51 In its November 2000 paper, Ofgem indicated that separate price regulation of Transco's emergency service within Transco's gas transporter licence may be appropriate.

2.52 The procurement of an emergency service is required under condition 18 of Transco's licence. Other gas transporters have the same condition in their licences, and they generally fulfil this condition by paying Transco to provide the service on their behalf. It would be important to ensure that any price regulation of an emergency service provider did not affect the provision of a single national free phone number for the reporting of suspected gas escapes.

2.53 Currently, Transco procures the emergency service necessary to support its NTS and LDZ networks from within its own resources and non-Transco gas transporters have chosen to contract with Transco to procure the emergency services to meet their safety-case obligations. As a result, Transco responds to incidents both on its own network and on those of the other gas transporters.

2.54 Ofgem is concerned that there appears to be little effective competition in the provision of emergency services to gas transporters while the revenues Transco receives from non-Transco gas transporters are not currently regulated through the price control. Ofgem understands that the development of appropriate competences together with associated training arrangements will enable other service providers to enter the market over time. However, the lack of existing competition suggests that in the absence of some form of regulation, Transco's charges to other gas transporters may be higher than necessary.

2.55 There are two routes by which Ofgem could address such a problem:

[8] The calculation of annual licence fees and licence modifications, Joint consultation paper, Ofgem and Department of Trade and Industry, October 2000

- if Ofgem concluded both that Transco enjoyed a dominant position in the provision of these services and that there were evidence that Transco's charges to other gas transporters were excessive, this might suggest an abuse of that dominant position and therefore an infringement of the prohibition in Chapter II of the Competition Act 1998. Ofgem can take action under the Competition Act to impose financial penalties and bring such infringements to an end; or

- Ofgem could introduce a restriction on Transco's charges to other gas transporters as a condition of its licence. Since this service is not provided to shippers it could not be covered by the LDZ transportation control, although the costs incurred by Transco's NTS and LDZs in procuring emergency services would be taken into account in setting the price controls for NTS and LDZs.

2.56 Ofgem welcomes views on whether the additional transparency available through separate price regulation of Transco's emergency service provider activities will provide benefits to customers in terms of both cost efficiency and quality of service; or whether Ofgem should rely on the Competition Act 1998 to ensure that these charges are not excessive.

SO arrangements

2.57 In its May 2000 and November 2000 papers, Ofgem discussed the role of the SO. The primary role of the SO is to achieve efficient day-to-day management of the system, given the endowments of capacity provided by the TO. This includes efficient energy balancing (ensuring that inputs and offtakes of gas balance on the day) and capacity constraint management. The SO has a number of tools at its disposal in carrying out these tasks, including linepack, the OCM (on-the-day commodity market), LNG and interruption.

2.58 The SO also fulfils a number of other roles. These include providing gas quality services and managing "shrinkage gas" on the system. It may also be appropriate for the SO to be responsible for Transco's shipper services function.

2.59 The TO is then responsible for the ownership and maintenance of the network and for the longer-term planning and development of the network.

2.60 The proposed price control for the LDZs would cover both TO and SO activities. At present, Transco has a single department responsible for the operation of its system. This department includes the NTS control room, plus four regional control rooms which operate three LDZs each. If Transco decides to keep this organisational structure in place for the next price control period, this department would act as the NTS SO, while contracting with the LDZs to provide their SO requirements.

2.61 Ofgem does not consider it appropriate at this time to further disaggregate the LDZ price control into TO and SO roles. To do so might lead to undue complexity over the responsibility for security of supply. At the same time, Ofgem recognises that efficiency may be enhanced if LDZ managers seek out the optimum approach to meeting the needs of their customers.

2.62 Ofgem considers that setting a separate NTS SO control would provide incentives for the efficient management and operation of this activity, but that due attention should be paid to ensuring that the SO role is adequately defined and that the function is adequately resourced to operate separately from the TO.

2.63 Ofgem therefore proposes that in the next price control period the role of the SO is recognised and defined with appropriate incentives to ensure it minimises the aggregate costs of energy and residual constraint management. Ofgem will require Transco to report separately on the NTS SO costs with the SO expenditure forming part of the proposed annual expenditure monitoring process.

2.64 Ofgem will be investigating the appropriate boundaries for the SO role and will make proposals for applying incentives or price controls to the SO in its June draft proposals paper.

LNG storage

2.65 Some LNG storage is located at the extremities of Transco's NTS and in some cases is close to centres of demand. This LNG can provide a substitute for transmission pipeline capacity at periods of high demand. LNG which performs this duty is called constrained LNG.

2.66 LNG is also reserved by Transco to provide a reserve of gas to deal with short –term supply problems which might arise, for example, because of a failure of Transco's

equipment or because of an offshore supply problem. This reserve of gas is called operating margins gas.

2.67 Transco also uses the Glenmavis LNG facility and a tanker service to supply four small towns in Scotland, effectively as a substitute for the installation of transportation capacity.

2.68 The volume of Transco's operating margins reserve is agreed each year between the HSE and Transco. The method for calculating operating margins is revised from time to time. Ofgem has recently received information from Transco on its operating margins volume forecasts and proposals to 2007, and will be discussing these with Transco.

2.69 As regards constrained LNG, Ofgem considers that the level of booking is a matter for Transco, based on the best use of a variety of constraint management tools including interruption and based upon a specific allocation of constraint resolution funds within the NTS allowed revenues.

2.70 A starting point for determining this specific allocation of funds is to consider how much Transco currently spends on constraint relief on the NTS with Transco incentivised to control and reduce constraint costs.

2.71 Ofgem considers that a long-term arrangement for the treatment of LNG would be appropriate. Four possible options are being considered:

- LNG incorporated as part of transportation price control;
- a regulated price for LNG as part of Transco's licence (in other words, a separate price control for LNG);
- LNG offers its services in the market along with all other forms of storage (so LNG is treated as a separate entity outside Transco's regulatory ring-fence); or
- a combination of the above may be appropriate taking into account the different roles of LNG depending on location.

2.72 The separate proposals for the discovery of exit capacity prices will inform the value of LNG and particularly constrained LNG. There may be a case for deferring the setting of price controls on LNG until this market is established.

Summary of Issues

2.73 Ofgem welcomes views on any of the issues discussed in this Chapter, but in particular on its proposals for the scope and form of controls which are summarised below:

- separate price controls for the NTS and LDZs, with further disaggregation of costs within the NTS control to recognise the separate roles of the TO and SO;
- an RPI-X form of price control for the NTS, with adjustment mechanisms to be based on performance against capacity-based output measures and market signals;
- the NTS SO to be incentivised within the NGTA balancing regime (these proposals are currently being developed separately);
- a single overall RPI-X LDZ price control, with incentives based on performance against output measures of individual LDZs, and the retention of a volume-based revenue driver;
- further consultation on the implementation of individual LDZ controls within the next control period, subject to the availability from Transco of reliable data on LDZ costs and performance; and
- the LDZs to be responsible for the operation of their own networks.

2.74 Ofgem would also welcome views on:

- whether it would be appropriate to separately price control the provision of an emergency service to other gas transporters, or whether the Competition Act can be relied upon to address any monopoly power Transco may possess in this area; and
- the appropriate form of price regulation for LNG.

3. Metering and meter reading controls

Background

Transco's metering and meter reading services

3.1 Transco provides metering and meter reading services to shippers. Metering services include the provision, installation and maintenance of meters, and associated work such as meter repositioning. Meter reading services include the retrieval of meter read information, either remotely (via a datalogger) or manually, and the processing of such data.

3.2 Transco levies separate charges for the provision of its metering and meter reading services. Transco's metering services, and daily-metered (DM) meter reading services, are provided under the Network Code. Its provision of meter reading services for non-daily metered (NDM) sites is provided under a separately negotiated contract with shippers (the 'incentive-based contract' or 'IBC').

The current price control

3.3 When the current transportation price control was set in 1997, Transco's provision of metering services and DM meter reading services fell within the scope of the transportation price control. Transco's provision of NDM meter reading services was not price controlled. Costs of NDM meter reading were allowed to be 'passed through' to shippers, subject to an economic purchasing obligation.

3.4 In May 2000, Ofgem made final proposals for changes to Transco's price control arrangements[9]. The proposed changes maintained the overall level of allowed revenue, while creating separate price controls (of an RPI-X form) for metering and meter reading. In January 2001, Transco consented to the associated licence modification[10] and this was implemented later in the same month.

[9] Securing effective competition in gas metering and meter reading services - The Director General's final proposals, Ofgem, May 2000

[10] Securing Effective Competition in Gas Metering and Meter Reading Services - Modification of Transco's Public Gas Transporter Licence, Ofgem, January 2001

3.5 The purpose of this modification was to increase the transparency of Transco's metering and meter reading charges, and to remove any potential for cross-subsidy between metering, meter reading and transportation charges. In Ofgem's view, these steps were necessary to promote competition in metering services.

Transco's disaggregated metering charges

3.6 In May 2000, Transco came forward with a pricing proposal to disaggregate its metering charges. It proposed introducing separate charges for installation, provision and maintenance (based on meter type and capacity) of meters already *in situ*, together with transactional charges for one-off pieces of meter work. The charges were, in aggregate, in line with Ofgem's proposed price control for metering.

3.7 Ofgem did not veto the charging proposal, although the introduction of disaggregated charges for industrial and commercial (I&C) sites was delayed until April 2001 in order to address shipper concerns about implementation practicalities.

Review of Gas Metering Arrangements (RGMA)

3.8 Ofgem's May 2000 document on competition in metering also consulted on a draft project plan developed by Transco to address remaining perceived barriers to competition in metering. A revised project plan was consulted on in August 2000, and since then a number of industry workgroups have been taking forward the work.

3.9 The project is managed through the Ofgem-chaired Metering Competition Focus Group. A steering group of industry representatives has been established to facilitate the completion of the project in accordance with the project plan.

3.10 Over the next twelve months the RGMA steering group will co-ordinate the work to facilitate the removal of metering from Transco's Network Code, and the separation of Transco's IT systems for metering and meter reading from its core transportation system, UK Link.

Ofgem's initial views

3.11 It is Ofgem's objective to secure effective competition in gas metering and meter reading services. In Ofgem's view this will reduce the cost to consumers of existing metering and meter reading services, and promote innovation in new metering

services. When effective competition has been secured, it is Ofgem's intention to remove price regulation of these services.

3.12 During Autumn 2000, Ofgem carried out its first competitive review of metering and meter reading services in gas and electricity. This assessed the current extent of competitive, and the outstanding barriers to the further development of competition. The findings of this review, which are due to be published shortly as part of Ofgem's metering strategy document, have informed Ofgem's initial thoughts on an appropriate regime of price regulation for Transco's metering and meter reading activities going forward.

3.13 The creation last year of separate price controls for Transco's metering and meter reading activities represents the removal of a significant barrier to competition. The work of the RGMA project is taking forward important work to remove other barriers to competition.

3.14 While these steps represent considerable progress, at the present time there is not effective competition. Transco remains the *de facto* monopoly provider of metering services and DM meter reading services. There is a greater degree of competition in NDM meter reading, where a significant number of shippers (most notably BGT) use parties other than Transco for all or part of their portfolio of supply points. Transco does, however, provide NDM meter reading services to the majority of shippers.

3.15 In the light of the current state of competition, it is therefore prudent for Ofgem to develop proposals on the basis that Transco's metering and meter reading services will continue to be price controlled after March 2002. Ofgem will review whether this continues to be the case on an ongoing basis between now and publication of Ofgem's final proposals. In the longer term, it would be Ofgem's intention to review the development of competition periodically to assess whether price regulation continues to be necessary.

3.16 On the premise that all or some of Transco's metering and meter reading activities continue to be price regulated after March 2002, Ofgem will have two objectives in designing a control. First, to facilitate the development of competition. Second, to provide effective protection for consumers while competition is developing.

3.17 Ofgem's initial views on an appropriate design of control, with these two objectives in mind, are set out below.

Scope of control

3.18 In Ofgem's view, the separation between monopoly transportation activities and contestable metering activities is important for the development of competition in metering. To the extent that metering continues to be price controlled, it is Ofgem's view therefore that the current division between transportation and metering and meter reading for price control purposes should be retained.

Form of control

3.19 The present price controls on metering and meter reading specify a maximum allowed revenue per unit of activity.

3.20 For metering, the activity measure is the (weighted) number of meters that Transco provides. For meter reading, the activity measure is the (weighted) number of meter readings Transco performs. The average revenue allowances were calculated from the allowed revenues under an RPI-X form of control and the assumed levels of activity.

3.21 A price control of the above form is most appropriate for areas of activity where the range of services covered is limited (and is likely to remain unchanged for the duration of the price control), and volumes of activity are relatively predictable.

3.22 Transco's provision of metering and meter reading services from 2002 onwards may not demonstrate either of these characteristics. The development of metering competition is likely to stimulate the development of new services (through the application of advanced metering technology, for example). The transition to competition also makes volume forecasts inherently uncertain, since Transco's level of activity will reflect the degree to which it retains market share in each service.

3.23 An average revenue control of the form currently applied to metering and meter reading might not therefore be the most appropriate form of control going forward. Ofgem's initial view is that separate price caps for each service may be more appropriate to Transco's metering and meter reading activities. Under such an approach, each individual metering or meter reading service offered by Transco would

have a separate regulated tariff. Transco would not be allowed to price above the prescribed tariff for any individual service.

3.24 A variant of the tariff cap approach would be a 'tariff basket' approach. This would involve combining a number of individual metering and/or meter reading services, and applying a cap to the average charge for services within the basket. Transco would have discretion over the individual charges for services within the basket, subject to the constraint that the average charge did not exceed the cap.

3.25 Both of these approaches would be based on an assessment of the level of efficient costs, including financing costs, attributable to each service or basket of services.

3.26 It is Ofgem's initial view, that metering and meter reading services could reasonably be divided into the following 'baskets' for price control purposes:

- domestic – credit meters;
- domestic – prepayment meters;
- industrial and commercial (I&C) – metering;
- DM meter reading; and
- NDM meter reading.

3.27 Within each basket, an assessment would need to be made as to whether individual services should be capped. It is Ofgem's initial view that Transco's charges for domestic metering services could be individually capped. Price caps could be applied to the separate services of meter provision, installation and operation – and Transco's range of one-off meter work jobs. However, charges in respect of I&C meters (which vary in design to a much greater extent) may need to be subject to some form of averaging.

3.28 The approach described above would, arguably, be more transparent than the current regime since it would separately identify regulated charges for individual services, rather than setting a level of allowed revenue which Transco's charging structure must comply with in aggregate. The tariff cap approach could also reduce the potential

scope for Transco to cross-subsidise between metering services which are subject to greater or lesser degrees of competitive pressure.

3.29 Under such a regime, it may also be necessary to incorporate a formal mechanism for introducing new services (and tariffs), or the incorporation of new services into existing 'baskets'. Alternatively, new services introduced by Transco could be excluded from price regulation entirely. The rationale for such an approach would be that price controls for 'basic' metering services (including prepayment metering) represent sufficient protection for customers, and that Transco should have the incentive to introduce 'value-added' metering services without the constraint of price regulation.

3.30 As competition develops, Ofgem would envisage the removal of price controls for individual services, or baskets of services. This is the approach Ofgem took in respect of the price regulation of British Gas Trading. One of the benefits of a tariff cap approach is that it enables price controls to be removed relatively easily on a piecemeal basis – since there are no interactions with other aspects of the price control.

Duration

3.31 Any price control for metering and meter reading activities does not need to be of the same duration as price controls in respect of transportation services. Indeed, if competition develops sufficiently, Ofgem would envisage relatively short-lived controls for metering and meter reading. Depending on developments over the next six months it may be appropriate to remove price regulation for particular services, for example NDM meter reading, with immediate effect from April 2002.

3.32 It is Ofgem's initial view that if price controls were to be applied to Transco's metering and meter reading activities after March 2002, then they would be of a duration of no more than two years. Ofgem would envisage reviewing developments within such a two-year period to assess whether it was possible to remove such controls. If competition has not developed sufficiently to lift controls by March 2004, then Ofgem would consider setting a new price control for a further two year period.

Views invited:

3.33 Ofgem would welcome views on:

- whether it remains appropriate to apply price controls to Transco's metering and meter reading activities from April 2002;
- if so, which services if any should not be subject to price controls after April 2002;
- whether new metering and meter reading services should be excluded from price regulation;
- whether the form of control should be a price cap on individual services (or basket of services) or some other form of control; and
- how services, or baskets of services, should be defined for price control purposes under a tariff cap approach.

4. Output measures

Introduction

4.1 The November 2000 price control update paper described the background to Ofgem's work on output measures. The paper set out initial views on possible output measures to be incentivised under the price control; information to be collected to support the output measures; and possible indicators of the longer-term reliability of Transco's network.

4.2 This chapter describes Ofgem's further thoughts on the appropriate LDZ outputs framework in the light of responses to the November 2000 paper and views expressed at the public seminar in December 2000.

4.3 Under the Utilities Act 2000, Ofgem has powers to specify Guaranteed and Overall Standards of Performance to apply to Transco and other licence holders. The development of these standards needs to be coordinated with the development of an outputs framework, to ensure that there is no undesirable duplication (or omission) in their coverage. Ofgem's proposals for Guaranteed and Overall Standards to apply to Transco are set out in Chapter 5.

4.4 As discussed in Chapter 2, proposals for the appropriate outputs and incentives for the NTS will be described in Ofgem's forthcoming final proposals paper on long-term investment signals.

4.5 This chapter describes the proposed outputs framework for the LDZs.

Role and objectives of LDZ output measures

4.6 As discussed in chapter 2, previous regulatory reviews have concluded that the RPI-X form of price control provides strong incentives for overall efficiency. However, there is a concern that as cost savings become harder to achieve, the control may incentivise Transco to reduce costs at the expense of a lower quality of performance.

4.7 The objectives of introducing output measures are to:

- provide clearer incentives on Transco to deliver an appropriate level of service to its customers;

- collect better information on Transco's quality of performance between reviews;
- monitor delivery between reviews; and
- ensure that Transco does not focus on short-term performance at the expense of medium-term performance.

Development of an LDZ output regime

4.8 The development of an outputs regime for Transco's LDZ networks will need to follow a multi-staged process, following similar principles to the Information and Incentives Project (IIP) for the electricity distribution businesses. The work can be broken down into the following stages:

- developing a framework for the reporting of output measures, including consistent definitions of LDZ outputs;
- monitoring delivery between price control reviews; and
- developing an LDZ output-based incentive scheme.

4.9 The timetable for this work will be discussed in greater detail at the end of this chapter. However, as part of the price control review, Ofgem intends to complete the first stage in this process. The aim of this work will be to improve the information produced by Transco in the areas of quality of supply and network performance. Ofgem, in consultation with Transco, its customers and other interested parties will develop a number of output measures and supporting information that Transco will be required to collect and report, including information of the medium-term performance of its networks. Ofgem will then set out regulatory guidelines, including the definition of these outputs and guidance for collating them. It may be necessary to make a change to Transco's licence to facilitate the introduction of the reporting framework.

4.10 Work on developing an incentive scheme will begin after the completion of the price control review. Ofgem would expect to introduce the incentive scheme during the next price control period. The detailed timing for this needs to be considered further.

LDZ outputs framework

4.11 Ofgem considers that the reporting framework for outputs should have three main elements as follows.

(a) Output measures incentivised through the price control

4.12 Transco should collect and report information on a small number of output measures, which will form the basis of a price control incentive scheme. Ofgem considers that the number and duration of non-contractual interruptions are suitable measures as these interruptions affect the gas market as a whole rather than individual shippers or end customers.

(b) Output measures to monitor delivery between reviews

4.11 Transco should also collect and report information on a number of further output measures (reflecting other key outputs or aspects of Transco's quality of service) which Ofgem currently believes it would be inappropriate to incentivise through the price control. This will allow Ofgem to monitor Transco's quality of performance and ensure that it does not deteriorate between reviews. Ofgem proposes that these measures should address:

- key shipper services, which facilitate the development of competition; and
- the safety performance of Transco's networks.

(c) Report on the medium-term performance of Transco's LDZ networks

4.13 Ofgem believes it would be appropriate for Transco to provide a report on the medium-term condition of the each of its LDZ networks, including relevant system performance measures and a supporting narrative. A similar report should be provided for the NTS.

4.14 Ofgem's proposals for each element of this framework are set out below.

(a) Output measures incentivised under the price control

4.15 The November paper indicated that Ofgem's initial view was that the number of LDZ output measures incentivised through the price control should be kept to a small number and that they should address:

- the number of non-contractual supply interruptions that customers individually experience; and
- the duration of those interruptions.

Number and duration of non-contractual interruptions to supply

4.16 A number of respondents to the November update paper and participants in the December workshop supported the development of output measures relating to non-contractual interruptions. Customer research by MORI on behalf of Ofgem would appear to support this.[11] It showed that restoring supplies quickly was the key priority for customers when their gas supplies failed. Further, each LDZ has at least some degree of influence over the number and duration of non-contractual interruptions on its network.

4.17 Data on the number of non-contractual interruptions in 1999 is shown in Table 4.1 below.

Table 4.1: Indicative number of non-contractual interruptions on Transco's network in 1999 (thousands)[12]

Total number of customer interruptions	**1,890**
Total number of unplanned interruptions	600 (32%)
Number of unplanned interruptions due to:	
Transco fault/repairs (non-meter)	120*
Transco meter faults/replacement	430*
Third Party damage	40*
Total number of planned interruptions	1,290 (68%)
Number of planned interruptions due to:	
Mains and services	260
Mains replacement	580
Customer/shipper initiated work	450

*Figures do not total 600 due to rounding

[11] "Experience of the Competitive Market", The Domestic Electricity and Gas Markets Research Study Conducted for Ofgem by MORI January 2001

[12] These are indicative figures and not audited.

4.18 There were approximately 1.9 million non-contractual customer interruptions on Transco's LDZ networks in 1999. Approximately two-thirds of these were due to planned work, the remainder were due to unplanned events.

4.18 Transco's estimates of the duration of these interruptions are shown in Table 4.2 below.

Table 4.2: Estimated number of customer hours supply lost on Transco's network in 1999

Estimated total number of customer hours supply lost (million hours)	7
Estimated number of customer hours supply lost due to:	
Unplanned interruptions	3 (46%)
Planned interruptions	4 (54%)

4.19 Transco estimate that the total duration of these interruptions was approximately 7 million hours. Unplanned interruptions make up 46% of the total number of customer hours lost.

4.20 Respondents to the November update paper and participants in the December workshop on output measures had mixed views on how interruption measures should be incentivised. Some supported incentivisation through the price control, others suggested that it would be more appropriate to develop a guaranteed standard of performance on supply outages.

4.21 Ofgem proposes that the number and duration of interruptions to supply should be output measures that are directly incentivised through the price control. However, this does not preclude introducing a guaranteed standard of performance on supply outages. Any incentive scheme that is introduced under the price control will need to take into account compensation paid under guaranteed standards of performance.

Definition of interruption measures

4.22 There are a number of different types of non contractual interruptions. Firstly, unplanned interruptions include interruptions due to:

- Transco's fault or repairs (non-meter);
- Transco meter faults or replacement; and

- Third-party damage.

4.23 Planned interruptions include interruptions due to:

- Mains and services;
- Mains replacement; and
- Customer/shipper initiated work.

4.25 Ofgem currently considers that the number and duration of all non-contractual interruptions upstream of the meter should be reported by Transco, including planned interruptions and interruptions due to third-party damage. Customers are primarily concerned with the extent of disruption to their gas supplies rather than the cause of the disruption.

4.24 Initial definitions of the number and duration of non-contractual interruptions are set out in Appendix 3. Ofgem would welcome views on these definitions and in particular ways in which these might be improved or extended. As explained above it will be necessary to develop detailed regulatory guidance and definitions for collating this information.

4.25 It will be necessary to consider the treatment of different "types" of interruption within the incentive scheme itself in due course. For example:

- whether it is appropriate to include planned interruptions. Most planned interruptions relate to mains replacements under policies agreed with the Health and Safety Executive, obligations to replace faulty or inaccurate meters or work initiated by shippers or final customers. In some cases they are therefore outside Transco's control; and
- whether it is appropriate to include interruptions relating to third-party damage. Although many of these interruptions may be due to negligence on the part of contractors working for other parties (for example, other utilities), Transco may be able to reduce the number of interruptions by providing better information to contractors concerning the location of its pipes.

NTS interruptions

4.29 It is not proposed to implement an incentive regime in relation to non-contractual NTS interruptions. However, there may be incentives for Transco to interrupt NTS customers in preference to LDZ customers or vice versa, and it is therefore proposed that under the Exit Code discussed in chapter 2 there will be arrangements for the level and location of any non-contractual NTS interruptions to be monitored to understand the reasons for any actions taken.

Metering interruptions

4.28 A large number of interruptions to customers' supplies are due to meter-related work or meter faults. Ofgem would welcome views on whether it is appropriate to introduce output measures on the number and duration of interruptions caused by meter-related faults or activities.

4.29 As competition is expected to develop in metering during the next price control period, meter-related interruptions may become increasingly outside Transco's control. Therefore, it may become appropriate to alter the way these interruptions are treated within the outputs framework.

Disaggregation of the interruption output measures

4.30 Ofgem proposes that the interruption outputs measures should be disaggregated by:

- cause;
- geographic area (LDZ); and
- type of customer.

Disaggregation by cause

4.31 For example, the duration of interruptions due to leaking service pipes and the duration of interruptions due to third-party damage should be separately reported. This would help Ofgem determine the extent to which trends in output measures are due to Transco or third parties.

Disaggregation by geographical area (LDZs)

4.32 Ofgem believes that the interruption output measures should be reported separately for each of Transco's LDZs. This would clearly enhance the information available to Ofgem and allow monitoring and/or incentivisation to be based on the performance of each of the LDZ networks.

Disaggregation by customer type

4.33 Ofgem believes that the interruption output measures should be disaggregated by the following customer types:

- vulnerable domestic customers (such as customers on the relevant supplier priority lists);
- non-vulnerable domestic customers; and
- industrial and commercial customers.

4.34 This would allow Ofgem to monitor differences in the quality of supply for different types of customer and ensure that particular groups are not disadvantaged by Transco's performance. It would be necessary to define these customer groups for the purpose of reporting.

(b) Output measures to monitor delivery between reviews

4.35 Ofgem proposes that Transco should collect and report data on a small number of other output measures to enable Ofgem to monitor delivery between reviews. These output measures should address:

- key shipper services which facilitate the development of competition; and
- the safety performance of Transco's networks.

Key shipper services facilitating the development of competition

4.36 Transco plays a key role in the development of competition in shipping and supply as it manages the customer transfer process. In order for customers to be able to switch quickly and successfully between shippers or suppliers it is important that Transco maintains accurate records for each customer connected to its network.

4.37 Further, when problems arise with the transfer process or other aspects of shipper services, such as gas nominations and invoicing, it is important that Transco resolves shippers' queries promptly and satisfactorily.

4.38 A number of respondents to Ofgem's November paper and participants in the December seminar emphasised the importance of Transco's shipper services in general, and in particular the customer transfer process, the accessibility of Transco's data and the resolution of shipper queries.

4.39 Ofgem therefore believes it is appropriate to introduce output measures to monitor Transco's role in facilitating the development of competition. However, Ofgem does not propose, at this stage, to incentivise these output measures directly through the price control as it considers that shipper services are most appropriately financially incentivised through the Network Code, which governs the contractual relationship between Transco and shippers.

4.40 Ofgem proposes to measure Transco's performance in providing shipper services in two areas: accessibility of data and speed of query resolution.

Accessibility of data

4.41 Many customer transfers that do fail are delayed due to problems of data inaccuracy, such as duplicate addresses for a single meter point reference number on Transco's sites and meters database. Transco has developed internet access to this database so that shippers are able to validate their customers' information and correct any errors.

4.42 Ofgem proposes to introduce output measures for the availability of this service. Possible measures include the number of times this service is down and the length of time the service is unavailable. (Initial definitions of the data accessibility output measures are set out in Appendix 3.)

Speed of shipper query resolution

4.43 A number of shippers have been working with Transco to develop a standards of service package to achieve immediate improvements in shipper query management. Ofgem believes that the output measures should reflect this work. Ofgem's initial view is that output measures on the percentage of queries resolved within 10 business days and the percentage of queries resolved within 20 business days are appropriate.

4.44 In addition, Transco should report the average time taken to resolve queries that are outstanding after 20 business days. The measures should be disaggregated by type of query and by shipper. (More detailed information on shipper query output measures is set out in Appendix 3.)

Gas Safety

4.45 A number of participants in the December outputs seminar and respondents to the November update paper emphasised the importance of safety for customers.

4.46 Monitoring Transco's safety performance is primarily the responsibility of the Health and Safety Executive (HSE). Transco has a duty, under the Health and Safety at Work Act, to maintain or improve levels of safety. At the beginning of the current price control period the HSE reviewed historic data on the number of incidents that had occurred on Transco's cast iron mains population. (The definition of an incident is set out in Appendix 3.) The average number of incidents was found to be approximately three. Since then the HSE has extended its analysis to cover the metallic mains population as a whole.

4.47 Transco currently reports information on mains replacement to both Ofgem and the HSE. Ofgem proposes that these reports should be formalised as part of the outputs framework as mains replacement forms a significant element of Transco's expenditure. (An initial definition of the safety output measure is set out in Appendix 3.) The programme of mains replacements is discussed in Chapter 6.

4.48 However, Ofgem does not propose to introduce financial incentives related to safety. Ofgem considers that it would be inappropriate to introduce financial incentives which duplicate the HSE role. Transco's policy for mains replacement forms part of its Safety Case, and deviation from the Safety Case may result in enforcement action by the HSE.

(c) Medium-Term Performance of the NTS and LDZ networks

4.49 It is important to achieve an appropriate balance between the short and medium-term performance of the network. Otherwise Transco may be able to achieve short-term improvements in output measures at the expense of medium-term performance.

4.50 Ofgem therefore believes it would be appropriate for Transco to provide a regular report on the medium-term condition of the NTS and each of its LDZ networks, including relevant system performance measures and supporting narrative.

4.51 There are two possible approaches for developing such a report:

- Ofgem could pre-specify a range of performance measures for the price control period that Transco would be required to report and comment on, supported by additional information Transco may wish to provide; or
- Transco could be given some discretion to choose the most appropriate measures of medium-term performance.

4.52 The first approach would have the advantage of ensuring continuity and consistency of information for Ofgem over time and mitigate any risk of selective reporting. However, if too detailed, such an approach might be perceived as intrusive regulation. The second approach would allow Transco greater flexibility to adapt its report in line with developments in its asset management policies.

4.53 A range of possible medium-term performance measures for the NTS and LDZ networks is set out in Appendix 4.

4.54 Ofgem believes that as a minimum Transco's supporting narrative should:

- outline its asset management strategy together with any developments since the last report;
- provide details of component population and changes since the last report;
- provide details of any condition monitoring exercises and results;
- explain the reason for the trend in each performance measure, including any secondary influences;

- identify any material changes in component reliability within the measure; and
- report unplanned loss of containment of gas as reported under the Reporting of Infectious Diseases and Dangerous Occurrences Regulations to the HSE.

4.55 This narrative would need to include an environmental report. The form of the environmental report would need to take into account guidance from Government, the Environment Agency and other relevant bodies. Transco would need to report on the environmental targets it is working to and its performance against these. Ofgem would expect Transco to report on levels of methane leakage as part of the report.

4.56 Ofgem considers that Transco should publish the first report in summer 2002 incorporating data on historic performance and future projections. It is recognised that data collection in some areas may not be fully implemented at that stage, but the report should set out progress and delivery timescales in these areas.

4.57 Ofgem would welcome views on the appropriate form of the report, including views on relevant performance measures and the content of the supporting narrative.

ISO accreditation

4.58 Transco has suggested that ISO 9001 accreditation of its asset management policies would provide evidence that appropriate procedures are in place for maintaining the longer-term reliability of its network. However, Ofgem does not consider that ISO 9001 accreditation is, on its own, necessarily sufficient to demonstrate satisfactory medium-term performance. It may also inhibit innovation.

Expenditure monitoring framework

4.59 Ofgem intends to retain and develop some of the existing capital expenditure monitoring outputs in addition to the "new" output measures to inform the understanding of Transco's capital and operating expenditure on an ongoing basis. Such monitoring would need to be developed to inform the outputs framework, and in particular the analysis of the medium term performance data provided by Transco in relation to the NTS and individual LDZ networks.

4.60 Ofgem is considering whether it is appropriate to formalise the requirements for expenditure monitoring in a special licence condition.

Audit process

4.61 Ofgem needs to consider the nature of any audit that is introduced for output measures. Two models were considered by Ofgem as part of the IIP for the electricity distribution businesses.

4.62 Under one model Transco would employ reporters who owe a duty of care to Ofgem. In addition, Ofgem would set out the rules for the appointment of the reporter and have the power to insist that a reporter be changed. The reporter would be broadly responsible for auditing the processes used to collate information that is reported to the regulator.

4.63 Under the second model Ofgem would appoint the auditor. Ofgem does not believe that there are material differences in the costs of these approaches but there may be differences as to who meets the costs.

4.64 The IIP has chosen to adopt the second approach because of the need to establish, as soon as possible, consistency in the information that is reported to Ofgem. Similar considerations may be appropriate in relation to the LDZs.

4.65 Ofgem would welcome views on the appropriate nature of audit for output measures and medium-term performance reports.

Cost of developing and implementing new systems

4.66 Transco already collects some of the data required for reporting outputs and medium-term performance. For example, data on the average number of incidents on Transco's network is already reported to Ofgem and the HSE.

4.67 However, there are a number of areas in which Transco may need to develop and implement new systems to record data on outputs. For example, detailed data on the number and duration of supply interruptions is not currently measured. This issue will be taken into consideration in developing the output regime and setting the price controls for the NTS and LDZ networks.

Way forward for developing the outputs regime

4.68 As was noted earlier in the chapter, the development of the output regime is a multi-staged process. The work can be broken down into the following stages:

- developing a framework for reporting outputs, including consistent definition of LDZ outputs;
- monitoring delivery between price control reviews; and
- developing an LDZ output-based incentive regime.

Developing a framework for reporting outputs

4.69 As part of this price control review, Ofgem intends to complete the first stage in the process of developing an output regime; that is improving the information produced and reported by Transco in the areas of quality of supply and network performance.

4.70 Ofgem aims to develop draft regulatory instructions and guidance for reporting outputs measures by June. This will include full definitions of all the output measures and any additional supporting information that is required. It will also define the approach for reporting medium-term performance, including definitions of performance measures, to the extent that these are to be defined by Ofgem. Ofgem will make use of the lessons learnt in the IIP for the electricity distribution businesses in establishing a suitable reporting framework for Transco.

4.71 Ofgem will publish the final regulatory instructions and guidance for reporting output measures in September together with the requirements for audit.

4.72 Where the relevant systems are already in place for collecting the data on output measures, reporting should commence in April 2002. However, Ofgem recognises that for some of the output measures and supporting information Transco will have to develop new systems to record the data. A lead-time of 12 months may be required before these systems are established. Ofgem therefore believes it will be appropriate to delay the requirement to report the remaining output measures and supporting information until April 2003.

Monitoring delivery of outputs between reviews

4.73 Ofgem will monitor the delivery of outputs on an ongoing basis to determine any trends in performance and ensure that Transco's quality of supply is not deteriorating. It will also be important to monitor Transco's medium-term performance and ensure that Transco is not improving short-term performance at the expense of the medium or longer-term condition of the network.

4.74 The process of monitoring outputs will begin in May 2002, as soon as the first outputs data becomes available. Ofgem proposes that medium-term performance should be monitored regularly, probably annually, on the basis of the proposed medium-term performance reports.

Developing an output-based incentive scheme

4.75 Ofgem believes that it is appropriate to introduce incentives relating to the number of customers interrupted and the duration of interruptions.

4.76 However, it is not feasible to develop the incentive regime as part of the current price control review. At present, in contrast to the position in electricity distribution, data on the number and duration of interruptions on Transco's network is very limited. Transco only records the number of customers interrupted for incidents where more than 250 customers are affected. Further, there is no record of the number of customer minutes lost through supply interruptions. Transco will need to develop new systems in order to record information on interruptions disaggregated by cause, type of customer and LDZ.

4.77 Ofgem expects to introduce the incentive scheme part way through the next price control period, in April 2004. One question raised by this timing is whether it will provide a sufficient track record on Transco's performance against the new measures to allow Ofgem and Transco to agree the targets for the incentive schemes. However, delaying the introduction of the incentive scheme until 2005 would mean that Ofgem would possess less experience of the impact of the incentive scheme to inform the next Transco price control in 2007.

4.78 One way of addressing concerns regarding the extent of data on interruptions would be to reduce the amount of revenue which would otherwise be put at risk in the first year of the incentive scheme.

Financial exposure to the regulatory incentive scheme

4.79 In setting the price control, it is important that there is clarity on the extent to which Transco's revenues will be affected by these incentive arrangements. If this exposure is too high it may increase Transco's business risk, and may impact on its cost of capital. If too low, it may fail to provide an effective incentive on Transco. In setting the 2000 electricity distribution business price controls, Ofgem limited their exposure to incentives to be developed as part of the IIP, to 2 per cent of price-controlled revenues. Ofgem is currently minded that the financial impact of the incentive regime on interruptions should be similarly limited to 2 per cent of LDZ regulated revenue for the period April 2002 to March 2007.

Form of the regulatory incentive scheme

4.80 There are two possible forms of regulatory incentive scheme, which could be used. Each LDZ's performance could be assessed on the basis of:

(a) its own performance (i.e. absolute measures); or

(b) its performance relative to its peers.

4.81 Under the first approach the revenue for each LDZ would depend on its absolute level of performance. For example, Transco could collect 98% of its allowed revenues for each LDZ at the beginning of the year and then, dependent on the performance of each LDZ in the incentive scheme over the period, collect up to a further 2 per cent of allowed revenues from its customers.

4.82 Under the second approach a certain proportion of revenues would be "transferred" between LDZs, according to their relative performance. To facilitate performance comparisons it might be necessary to normalise output measures for differences between the LDZ networks.

4.83 While all LDZs remain in common ownership, regulatory incentive schemes based on relative performance are unlikely to be effective. "Transfers" of revenues between LDZs will have no financial impact on Transco as a whole. Further, under such a scheme Transco might have an incentive to reduce its performance in some LDZs in order to benefit from softer performance targets for the others.

4.84 Ofgem therefore considers that a regulatory incentive scheme based on the absolute performance of each LDZ is most appropriate for the next price control period.

Internal incentive scheme

4.85 While regulatory incentives schemes based on relative performance between LDZs are unlikely to be effective with LDZs under common ownership, this does not preclude Transco from developing internal incentive schemes based on relative performance. Ofgem would encourage schemes whereby the rewards for managers and staff are based on the absolute and/or relative performance of their LDZ.

Timetable

4.86 The key milestones for developing the outputs regime are set out in Table 4.3 below.

Table 4.3 Key Milestones for developing outputs regime

Dates	Milestones
June 2001	Draft regulatory instructions and guidance containing detailed definitions of outputs Expenditure monitoring proposals
September 2001	Final proposals for regulatory instructions
April 2002	Implementation of new price control: outputs framework comes into force. Reporting begins for outputs where Transco has existing systems in place.
April 2003	Reporting begins for remaining outputs
April 2004	Implementation of incentive regime

Issues for consideration

4.87 Views are invited on any of the issues discussed in this chapter, but in particular:

- on the initial definitions of the output measures set out in Appendix 3 and ways in which these might be improved;

- the appropriate approach for Transco to report the medium-term performance of its NTS network and each of its LDZ networks;
- the timetable for the introduction of outputs-based incentives on Transco; and
- whether it is appropriate for Transco to be financially incentivised against the number and duration of LDZ interruptions up to a limit of 2 per cent of LDZ price-controlled revenues.

5. Guaranteed and overall standards of performance

Introduction

5.1 The Gas Act 1986 (as amended by the Utilities Act 2000) will empower Ofgem to set guaranteed and overall standards of service for gas transporters, in consultation with energywatch, the licensee and other interested parties.

5.2 Guaranteed standards set service levels that must be met in each individual case. If the licensee fails to provide the required level of service, it is required to pay fixed compensation to the affected customer. Overall standards of service cover areas where it is inappropriate to give individual guarantees, because the nature of the service means there is an inherent level of variability in delivery of performance. However, overall customers have a right to expect the licensee to deliver pre-determined, minimum levels of service.

5.3 Ofgem believes that it is important to introduce guaranteed and overall standards of performance in respect of certain non-contestable activities carried out by Transco. They will provide the primary protection to Transco's final consumers in relation to quality of supply until they are supplemented by financial incentives under Transco's price controls, as discussed in Chapter 4.

5.4 In addition, Ofgem considers it might be appropriate to introduce statutory standards of performance for other gas transporters, as their customers should also be assured of certain minimum standards of service. These may be similar in form to those established for Transco, but Ofgem has the discretion to establish different provisions for different licensees. This will be discussed in more detail in a separate document to be published in March 2001.

5.5 Ofgem considers that new or revised standards of performance for gas transporters should be introduced from 1st April 2002, the beginning of Transco's next price control. However, as discussed in the January 2001 consultation paper on standards of performance[13], Ofgem believes it is necessary to introduce a number of interim metering standards on Transco this year. This will ensure that there is consistency

[13] "Guaranteed and overall standards of performance. Final proposals." January 2001, Ofgem.

between Transco's standards of performance and the new metering standards being proposed for gas suppliers.

Existing standards

5.6 At present there are no guaranteed or overall standards of performance for gas transporters as such. However, standard condition 19 of the PGT Licence requires licensed gas transporters to establish standards of performance in respect of connections to premises using less than 73,200 kWh and in relation to the prevention of gas escapes and the provision of alternative heating and cooking facilities. Transco's public standards of service also include a number of voluntary standards, such as standards of service on telephone calls, correspondence, visits and making and keeping appointments. They are summarised in table 5.1 opposite.

5.7 As an interim measure the existing standards of service for gas transporters will remain in place within the current regulatory framework until 31 March 2002. This gives Ofgem time to consider the appropriate standards of service for gas transporters.

5.8 A detailed review of Transco's national performance against the standards was set out in Ofgem's October consultation paper on standards of performance.[14] It is clear that Transco has been meeting or outperforming the targets. In the period from 1st January 1997 to 31st December 2000, Transco met or exceeded all of the targets at a national level.

5.9 It is also important, where appropriate, to consider Transco performance at an LDZ level.[15] In the period from 1st January 1997 to 31st December 2000 each LDZ met the planned performance level for recording complaints and the provision of alternative heating and cooking facilities to priority customers (PSOS 3 and PSOS8). Performance, however, has varied significantly between LDZ for the remaining standards. Figures 5.1 to 5.6 below show Transco performance by LDZ for 2000.

[14] "Guaranteed and overall standards of performance. A consultation paper." October 2000, Ofgem.

[15] The standard on the telephone response applies to call centres rather than individuals LDZs.

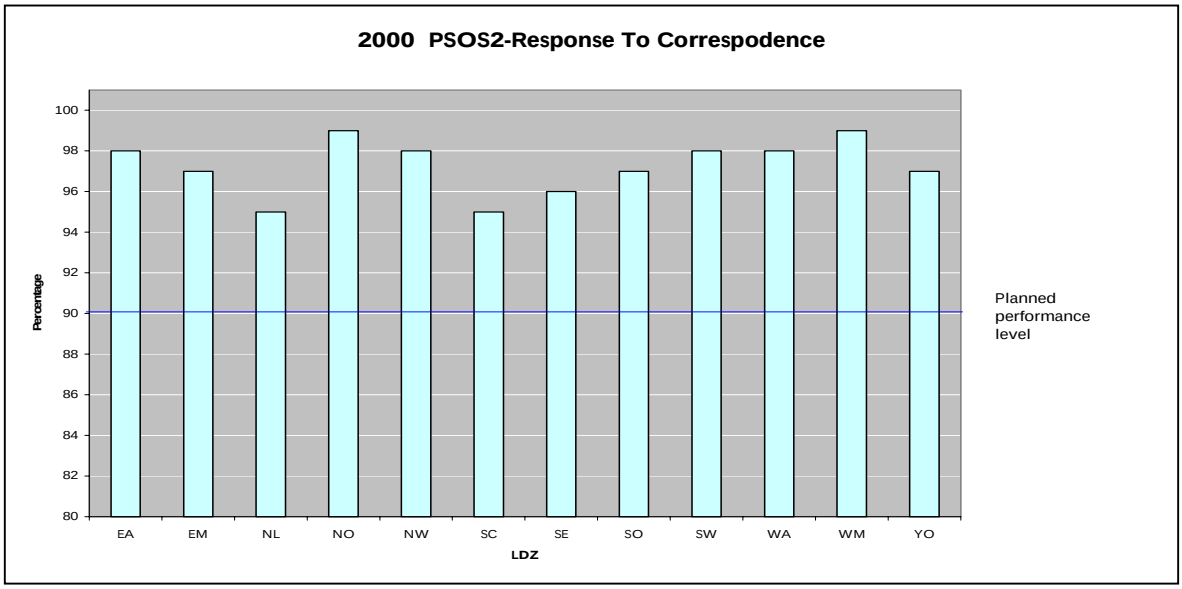
Table 5.1: Transco's public standards of service

Service	Standard	Performance level	Compensation Payment
PSOS 1	Telephone calls Planned performance level 90%	All calls to Transco call centres to be answered within 30 seconds.	Disc
PSOS 2a	Replies to correspondence – 1 Planned performance level 90%	Customer to receive a reply within 5 working days, except where immediate action is required. Interim replies will indicate when a full reply may be expected.	Disc
PSOS 2b	Replies to correspondence – 2 Planned performance level 90%	Correspondence requesting connection of premises likely to use less than 2,500 therms (73,200 kWh) per year will receive a reply in 5 working days (unless the request comes via a shipper or supplier).	Disc
PSOS 3	Complaints Planned performance level 100%	A record will be kept of all complaints, from whatever source.	Disc
PSOS 4	Visits Planned performance level 93%	Where a visit is appropriate, following receipt of correspondence or a complaint, contact will be made within 2 working days. The visit will be made within 5 working days, or later with the customer's agreement.	Disc
PSOS 5	Notification of planned work Planned performance level 95%	Work for planned maintenance that requires interruption of the gas supply, and entry to the customer's premises will be the subject of notice of: at least 10 working days in respect of the service pipe; and at least 5 days in respect of the meter.	Disc
PSOS 6	Making and keeping appointments Planned performance level 95%	Where required, appointments will be made on a morning or afternoon basis. Failure to give 24 hours' notice of inability to attend may attract a compensation payment.	£10
PSOS 7 And 7a	Gas emergencies (Transco currently undertakes this work, on behalf of other gas transporters) Planned performance level 97%	In respect of gas escapes, spillage of carbon monoxide or other hazardous situations, as quickly as possible but within at least one hour for uncontrolled escapes and two hours for controlled escapes.	Disc
PSOS8	Alternative heating and cooking facilities. Planned performance level 100%	Where Transco has to disconnect the gas supply for safety reasons, it will provide alternative heating and cooking facilities for customers who are disabled, chronically sick, or of pensionable age, or where there are children in the property.	£20

Disc = Discretionary

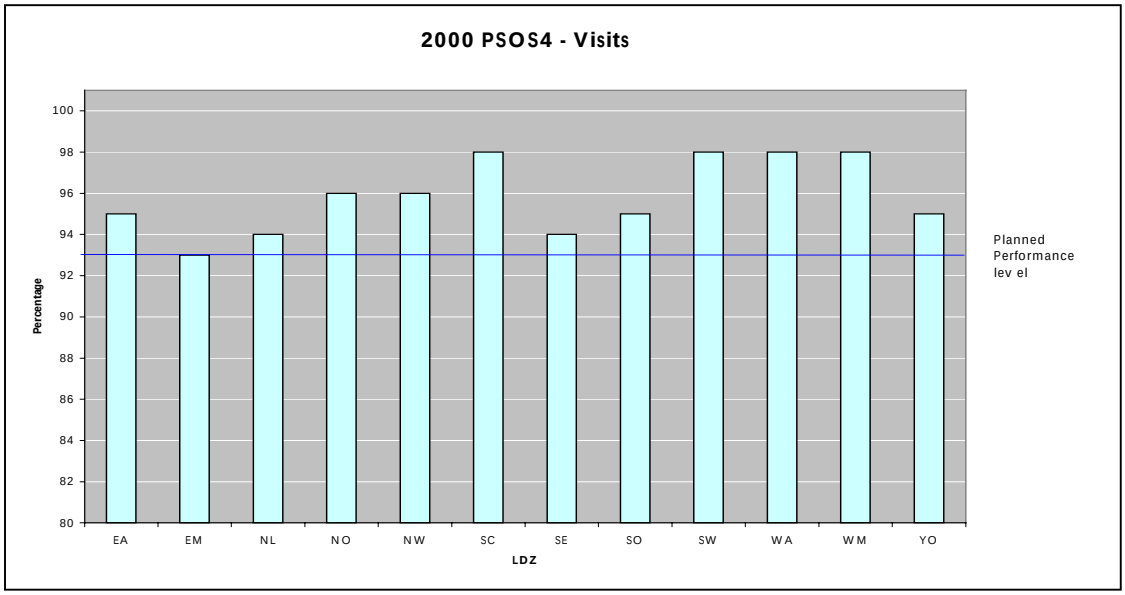
5.9 Figure 5.1 shows each LDZ's performance against the standard for replying to correspondence. Northern and West Midlands LDZs met the standard in 99% of cases in 2000. By contrast the worst performing LDZs, North London and Scotland, met the standard in 95% of cases.

Figure 5.1: Response to Correspondence



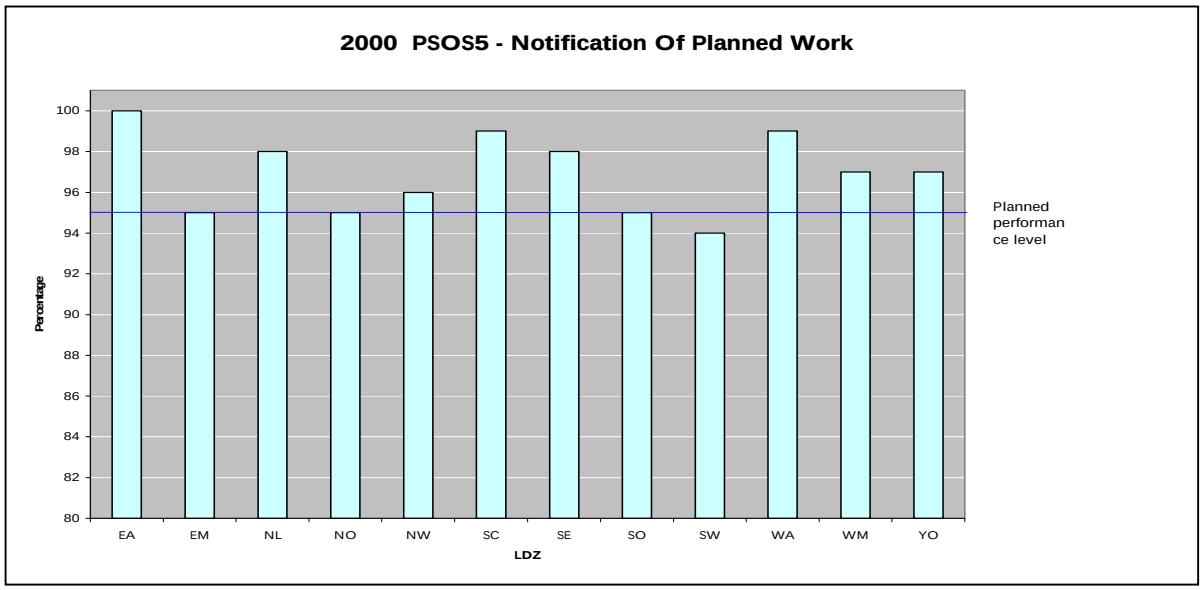
5.10 Figure 5.2 shows each LDZ's performance against the standard for visits. Four LDZs (Scotland, South-Western, Wales and West Midlands) met the standard in 99% of cases in 2000. By contrast the worst performing LDZ, East Midland met the standard in 93% of cases, equalling the planned performance level.

Figure 5.2: Visits



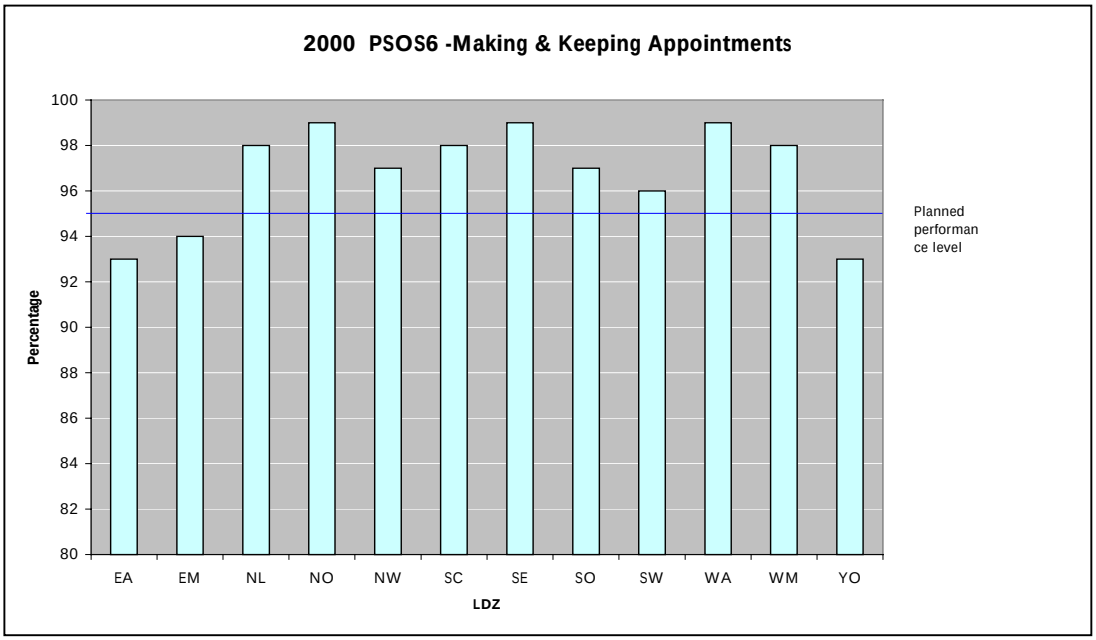
5.11 Figure 5.3 shows each LDZ's performance against the standard on notification of planned work. East Anglia met the standard all cases in 2000. By contrast the worst performing LDZ, South-West, only met the standard in 94% of cases, failing the performance target.

Figure 5.3: Notification of planned work



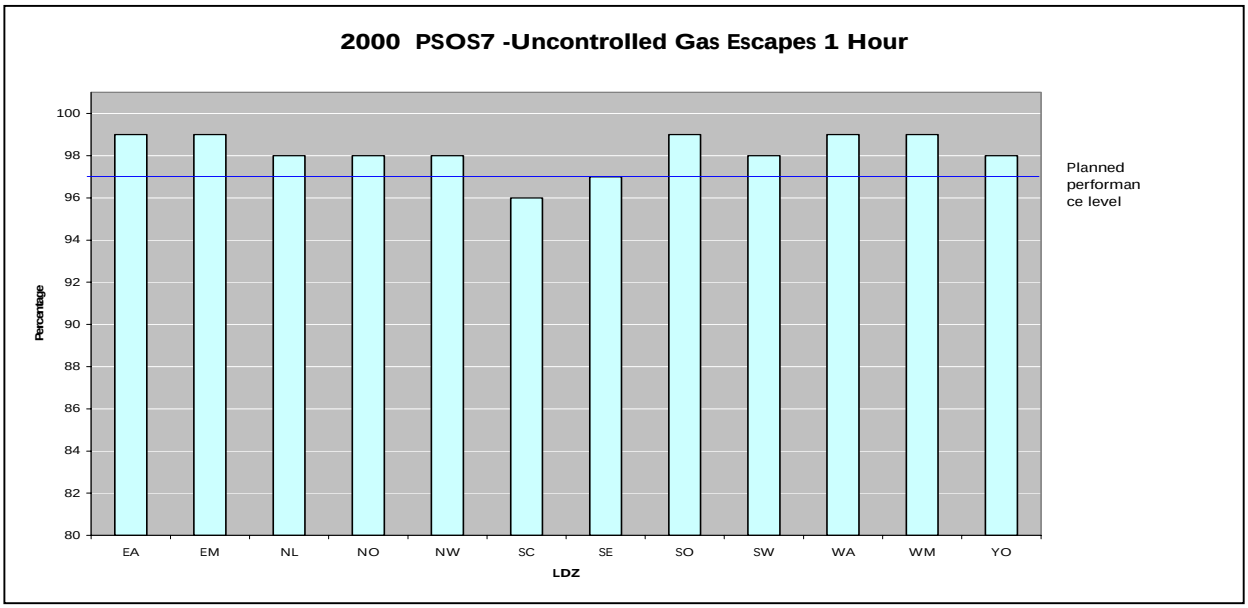
5.12 Figure 5.4 shows each LDZ's performance against the standard for making and keeping appointments. Three LDZs (Northern, South-East and Wales) met the standard in 99% of cases in 2000. By contrast, East Anglia, East Midlands and Yorkshire failed to meet the planned performance level.

Figure 5.4: Making and keeping appointments



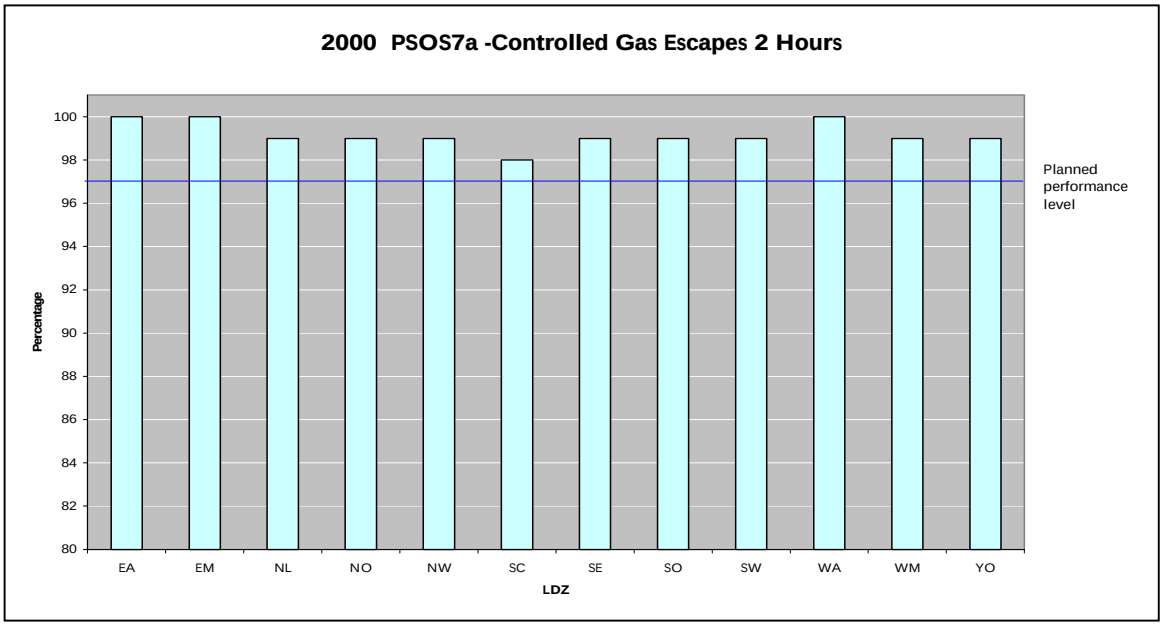
5.13 Figure 5.5 shows each LDZ's performance against the standard for uncontrolled escapes. The best performing LDZs (East Anglia, East Midlands, Southern, Wales and West Midlands) met the standard in 99% of cases in 2000. By contrast the worst performing LDZ, Scotland, failed to meet the 97% planned performance level.

Figure 5.5: Uncontrolled Gas Escaped 1 Hour



5.14 Figure 5.6 shows each LDZ's performance against the standard for controlled gas escapes. The best performing LDZs (East Anglia, East Midlands and Wales) met the standard for controlled gas escapes in 100% of cases in 2000. Scotland, the worst performing LDZ, met the standard in 98% of cases.

Figure: 5.6 Controlled Gas Escapes



5.15 In addition to these standards of performance, Transco has obligations to consumers of gas under its Network Code. The Network Code provides that, where Transco is or has been in breach of its obligation to make gas available for offtake from the system, it must pay:

- consumers using less than 73,200 kWh (2,500 Therms): £20 for each consecutive period of 24 hours, or part of such a period, commencing with the expiry of the first 24 hours of the failure; and
- other users consuming greater than 73,200 kWh: a payment calculated in accordance with a formula set out in the Network Code.

5.16 Transco is not currently required to make these payments where the failure to make gas available is the result of third-party damage.

5.17 The Code requires that Transco make any payments that are owed under this provision to the relevant shipper. The payments are then passed onto the relevant supplier and finally the final customer.

5.18 The most recent figure for payments made to customers for loss of supply is £560,622 for January to August 2000.

5.19 Transco also has a number of connections standards of service imposed by an enforcement order issued by Ofgem in February 1999 under Section 28(1) of the Gas Act. These standards combine features of the guaranteed and overall standards, in that Transco is not required to make compensation payments unless it has failed to achieve a certain overall performance level. The amount of compensation will also increase dependent on the length of time that is taken to provide a quotation and the overall performance level. The standards are summarised in table 5.2, in which 'D' represents the day of request for quotation.

5.20 Transco's performance against all the connections standards of service improved significantly between 1998 and 1999, with Transco close to or exceeding the planned performance level for most of its connections standards in 1999. However, Transco underperformed in some areas. For example, Transco only achieved a performance level of 76.4% for CSOS 3a and 84.7% for CSOS 5a. These standards relate to

quotations for one-off connections for loads exceeding 73,200 kWh requiring reinforcement.

Table 5.2: Transco's connection standards of service

Standard	Work Area	Standard of Service	National Planned Performance Level	Stage 1 Liability Payment	Stage 2 Standard of Service	Stage 2 Liability Payment
CSOS 1	One-off quotations[16] < 73,200 kWh (desktop)	D + 3	90%	£30	D + 10	£40
CSOS 2	One-off quotations < 73,200 kWh (requiring a site visit)	D + 8	90%	£30	D + 15	£40
CSOS 3,5[17]	Single connection[18] quotations > 73,200 kWh (not requiring reinforcement)	D + 8	90%	£50	D + 15	£65
CSOS 3a,5a[19]	Single connection quotations > 73,200 kWh (requiring reinforcement and a site visit)	D + 12	90%	£50	D + 25	£65
CSOS 4	Quotation for new housing (multiple supply meter points)	D + 15	90%	£50	D + 25	£65
CSOS 6	Quotation for GT connection (not requiring reinforcement)	D + 8	90%	£50	D + 15	£65
CSOS 6a	Quotation for GT connection (requiring reinforcement)	D + 12	90%	£50	D + 25	£65
CSOS 7	Quotation to connect a self lay pipe (not requiring reinforcement)	D + 8	90%	£50	D + 15	£65
CSOS 7a	Quotation to connect a self lay pipe (requiring reinforcement)	D + 12	90%	£50	D + 25	£65
CSOS 8	Response to land enquiry from shipper, supplier or developer	D + 5	90%	£30	D + 15	£40
CSOS 9	Initial land enquiry by a PGT	D + 5	90%	£30	D + 15	£40
CSOS 10	Initial self lay enquiry	D + 5	90%	£30	D + 15	£40

The liability payment is for failing to meet a standard of service.

[16] A one-off quotation relates to the connection of single premises.
[17] CSOS 3 applies to quotations for shippers. CSOS 5 applies to quotations for non-shippers.
[18] A single connection quotation can cover a number of premises.
[19] CSOS 3a applies to quotations for shippers. CSOS 5a applies to non-shippers.

Development of guaranteed and overall standards of performance

5.21 A number of key issues need to be considered in developing the framework for regulatory standards for April 2002, such as: the appropriate scope of the standards; which customers should be covered; whether there should be qualitative standards and the appropriate form and level of compensation schemes. For the purposes of the price control it will also be important to take into account the cost of meeting any new or revised standards of performance, including costs of developing new systems required to record performance.

Scope of standards

5.22 It is important to decide which services should be covered by standards of performance.

Transportation

5.23 Some of the guaranteed and overall standards of performance for gas transportation may be based on Transco's existing public standards of service, such as the standards for the telephone response, visits and making and keeping appointments. However, it may be appropriate to introduce additional standards in a number of areas.

Resolving complaints

5.24 Ofgem believes that the level of complaints is an important indicator of Transco's quality of service and that all complaints should be resolved promptly and satisfactorily. It might therefore be appropriate to introduce a standard of performance in this area. For example, an overall standard of performance may require that 90 per cent of all complaints be resolved within 10 days of receipt.

5.25 Ofgem would welcome views on whether there should be a standard on resolving customer complaints and the nature of that standard.

Reconnection following supply outages

5.26 As discussed in the chapter 4, the continuity of supply to final customers is a key area of LDZ performance. Ofgem proposes to establish licence obligations and guidelines for reporting the number and duration of non-contractual interruptions as part of the

price control review. Once a track record has been established, Ofgem will propose an incentive scheme for interruption, to take effect part way through the next price control period.

5.27 It is important to ensure that Transco has an incentive to reconnect customers promptly following a supply outage and provide individual customers with adequate compensation for the inconvenience caused. Ofgem therefore believes it might be appropriate to introduce a guaranteed standard of performance on reconnection following supply outages. Any incentive scheme that is introduced under the price control will need to take into account compensation paid under such a guaranteed standard of performance.

5.28 The standard could parallel an existing similar provision in electricity distribution. However, it is important to take account of differences between electricity and gas. In particular, for safety reasons, Transco needs to enter customers' premises to restore the gas supply.

5.29 Ofgem would welcome views on whether there should be a standard of performance on reconnection following a supply outage and the form such a standard should take.

Informing customers of when they are due to be reconnected

5.30 It is important that Transco keeps customers informed in the event of an interruption to their supplies. It may therefore be appropriate to introduce a guaranteed standard on informing customers when their supplies are due to be reconnected.

5.31 For example, a guaranteed standard could require Transco to inform customers of the expected time of reconnection within 6 hour time bands where outages are over 12 hours. Transco could also be required to provide updates if the estimated time of reconnection changes. This would help reduce any confusion as to the length of the interruption and help ensure that customers are present for Transco to enter their premises and reconnect their supplies.

5.32 Ofgem would welcome views on whether it is appropriate to introduce a guaranteed standard on providing estimates of the time of reconnection and the form of the standard.

Notification of entitlement to compensation payments

5.33 It might be appropriate to create an obligation for gas transporters to notify final customers when they may be entitled to compensation under the standards via their suppliers.

5.34 Ofgem would welcome views on whether it is appropriate to introduce a guaranteed standard on notifying customers of their entitlement to compensation and the appropriate form of the standard (e.g. the number of days within which they should inform customers.)

Gas Safety

5.35 Monitoring Transco's safety performance is primarily an HSE responsibility but Ofgem also has role to play. As explained in Ofgem's January consultation document on standards of performance, Ofgem considers there to be a good case for clarifying the respective roles in order to remove any regulatory overlap.

5.36 The Gas Safety Management Regulations (GSMR) apply to Transco's role as emergency service provider. Under the GSMR, Transco has an obligation to attend gas escapes as soon as reasonably practicable. Generally, repairs have to be effected within 12 hours. The HSE is primarily concerned with investigating individual cases, where it considers there may have been a breach of the regulations.

5.37 Ofgem sets standards for the overall level of service Transco provides. Transco is currently subject to a performance standard in respect of gas escapes, spillages of carbon monoxide and other hazardous situations. It is obliged to respond to such situations as quickly as possible, but within at least one hour for uncontrolled escapes and two hours for controlled escapes. The standard of service is currently for Transco to meet those time limits in 97 per cent of cases.

5.38 Transco has a duty, under the Health and Safety at Work Act 1974, to maintain or improve levels of safety. It might be appropriate to further develop and improve the ways that the performance of the emergency service is measured.

5.39 Ofgem proposes to convert the existing standards and targets for controlled and uncontrolled escapes into overall standards of performance. However, in addition it proposes that Transco should provide separate information on the number of controlled

and uncontrolled gas escapes against response times and calculate the median and mean response times in each case. These additional measures would help determine whether Transco's performance has been maintained, improved, or has worsened within the one-hour and two-hour targets.

Connections

5.40 Ofgem is considering whether it is appropriate to introduce guaranteed and overall standards of performance for Transco's network connections. These would be based on those introduced under the enforcement order, with the possible addition of a standard for the completion of connections. This would have the advantage of bringing most standards of performance for final customers within a single framework.

5.41 However, as competition in connections is expected to develop during the next price control period, and Transco's performance has significantly improved under the existing standards, such statutory standards might prove unnecessary or at least need to be modified.

5.42 Ofgem would welcome views on whether it is appropriate to introduce guaranteed and overall standards of performance for gas connections for April 2002 and what form, if any, these standards should take.

Metering

5.43 Ofgem believes that it is appropriate to introduce metering standards of performance for Transco in 2001. This will ensure that there is consistency between gas transporters' standards of performance and the new metering standards being proposed for gas suppliers.

5.44 A number of interim standards of performance for metering were proposed in Ofgem's January 2001 final proposals paper on standards of performance.[20] These are summarised in Tables 5.3 and 5.4 below.

[20] "Guaranteed and overall standards of performance – Final proposals" Ofgem, January 2001

Table 5.3: Proposed guaranteed standards for metering

No.	Service	Required Performance	Compensation Payment
1	Providing a meter	Arrange and keep and appointment within 2 working days for domestic customers and 4 working days for non-domestic customers, to an existing connection	Domestic £20 I&C £100
2	Responding to meter problems	Visit within 7 working days or a substantive reply within 5 working days	Domestic £20 I&C £100
3	Making and keeping appointments on metering business	A morning or afternoon appointment, or a timed appointment if requested by the customer	£20
4	Responding to pre-payment meter faults	Attend within 3 hours on weekdays and 4 hours at weekends	£20

Table 5.4: Proposed overall standards for metering

No.	Service	Required performance
1	Visiting to reposition the meter, when asked to do so by the customer	15 working days following acceptance of the quote
2	Changing meters when necessary on change of tariff	Within 10 working days of a domestic customer's request in all cases.
3	OS 3 is not applicable to Transco	N/A
4	Responding to pre-payment meter faults: within 3 hours on weekdays; and within 4 hours at weekends	 98% 95%
5	All consumers who have been disconnected for non-payment to be reconnected so as to restore supply before the end of the working day after they have paid the bill, or made arrangements to pay	24 hours

5.45 The definitions of these standards of performance and/or the respective performance targets may be revised for April 2002.

Meter reading

5.46 Ofgem believes that where there is sufficient scope for competition to develop, guaranteed and overall standards of performance are inappropriate. Competition in

meter reading is expected to grow significantly during the next price control period, so meter reading standards are unlikely to be necessary.

5.47 Further, Transco's incentive based contract for non-daily meter reading already provides incentives for Transco to improve its performance. Standards for daily meter reading are covered in the Network Code.

Coverage of standards

5.48 It is necessary to consider which customers should be covered by guaranteed and overall standards of performance. It might be appropriate to restrict the standards to domestic customers, and possibly industrial and commercial customers below a certain load size, or to include all final customers on Transco's networks.

5.49 Transco public standards of service currently apply to customers using less than 73,200 kWh per annum. With the introduction of the new standard licences under the Utilities Act 2000, the existing licence requirements for gas transporters to establish standards of performance will only relate to standards for domestic customers.

5.50 Clearly, standards of performance are an important safeguard for domestic customers. Smaller industrial and commercial customers (such as shops, restaurants, supermarkets and small factories) may also require similar protection. However, it is likely that larger industrial and commercial (customers will have their own service level agreements with Transco, and therefore standards of performance are unlikely to offer them significant additional protection.

5.51 Ofgem would welcome views on the coverage of standards of performance and in particular whether they should only apply to customers below a certain load size.

Definition and level of standards

5.52 Transco has been meeting or exceeding the target levels of performance for all of its public standards of performance. It is therefore appropriate to review some of the target levels, and to consider converting them into guaranteed standards of performance which must be met in each individual case or into overall standards with higher performance targets.

5.53 It may be appropriate to redefine some of the standards to ensure that Transco delivers an improved level of service to final customers. For example, a number of respondents to Ofgem's October consultation paper on standards of performance suggested that Transco should provide appointments within 2-hour time bands rather than morning or afternoon appointments.

5.54 It might be appropriate to introduce a standard on telephone responses that would require calls to be answered in 15 seconds (and within 30 seconds in exceptional circumstances).

5.55 Ofgem would welcome views on the appropriate definitions and target levels of performance for the guaranteed and overall standards of performance.

Disaggregation by LDZ

5.56 While Transco is meeting or exceeding most its standards of service at an overall company level, it may be more appropriate for standards of performance to apply to each LDZ separately.

5.57 This would have the advantage of enhancing the information available to Ofgem and final customers and would allow Ofgem to identify any LDZs that have an exceptional or weak standard of performance. It would also help align the regulation of electricity distribution businesses and gas transporters, by applying standards on a less centralised basis.

5.58 The concept of standards of performance for individual LDZs would also align with the possible introduction of separate LDZ price controls at some future date.

5.59 Ofgem would welcome views on whether Transco's standards of performance should apply to each LDZ individually.

Qualitative standards

5.60 A number of respondents to Ofgem's October consultation paper on standards of performance argued that there was a need to introduce more qualitative standards. For example, it was suggested that customers are less concerned about the speed of telephone or correspondence response and more concerned with the ability of Transco to answer the questions and resolve any problems.

5.61 Ofgem considers that it would be impractical to set qualitative standards of performance. There are a number of difficulties inherent in setting qualitative measures. For example, it is difficult to define and measure whether a customer's questions have been answered satisfactorily, or the attitude of staff answering calls.

5.62 Going forward it may be more appropriate to carry out surveys of Transco's customers to ensure they are satisfied as to the quality of telephone responses, visits and the response to queries.

5.63 However, Ofgem would welcome views on its initial conclusion that qualitative standards would not be appropriate.

Compensation payments

5.64 As part of the development of a package of guaranteed and overall standards of performance, Ofgem will need to decide the appropriate compensation schemes for guaranteed standards.

5.65 The existing guaranteed standards of performance for the electricity distribution businesses, and the proposed guaranteed standards for metering, typically define a level of compensation for domestic customers and a higher level of compensation for industrial and commercial customers. However, in principle, there could be more complex compensation schemes taking in account customers' load sizes.

5.66 Ofgem believes that the payments for failing to meet guaranteed standards should take into account the costs and inconvenience to final customers of Transco failing to provide a specified standard of service.

5.67 Ofgem would welcome views on the appropriate levels of compensation (in respect of final customers) for services currently covered by Transco's public standards of service and any possible additional standards. Ofgem would also appreciate views on the appropriate form of any compensation scheme.

Customer survey

5.68 Ofgem is proposing to undertake a survey of final customers' views on gas transporters' standards of performance. This will inform the development of guaranteed and overall standards of performance. The research will focus on customers' satisfaction with

existing standards and ways in which these might be improved, including the addition of new standards of performance. It will also consider whether customers' views vary between LDZs and the extent to which they are prepared to pay for an improved standard of performance. Transco has undertaken its own customer and consumer research as part of its customer service strategy

Cost of developing and implementing new systems

5.69 Transco's Licence to Operate division already has systems in place to collect and record data on public standards of service based on information provided by each LDZ. It is likely that a number of Transco's guaranteed and overall standards of performance will be based on these or other internal standards and therefore the appropriate data will be recorded using existing systems.

5.70 However, there are a number of areas in which Transco may need to develop and implement new systems to record data on standards of performance. For example, new software may be required to record when customers are notified that they are due to be reconnected following a supply outage. Ofgem will take this issue into consideration when setting the price control for the LDZ networks.

Way forward for developing guaranteed and overall standards of performance

5.71 Ofgem intends to appoint a market research company by the end of March to undertake the proposed survey of final customers' views on guaranteed and overall standards of performance for gas transporters. The initial results of this survey should inform Ofgem's draft proposals for standards in June.

5.72 Ofgem's final proposals, in the light of the June consultation and the results of the customer survey, will be published in September 2001.

5.73 Ofgem is empowered to set guaranteed standards in Statutory Instruments, with the approval of the Secretary of State. Ofgem can separately determine overall standards of performance for gas transporters. The appropriate secondary legislation and determinations will need to be in place for the standards to become effective on the 1st April 2002.

5.74 As part of this process it will be necessary to modify the standard licence condition for gas transporters' standards of performance to remove any duplication between the

existing standards required by the licence and new guaranteed and overall standards of performance.

5.75 A timetable for the development of guaranteed and overall standards of performance for gas transporters is set out in Table 5.5 below.

Table 5.5: Timetable for developing guaranteed and overall standards of performance

Dates	Milestones
March 2001	Ofgem appoints a market research company to carry out a customer survey on standards of performance
June 2001	Ofgem publishes Draft proposals on Guaranteed and Overall Standards of Performance for Transco and any standards which might be appropriate for other gas transporters. Initial results of the customer survey are included.
July/August 2001	Ofgem publishes the final results of the customer survey
September 2001	Ofgem publishes final proposals for Guaranteed and Overall Standards of Performance for Transco and any standards which might be appropriate for other gas transporters (including more detailed definitions)
September 2001–March 2002	Drafting and submission of statutory instruments for guaranteed standards Drafting and publication of determinations for overall standards Consultation on modifying the standard licence condition for standards of performance.
April 2002	Guaranteed and Overall Standards of Performance implemented

Issues for consideration

5.76 Views are invited on any of the issues discussed in this chapter, but in particular on:

- the scope of Transco's standards of performance (do existing standards need to be revised and are new standards appropriate?);
- which customers should be covered;
- the appropriate definitions and levels of the standards;
- whether standards should apply individually to each LDZ;

- whether Transco should provide additional information on its performance in attending to gas emergencies and whether this reporting should be on an individual LDZ basis;
- whether there should be qualitative standards; and
- the appropriate compensation schemes.

6. Transco's operating and capital expenditure

6.1 When setting new price controls, Ofgem must have regard to the need to ensure that Transco will be able to finance the activities which are the subject of obligations imposed by or under the Gas Act 1986 or the Utilities Act 2000. In this regard, Ofgem needs to take a view on the level of costs an efficiently managed gas transportation business would incur over the period to April 2007.

6.2 It is useful to distinguish between Transco's operating and capital expenditure. Operating expenditure is the day-to-day costs of running the transmission and distribution networks, such as repairs and maintenance, some staff salaries and business rates. Capital expenditure is expenditure on assets whose benefits can be expected to last for several years, such as high pressure pipelines and lower pressure mains.

6.3 Ofgem has appointed consultants to advise on the efficient levels of both operating and capital expenditure Transco would be expected to incur over the period of the new price control. The November 2000 update paper explained the tasks they are carrying out. In summary these are to assess:

- Transco's performance since the last price control review;
- the appropriate allocation of costs between different businesses;
- areas where the application of best practice would lead to improved performance, and to assess the impact of this on costs; and
- Transco's methods for forecasting outputs and expenditures, its plans for further investment and for the pattern of operating costs in the period of the next price control.

6.4 The consultants will also analyse the relationship between capital and operating expenditure and whether there is any trade-off between the two.

6.5 Specialist economic consultants (Europe Economics) will be examining Transco's performance and projections in comparison with companies carrying out comparable activities, and with other network businesses, to provide an assessment of Transco's achievements in improving efficiency and the scope for further improvements.

6.6 So far, the consultants have analysed the response to the business plan questionnaire, made a number of visits to Transco to clarify areas of uncertainty, gathered additional information and asked further written questions. They are at present working on a draft report relating to the efficiency of current operations, which will be sent to Transco for comment in due course.

6.7 This and further analyses will be published after Transco has had an opportunity to comment, and any appropriate amendments have been made. In their report, Ofgem's consultants will assess the efficient level of costs in the base year (1999). They will also consider the factors influencing cost levels in current and future years and make a projection of the efficient level of operating and capital costs between 1999 and 2007.

6.8 Expenditure projections for the separate price controlled components of Transco's business for the period after 2002 will be published in the draft proposals at the end of June 2001.

Transco's Expenditure Forecasting methods

6.9 Transco has explained its formal governance and business planning and budgeting processes to Ofgem. An important part of these processes is determining the supply and demand projections on which the business forecasts are to be based. These projections are guided by the results of the Base Plan Assumptions (BPA) process.

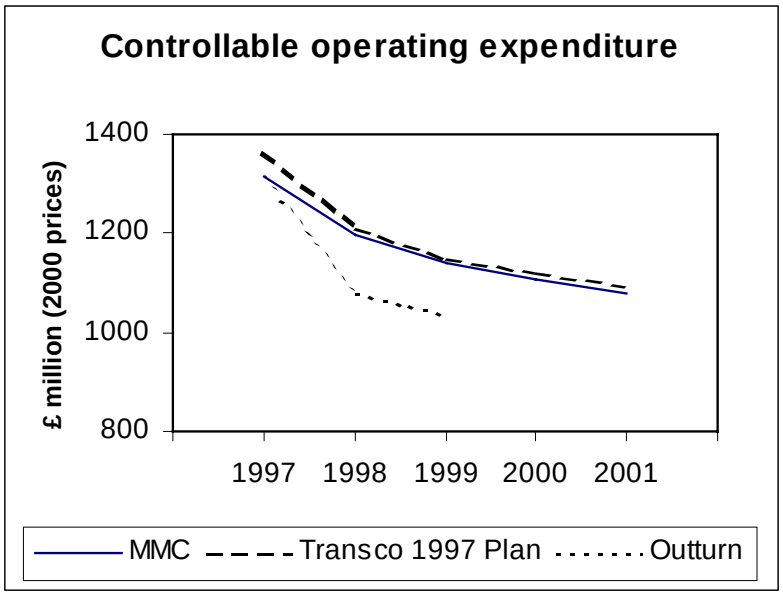
6.10 Transco's business planning department provides the NTS and LDZs and other Transco departments with overall guidance on the assumptions to be used in drawing up plans and budgets for the forthcoming and future years. Within this framework, the NTS and LDZs analyse their detailed requirements for resources (including manpower) and for capital and operating expenditures. These plans and forecasts are then subject to internal peer review and challenge prior to completion of the overall transportation business plans.

6.11 Transco's BPQ response contains forecasts of capital expenditure to 2007. In making these forecasts, Transco has made assumptions about future developments and has used modelling techniques to assess the most likely level of expenditure under three supply/demand scenarios. As part of the assessment of expenditure Ofgem, assisted by its consultants, will consider the assumptions used in such modelling and the modelling techniques themselves.

Operating Expenditure

6.12 In its November 2000 paper, Ofgem showed the path of controllable operating costs compared to estimates derived from the forecasts made ny the Monopolies and Mergers Commission (MMC) at the time of the last price control review. This is shown in Figure 6.1.

Figure 6.1: Out-turn annual controllable operating costs compared with 1997 estimates



Note: excludes expenditure on mains and services replacement

6.13 Controllable operating costs are defined as Transco's total operating costs less formula rates and depreciation. Controllable costs also exclude replacement expenditure.

6.14 In 1999 formula rates amounted to £233 million (in 2000 prices)[21].

6.15 Depreciation is not included within the operating expenditure allowance used to set the transportation price control. The treatment of depreciation in the price control is discussed in chapter 7.

6.16 Controllable costs (as defined above) include the Ofgem licence fees, which in 1999 were £8.4 million (in 2000 prices). As indicated in chapter 2, Ofgem is considering whether this and formula rates should be treated as pass through items in the next price control.

[21] All costs quoted in this chapter are in 2000 prices unless otherwise indicated.

6.17 In the present price control, controllable operating costs account for around 33 per cent of Transco's allowed revenue. The allowance for operating costs therefore has a significant impact on the overall level of price control revenues, and is likely to continue to do so. Over the period of the present price control, the average level of forecast controllable operating costs used to set the price control was £1170 million per year, and the average level expected to be achieved by Transco is £1120 million per year.

6.18 The November paper showed that in 1999, Transco's controllable operating costs were £1034 million (2000 prices). These costs can be broken down by the activities that it is proposed to price control separately from April 2002.

Table 6.1: Breakdown of Transco's operating costs (less depreciation and rates) in 1999

Costs incurred in 1999	*£ million (2000 prices)*
NTS	45
System operations	
Operations	21
Shrinkage	29
Storage charges	26
Total	76
LDZ	
Network operations (including call centres)	283
Shrinkage	34
Other	(24)
Total	293
Emergency service	167
Metering	56
Meter reading	29
Connections *	19
Other costs	349
One-off costs	-
Total controllable operating costs	**1034**

* Transco has indicated that it may remove its connections installation business from the price controlled activities by 1 April 2002.

6.19 In any assessment of the ongoing level of controllable costs, one-off costs would normally be removed. Shrinkage costs include the cost of gas consumed in compressor stations which is determined by shippers' transportation requirements day-by-day and by Transco's investment decisions.

6.20 If separate price controls had applied in 1999, a significant level of costs (the "other " costs) would have needed to be allocated to each of the specific activities. In addition the depreciation, licence fees and formula rates would have needed to be allocated to these activities. Transco's activity based costs presented in Ofgem's November paper goes some way towards making this allocation. Further work on the allocation process was made in setting the metering and meter reading controls in 2000. Ofgem's consultants will be analysing these "other" costs in detail in order to establish the appropriate allocation to the different price controlled activities.

6.21 A significant element within "other" costs is the cost of Information Systems (IS) which amounted to £142 million, and Ofgem's consultants will be examining these costs in detail.

6.22 As well as operating costs related to its transportation activities, Transco's LNG business incurs operating expenditure. In 1999 this expenditure (excluding depreciation and formula rates) was £20 million.

6.23 Transco's transportation controllable operating costs can also be broken down by source of expenditure as shown on table 6.2:

Table 6.2: Breakdown of Transco's operating costs (less depreciation and rates) in 1999

Costs incurred in 1999	*£ million (2000 prices)*
Staff costs (salary, wages, non-salary and agency costs; excludes capitalised items)	544
Materials and contractors	124
Communications/telecoms	52
Research and Development (inter-business transfer)	22
Storage charges	26
Corporate charge	68
Shrinkage	63
Other*	135
Total controllable operating costs	**1034**

Notes: "Other" costs include licence fees, software cost and consultants costs.
The costs in Table 6.2 include those for metering, meter reading and connections

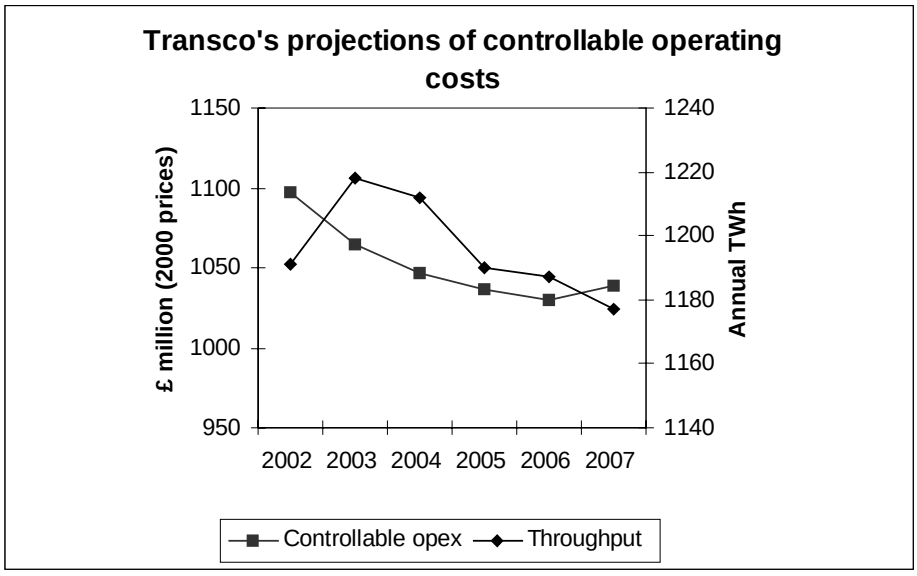
6.24 Ofgem's consultants will be examining these costs to establish whether this level of cost is appropriate and the efficient level for the next price control period. In doing so, they will take into account best practice approaches, as used in comparable businesses.

Among others, particular areas for analysis are staff and related costs which account for approximately 53% of controllable operating costs in 1999.

Operating costs - outturn and projections

6.25 Figure 6.1 shows that Transco's transportation business operating expenditure during the present price control period has been reducing at a greater rate than expected by the MMC in its recommendations for the present price control. Transco's projections of its operating costs during the next price control period are shown in Figure 6.2.

Figure 6.2: Transco's operating cost projections 2002 – 2007 (excludes depreciation and rates)



Note: excludes expenditure on mains and services replacement

6.26 This graph together with Figure 6.1 shows declining operating costs between 1997 and 2000, with Transco forecasting a levelling off over the period to 2007. Ofgem's consultants will be examining the reasons for this, the validity of the underlying assumptions, and determining an efficient level for Transco's operating expenditure.

6.27 The graph also shows Transco's forecasts of the estimated annual throughput of its transportation system in its base case supply/demand scenario which shows a decline towards the end of the period. The level of throughput is partly determined by growth in LDZ demand, which is expected to grow at just over 1 per cent per year taking into account estimated improvements in the efficiency of energy use by customers. Throughput is also determined by the forecasts of power station consumption on the

NTS and the level of exports from the NTS to other networks. In Transco's base case the level of exports is projected to decline towards 2007.

6.28 Transco has developed three supply/demand scenarios set out in its 10 year statement[22]. Its analysis of these scenarios shows that capital expenditure forecasts are particularly sensitive to the scenario assumptions. These results are reported under capital expenditure below.

6.29 Transco has provided figures which show that operating expenditure may change by up to 3.5 per cent under these different scenarios. The relationship between throughput and operating expenditure will be examined by Ofgem and its consultants.

Capitalisation policy

6.30 Under the RPI-X methodology there may be an expectation amongst regulated companies that capital expenditure efficiently incurred will be included in the regulatory asset base and allowed a rate of return, while efficient operating expenditure will be charged to consumers in the year in which it is incurred. Arguably, this treatment may create an asymmetry of incentives on regulated companies leading to the reclassification of some costs as capital expenditure, when they would more appropriately be designated as operating expenditure.

6.31 Transco have advised Ofgem that there are some areas of operating expenditure which are capitalised in accordance with UK accounting standards. Generally, these comprise staff and other costs relating directly to capital projects, plus an associated overhead allocation to cover non-directly attributable operating costs. Such costs normally arise in relation to connections, diversions and meter work. Ofgem's consultants will be investigating the implementation of Transco's capitalisation policies.

Allocations and recharges

6.32 Table 6.1 identifies the categories of direct and indirect operating costs incurred by Transco in 1999. In the future these categories of costs would need to be allocated to the proposed price controlled activities. The indirect "other" costs cover the following functions:

- corporate recharges;

- IS costs;
- business planning, finance and regulation functions; and
- human resources and other headquarters functions (such as Licence to Operate).

6.33 In order to allocate these costs to the proposed NTS, LDZ, metering and meter reading price controls, Transco has developed its own "transaction" model. Ofgem's consultants will analyse this and advise on the appropriateness of the underlying assumptions.

6.34 Ofgem considers that Transco's customers should not pay inappropriately high charges for services provided from outside the regulated business. Similarly, Transco's price regulated business should not be paid for services provided to companies outside the regulated business at inappropriately low rates. This would give those businesses a competitive advantage. Such cross-subsidies are prohibited by Amended Standard Condition 25 of Transco's licence, and accordingly, Ofgem is investigating Transco's policy on charging for such services.

6.35 The services where such intragroup trades apply are

- services provided from Lattice Corporate Centre to Transco;
- support services provided by Transco to Lattice Headquarters;
- research and development;
- technical training;
- engineering services; and
- telecommunications

6.36 Ofgem's consultants are presently investigating whether Transco's recharges are appropriate and whether its recharges at market rates are realistic and in line with industry benchmarks.

[22] Transportation Ten Year Statement 2000, Transco, September 2000

Capital expenditure

6.37 In setting the present price control, a gross capital expenditure allowance of £4.5 billion (2000 prices) over the five years, falling from £992 million in 1997/8 to £868 million in 2001/2, was assumed. This section considers capital expenditure in the period of the present price control, Transco's forecasting methodologies for the future period and the overall capital expenditure forecasts in the future period. In order to relate capital expenditure to its drivers, Transco classifies its expenditure into categories according to business.

6.38 For the NTS, these are:

- new transportation capacity;
- customer connections; and
- other (including diversions and environmental expenditure).

6.39 For the LDZ, these are:

- new LTS capacity;
- new distribution capacity;
- customer connections;
- other (including diversions and environmental expenditure); and
- mains replacement (shown as a separate line item in the table below).

6.40 For metering these are:

- new meters; and
- replacement meters.

6.41 Table 6.3 shows the breakdown of capital expenditure in 1999 between these main categories.

Table 6.3: Breakdown of Transco's transportation capital expenditure in 1999

Expenditure in 1999	*Category*	*£ million (2000 prices)*
NTS	New transportation capacity	110
	Customer connections	5
	Other	-
	Less customer contributions	(7)
	Total expenditure (net)	**108**
LDZ	New LTS transportation capacity	28
	New distribution capacity	45
	Customer connections (services)	59
	Other	25
	Less connections contributions	(58)
	Total expenditure (net)	**99**
Meters	New installation	73
	Replacements	50
	Less meter contributions	(1)
	Total expenditure (net)	**122**
	Other	33
LDZ replacement expenditure	Replacement (pipelines, mains, services)	228
	Less replacement contributions	(23)
Total(net)	**All capital expenditure**	**567**
Total (gross)	**All capital expenditure**	**656**

Note: Connection contributions can include a contribution towards system reinforcement.

Capital expenditure monitoring

6.42 Transco has produced a variance report[23] comparing its actual capital expenditure with forecasts made by the MMC in 1997.

6.43 Ofgem has examined Transco's capital expenditure during the present price control period and has published[24] the report of its consultants on their audit of Transco's capital expenditure in the period 1997 to 1999. This includes comparisons of actual expenditure against forecasts made at the time of the last review which may provide an insight into Transco's forecasting accuracy and investment practices.

6.44 Transco's variance report states that over the three year period (1997 to 1999) Transco under-spent relative to the price control forecast by £541m at 1996 prices (£603 million at 2000 prices) while achieving or exceeding expected outputs (standards of service) in all but one area, this being the replacement of inaccurate meters. In relation to this,

[23] Capital investment outputs monitoring, 1997 – 1999, Outputs Variance report, Transco, December 2000, available on Transco's website, www.transco.uk.com

[24] Report of the Auditor to Ofgem under the Transco Capital Expenditure Monitoring framework for the period 1997 – 1999, February 2001, available on the auditor's website, www.mazars-nr.co.uk

Transco claims to be on course to achieve the price control forecast for meter replacement in the remaining two years of the current price control period through to 2002.

6.45 The following is an extract from the report of the auditors of Transco's variance report, Mazars Neville Russell, who were appointed by Ofgem (the monies quoted in this extract from the audit report are at 1996 prices):

- The principal achievements were:
  - Meeting increased demand on the NTS whilst making savings of £37 million over three years by re-rating parts of the pipeline system and reducing purchasing costs on a large expansion of compression.
  - Significant unit cost reductions in purchasing credit meters leading to savings of £25 million over three years.
- The principal concerns were:
  - Of the four major LTS pipeline projects planned to start in 1997 (the first year of the review period) two have been cancelled, a third postponed to 2001 and a fourth still has no commencement date. Although Transco claim to have found alternative solutions subsequent to MMC, and has achieved planned capacity overall, this calls into question the adequacy of planning and forecasting at the time of the last Price Control review.
  - We were unable to review progress across the large numbers of smaller LTS pipeline projects due to the required analysis of historical management information not being available in the time frame for this study.
  - The number of diversions of the LTS and mains were significantly below the MMC Outcome level. Further work is required to evaluate this with respect to the work carried out and the capital contributions received which could identify a possible surplus or deficit. Ofgem should consider how to deal with this within the forthcoming Price Control review.
  - Similarly, the MMC Outcome did not envisage the substantial growth in competitive activities for mains, services and meters. We believe any surplus or deficit found in these areas, and appropriate adjustments where the workload mix remaining with Transco was materially different from that originally

continued

envisaged, should be considered by Ofgem within the forthcoming Price Control review.

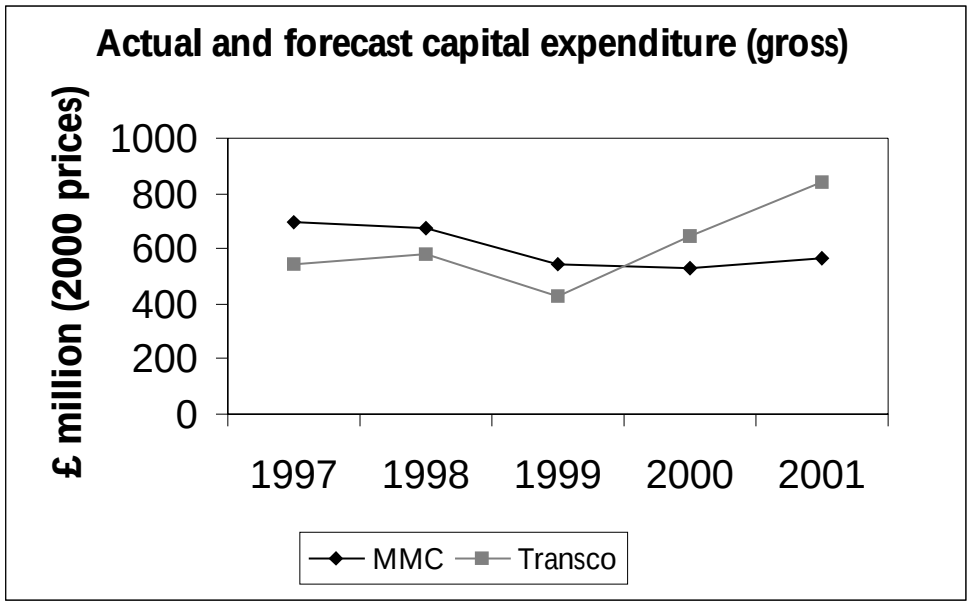
- The Variance Report does not provided an adequate explanation regarding increases in unit costs (attributed by Transco to labour costs) associated with mains installation and diversions.
- Savings of £110 million versus the MMC Outcome in replacing cast iron mains due to concentrating on smaller diameter pipe rather than the more expensive to replace larger diameter pipe.

6.46 Ofgem invites views on the results of the audit carried out in respect of the years 1997 to 1999. Ofgem intends that further auditing of Transco's capital expenditure will also be carried out in respect of the years 2000 and 2001. As part of this price control review, Ofgem intends to put in place a process for the annual auditing of Transco's expenditure. Ofgem invites views on whether this should be through the introduction of a new licence condition.

Expenditure in the Present Price Control Period

6.47 The following graph shows Transco's actual and forecast expenditure in this price control period against the expenditure forecast by the MMC at the time of the last price control review, excluding expenditure on mains and services replacement. This shows that Transco's expenditures have been below the profile used to set the control for the first 3 years, and that Transco expect to exceed the profile in the last 2 years. If this is achieved the average capital spend (excluding mains and service replacements) by Transco over the 5 year period will be approximately match of that used in setting the price control (approximately £600 million per year, excluding mains and services replacement).

Figure 6.3: Actual and forecast capital expenditure (gross)



Note: excludes expenditure on mains and services replacement

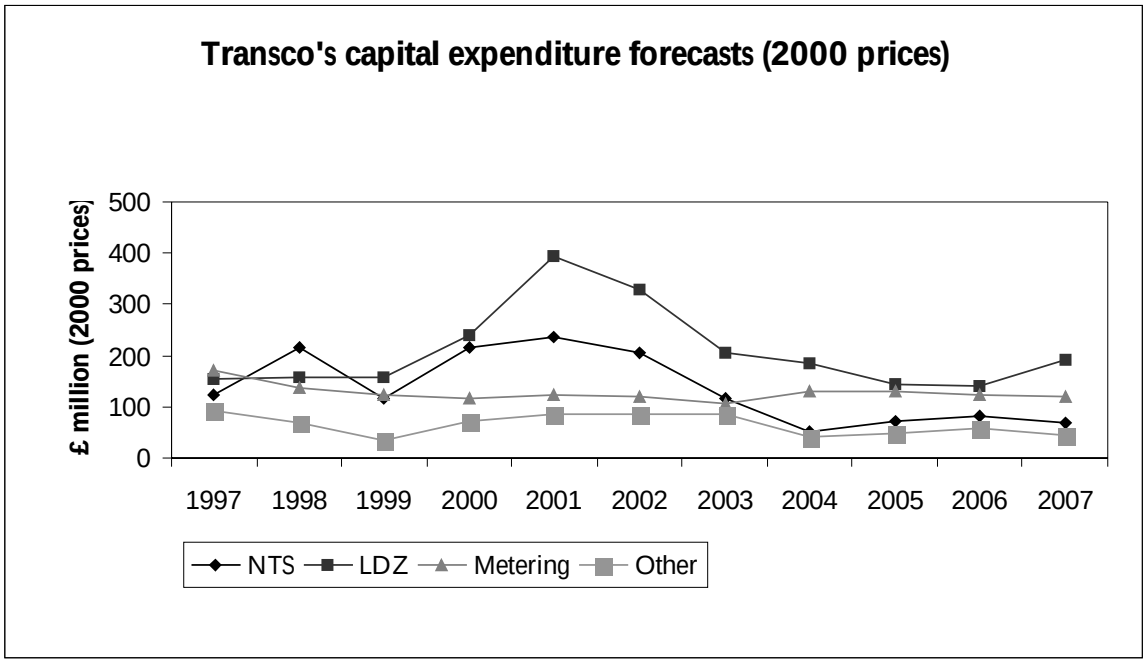
6.48 Ofgem understands that the reasons for the main increases in expenditure in the years 2000 and 2001 are increases in the costs of mains replacement to meet the targets for ductile iron replacement set by the HSE and additional costs, mainly labour costs, that Transco expects to incur in procuring the construction of new mains and services. Ofgem's consultants are examining the extent to which increases in these costs are justifiable.

6.49 Changes in capital expenditure from year to year can give an indication of likely future expenditure patterns. Where savings against forecast expenditure have been made, they may be due to efficiency gains from Transco's initiatives, windfall gains from events outside Transco's control, forecasting inaccuracy or a failure to meet expected outputs. Ofgem considers that Transco should have an incentive to pursue efficiency, but may wish to deal differently with gains from poor forecasting or from windfall events outside Transco's control. Transco should not be allowed to benefit from a failure to deliver expected outputs.

Expenditure projections for in the next price control period

6.50 Figure 6.4 shows Transco's forecast capital expenditure during the calendar years 1997 to 2007 for the NTS, LDZs and metering. In calculating the forecasts for NTS and LDZs, Transco have used their supply/demand base case.

Figure 6.4: Transco's capital expenditure for 1997 – 2007 (2000 prices)



Note: excludes expenditure on mains and services replacement

6.51 This graph shows a stabilising of LDZ expenditure after the increase in 2001 reflecting expected changes in the pattern of workload. It also shows reducing NTS expenditure as new supplies are assumed to be delivered at Bacton with only limited expenditure to reinforce the NTS to transmit gas away from other terminals.

6.52 Overall, Transco's forecast of capital expenditure for the period from 2002 is lower than that for the present price control period, as shown in the following table. Since capital expenditure can vary significantly from year to year, average annual figures are shown to aid comparison.

Table 6.4: Transco's average capital expenditure forecasts (£ million 2000 prices)

Average expenditure	*£ million per year*	*£ million per year*
Period	*1997 to 2001*	*2002 to 2006*
NTS (scenario C)	182	106
LDZ (excl meters)	220	201
Meters	135	122
Other	70	64
Total	**607**	**493**

Note: excludes expenditure on mains and services replacement

Capital expenditure scenarios

6.53 The capital expenditure forecasts for new transportation capacity will depend on the growth in demand, including power station loads, and on the evolving pattern of supplies.

6.54 Transco's forecasts derive from the BPA consultation process combined with using market intelligence and its knowledge of customers requirements. Transco has considered the market's possible requirements for transportation capacity under three supply/demand scenarios which are described in its 10 year statement. In this statement, Transco set out two LDZ demand related scenarios. On the NTS there are 3 scenarios reflecting the 2 demand scenarios and also the uncertainty over whether new gas supplies will be landed at Bacton or St Fergus.

6.55 The figures presented in this chapter relate to the Transco's baseline scenario (called Scenario C). Transco has also estimated the range of NTS and LDZ expenditures arising from two other scenarios in the 10 year statement as follows:

Table 6.5: Transco's capital expenditure ranges for 2002 – 2006 (transportation capacity)

£ million (2000 prices)	*NTS*	*LDZs*
Baseline - Scenario C Transco description: Baseline demand, interconnector balance	106	322
Scenario A Transco description: Strong demand, interconnector balance	146	368
Scenario B Transco description: Strong demand, St Fergus expansion	291	368

Note: excludes expenditure on mains and services replacement, includes meters

6.56 The different scenarios are not expected to have a significant impact on the capital expenditure associated with meters and other costs (mainly IS and support services).

6.57 The table shows that while LDZ capital expenditure requirements could vary by around 10 per cent from the base case, NTS expenditure requirements could vary by 175 per cent from the base case and possibly more. The high NTS investment case arises from the assumption of significant additional flows from St Fergus necessitating substantial new pipeline and compressor capacity in the north.

Specific areas of cost

6.58 The following specific areas of cost are being examined to see how their performance during this price control period, and any subsequent changes in policies, impact on the allowed revenues appropriate for the next control period.

Mains replacement

6.59 In the price control calculations, mains replacement expenditure is considered as a capital expense, whereas in its formal accounts, Transco considers these as an

operating expense. In presenting the operating and capital figures above, replacement expenditure has not been included, but is set out in the tables below. Over the period, Transco's projections of replacement expenditure are over 10 per cent less than those projected by the MMC.

6.60 Transco and its predecessors have been following replacement policies since the 1970s aimed at reducing the risks posed by metallic distribution mains and services pipes. These policies, which have been successful in reducing the number of incidents that have occurred each year, have been reviewed from time to time, the most recent review being set in place following the 1997 MMC enquiry. A Tripartite Group, comprising Transco, the HSE and Ofgem, reviewed the methodologies for identifying high-risk mains for replacement. As a result of this review, Transco developed a new model and carried out data gathering exercises to populate it with information on each main in Transco's network and the surrounding conditions. From 2000, Transco has used this model for identifying mains for replacement.

6.61 The model has been developed so that it can be applied to any type of main (for example, cast iron or ductile iron).

6.62 Based on separate considerations, in September 2000 the HSE issued an Improvement Notice[25] to Transco requiring the replacement of all medium pressure ductile iron mains within 30 metres of premises by December 2002. Transco responded with a programme to replace some 2,360km of ductile iron main and is currently on target to complete the programme as required by the HSE.

6.63 In setting the current price control, Transco was allowed expenditure to maintain the replacement programme for cast iron mains and to replace some ductile iron mains. An additional £122 million (2000 prices) to improve safety levels where this could be justified was also included.

6.64 Transco has provided information indicating that it has met the target for de-commissioning mains at risk in terms of the length removed, at lower cost than the capital expenditure forecast by the MMC, as shown in table 6.6, which includes expenditure on services

Table 6.6: Mains and service replacement expenditure (net) - £ million

	1997	1998	1999	2000
MMC	223	245	266	275
Actual	165	173	205	241
Variance	-58	-72	-61	-34
% Variance	- 26%	- 29%	- 23%	-12%

6.65 According to Transco, its costs are lower than forecast because it has replaced greater lengths of smaller diameter mains than forecast, and made other economies. Ofgem is still considering Transco's explanation for the lower than expected investment and has requested further information from Transco.

6.66 Ofgem has noted that Transco's forecast mains replacement workload for 2001 shows a significant decrease in the rate of cast iron replacement to accommodate the medium pressure ductile iron programme. In 2001 the length of cast iron mains replaced is forecast to be approximately half the average length replaced over the first three years of the price control period. However, in this period, Transco is expecting to replace approximately double the length of ductile iron mains forecast for the period.

6.67 Table 6.7 shows the total lengths of all mains de-commissioned.

Table 6.7: Mains replacement (de-commissioned) kilometres

	1997	1998	1999	2000
MMC	1722	1932	2130	2263
Actual	1981	1848	1951	1806
Variance	259	- 84	- 179	-457
% Variance	15%	- 4%	- 8%	-20%

6.68 Service pipe replacement, which is principally driven by the rate of mains replacement, shows similar lower than forecast expenditure. Transco states that an increase in the proportion of service transfers (cheaper than a full replacement) is a factor in this lower expenditure.

6.69 Tables 6.8 provide details of the workload on service replacements.

[25] A formal notice issued under The Health and Safety at Work Act.

Table 6.8: Services replaced (thousand service pipes)

	1997	1998	1999	2000
MMC	285	298	315	325
Actual	262	263	262	397
Variance	- 23	- 35	- 54	72
% Variance	- 8%	- 12%	- 17%	22%

6.70 Recently the HSE has expressed concern at the long-term rate of replacement of Transco's iron mains. Initial work by Transco has indicated that cast iron makes up 46 per cent[26] of the network and that the total replacement cost is in the order of £10 billion or more.

6.71 No decision has been made to date on the rate at which Transco should replace its cast iron mains population or how the work should be prioritised. However it is apparent that a significant increase in the current rate of replacement and expenditure may be necessary. For example, an increase of 50 per cent in replacement volume (based on the 1997 to 1999 average) would give a rate of 2,900 km per year. At this rate it would be over 40 years before all cast and ductile iron mains were de-commissioned.

6.72 In considering the appropriate time-scale for replacement, the HSE will primarily consider the safety benefits. The logistics of the exercise (the training of new personnel in a sector where resources are already scarce; planning; materials procurement; construction and the minimisation of disruption to customers and the public) are also significant issues that will need to be addressed to ensure that the replacement is carried out in the most economic manner.

6.73 Once the time-scale is agreed, Ofgem will need to consider the appropriate form of incentive to ensure the economic and timely execution of the programme. Ofgem will progress these matters further when the HSE finalises its position on the prioritisation and required rate of replacement.

[26] This includes some ductile iron, 120,000km in total

Environment

6.74 Transco has explained that all units within Transco have achieved ISO 14001 certification in 1999, and that this requires the business to be compliant with current legislation, have a culture of environmental awareness within the business, and ensure that environmental issues are considered in all business decisions.

6.75 Transco explained that the total amount of NOx emitted by its compressor stations has progressively decreased since 1996. This has been achieved by the introduction of better monitoring and control equipment and the installation of new compressors with more advanced burner systems. It has a continuing programme of compressor replacements which will further reduce emissions. Some of these replacements will provide added transmission capacity as well.

6.76 Transco has also explained that it has a programme for the replacement of valve actuators at compressor stations which will reduce methane emissions. In addition, Transco's mains replacement programme will yield benefits in lower levels of methane leakage as well as improved safety confidence.

6.77 Transco is also proposing to introduce more efficient heaters at offtake stations which will improve fuel efficiency and reduce emissions.

6.78 Transco has provided Ofgem with estimates of the capital costs of these environmental initiatives:

Table 6.9: Expenditure on environmental projects (£ million)

Average cost per year over the period 2002 to 2006	*£ million (2000 prices)*
Compressor replacements *	18
Valve actuator replacements	13
Offtake heater replacements	3
Total	34

* may also provide added transmission capacity

6.79 Transco explained that the annual operating cost of maintaining ISO 14001 is estimated at £1.5 million per year, and that in addition the landfill tax will add costs of approximately £1 million per year.

6.80 Transco said that it would incur costs associated with holding contaminated land sites, and provided estimates for investigation, remediation and other works in relation to these sites averaging £6 million per year over the period 2002 to 2007.

Meters

6.81 Transco owns over 20 million meters. The majority of Transco's meters, some 17 million, are simple mechanical domestic credit meters. Capital expenditure is required for the replacement of such meters that have become inaccurate, generally due to deterioration of the internal diaphragm. There are around 1.6 million electronic credit meters. In addition there are some 1.5 million electronic token meters, as well as a small number of mechanical token meters. Transco is installing domestic electronic meters fitted with valves. These can be converted from credit meters to prepayment meters by the addition of a module. Transco is projecting a substantial increase in the use of this type of meter from some 40,000 presently installed to around 1.4 million at the end of 2007. Industrial and commercial meters make up a small percentage of the metering population.

6.82 The bulk of Transco's operational costs for metering result from work on pre-payment meters. These are more complex than credit meters. Most are electronic and require frequent battery changes, while some early electronic pre-payment meters also suffer from software faults. A number of meters have become damaged because of the need for regular operation by the consumer. The operational cost associated with electronic token meters is therefore high. In contrast, very little maintenance work needs to be performed on credit meters. When the meters become inaccurate, usually they are removed from service and replaced with a new or reconditioned meter.

6.83 Tables 6.10 and 6.11 provide details of Transco's actual and forecast workloads and expenditure on metering, together with the workload and cost forecasts projected by the MMC.

Table 6.10: Number of meters (new and replacement):

	1997	1998	1999	2000	2001	Average for 2002 to 2006
MMC	1837	1709	1549	1445	1422	N/A
Actual	1603	1440	1391	1736	1647	1686
Variance	-234	-269	-159	-291	-225	N/A
% Variance	- 13%	- 16%	- 10%	-20%	-16%	N/A

Table 6.11: Total capital costs of meters (new and replacement):

	1997	1998	1999	2000	2001	Average for 2002 to 2006
MMC	244	234	211	199	170	N/A
Actual	171	137	122	118	123	121
Variance	-72	-97	-89	-81	-47	N/A
% Variance	- 30%	- 41%	- 42%	-40%	-28%	N/A

6.84 More detailed analysis will be carried out to understand the relationships between capital and operating expenditures, and the numbers of meters replaced.

6.85 Reductions in metering capital expenditure over the period 1997 to 1999 have been due to a number of factors including:

- Transco not replacing the forecast number of meters anticipated;
- a reduction of overheads attributed to metering;
- a change in Transco's policy: instead of a policy of phasing out mechanical meters the policy is to purchase the cheapest meter. Mechanical meters are significantly cheaper than electronic meters;
- additional meter churn as a consequence of a shipper request, e.g. when a meter was changed from credit to pre-payment;
- the use of refurbished meters instead of new purchase;
- a change in meter specification eliminating the requirement for a pulsed output; and

- a reduction in the "new meters" workload because of competition.

6.86 In the period 1997 to 1999, the level of investment in meters was £258 million (in 2000 prices) below the level forecast by the MMC report. Over this period the level of investment in meters that did not meet accuracy requirements was £139 million (in 2000 price) below the MMC forecast. Transco has stated that it intends to complete the workload for replacing inaccurate meters, as expected by the MMC, by the end of the current price control period.

Excluded Services

6.87 Excluded services are services where the revenues Transco earns are not subject to a price control. However, in setting the price control Ofgem takes account of expected revenues and costs from providing these services. If Transco is able to sell additional excluded services, then the revenues it receives will cover the additional costs incurred and any surplus revenues will not be counted against the allowed regulated revenues.

6.88 The excluded services that Transco carries out can be broadly grouped as follows:

- connections and construction for third parties;
- operations and maintenance for third parties, including emergency service provision;
- operational consultancy to third parties;
- provision of Transco services to Lattice Group; and
- miscellaneous (including the provision of training and IS services, and sales of electricity, to third parties)

6.89 In 2000 Transco's excluded services made a total contribution to gross profit of approximately £12 million. Transco expects this figure to fall to around £8 million in future years. This is because Transco will no longer receive rentals from telecommunications towers which have been transferred out of the business, and the cessation of payments for the provision of certain IS services.

6.90 Some excluded services are provided to shippers and others to parties such as other gas transporters. Ofgem may need to consider the definition of services that most appropriately come within the excluded service category.

6.91 As part of the ongoing efficiency study, Ofgem and its consultants will investigate Transco's forecasts of excluded service revenues and costs. The allocation of shared costs between these activities and those falling within the price control will be reviewed.

Emergency Service

6.92 As explained in chapter 2, Ofgem is considering whether Transco's emergency service should have a separate price control from April 2002, or whether it is appropriate to rely on the Competition Act to address any problems of monopoly power in the provision of this service to other gas transporters. This section sets out the main costs and services associated with the emergency service.

6.93 Transco's gas emergency service involves a number of activities:

- the maintenance of a continuously manned telephone service to receive reports of gas escapes and other gas emergencies;
- the ability to send out a competent person to investigate the complaint (for uncontrolled escapes within one hour of receiving the customer's call);
- ensuring that where there is some form of danger, this is dealt with to ensure safety; and
- ensuring that domestic customers (in particular the disabled and those of pensionable age) have access to heating and cooking facilities where gas supplies have been reduced or restricted in some way.

6.94 Emergency work can arise from several sources. These include:

- gas escapes from Transco assets (such as those making up the low pressure system);
- escapes from customer appliances (such as cookers, boilers etc); meter faults; and

- incidents which may effect a number of customers (evacuation of properties, fire, explosion, asphyxiations, loss of gas supply).

6.95 Transco provides this service not only to customers connected directly to its own network but in addition, to customers on the networks of independent gas transporters. The income from independent gas transporters is counted as excluded service revenues.

6.96 The direct costs of the emergency service in 1999 are set out in Table 6.2. The full cost will be determined as part of the cost allocation exercise being carried out by Ofgem's consultants, but will include, for example, some of the costs associated with call centres.

Assessment of Transco's forecasts

6.97 Ofgem and its consultants are examining Transco's forecasts to assess that Transco is able to fulfil its statutory and licence obligations and to maintain its assets without incurring excessive capital costs.

6.98 Ofgem's engineering consultants are examining Transco's forecasts for the period of the next price control. The study will consider the expenditure drivers and the individual projects that make up the forecast. An important part of this will be analysis of the assumptions used by Transco.

6.99 Ofgem's consultants will consider:

- whether the levels of expenditure which Transco forecasts for the last two years of the present period are likely to occur and whether they are appropriate; and
- whether Transco's forecast level of expenditure is appropriate in the next period.

6.100 Particular activities amongst others which will be examined are:

- the cost of procuring contractors to carry out works on the distribution system;
- the manpower structure and salary and wage levels within Transco; and
- Transco's arrangements for procuring and delivering IS products.

Issues for consideration

6.101 Ofgem seeks views on whether its approach to the assessment of efficient operating and capital expenditure requirements is appropriate.

7 Financial issues

Introduction

7.1 The May 2000 consultation document set out a framework for the analysis and assessment of financial issues during the Transco price control review. This involves establishing a regulatory value for Transco's asset base and estimating a return equivalent to the cost of capital on that regulatory value. Other regulators and the Competition Commission (formerly the Monopolies and Mergers Commission) have adopted similar approaches in setting price controls. As a supporting check on these calculations it is necessary to consider the financial position of Transco over the life of the next price control period and beyond. In setting price controls, Ofgem is required by the Gas Act (as amended by the Utilities Act) to have regard to the need to secure that Transco is able to finance its regulated activities. Ofgem will therefore need to ensure that its price control proposals will allow Transco, if efficiently managed and financed, to finance the carrying on of these activities.

7.2 This chapter reports on work by Ofgem relevant to Transco's cost of capital, the calculation of its regulatory value and the modelling of its financial position.

Cost of capital

7.3 The level of return required by the financial markets to provide capital to a company is called the cost of capital. The cost of capital is usually calculated as a weighted average of the cost of debt and of equity finance. As well as providing a return on debt and equity, companies must also finance corporation tax payments. The cost of capital can be adjusted to provide an allowance for corporation tax.

Ofgem's approach

7.4 For price control purposes, the relevant cost of capital is that faced by the regulated business within Transco, rather than the cost of capital to either Transco plc or the Lattice Group as a whole.

7.5 This document has set out proposals for separate price controls to apply to different activities within Transco. It could be argued, therefore, that it would be more appropriate to estimate a cost of capital for each of Transco's activities subject to

separate price controls, taking account of the differing risk characteristics of each. However, although Ofgem is proposing to set separate price controls, it is not requiring any change in ownership or corporate structure. Transco will continue to be able to raise finance at a Transco company level and so will face a cost of capital based on the costs of financing its regulated business as a whole. This may be expected to reflect the overall risk profile of its portfolio of regulated activities, and would take account of the extent to which risks of individual businesses are diversified within the portfolio. The following discussion on the estimation of a cost of capital therefore assumes that a cost of capital for the Transco regulated business as a whole is being estimated. However, it will be necessary to assign Transco's regulatory value to the different price controlled activities in order to perform each price control calculation.

Gearing and the weighted average cost of capital

7.6 Companies can be financed by both debt and equity. The proportion of debt to debt plus equity is referred to as gearing. In calculating an average cost of capital it is necessary to make an assumption about gearing. Gearing also influences the cost of both debt and equity finance. It is appropriate for Ofgem to assume that Transco has a reasonably efficient level of gearing, in order to encourage financial efficiency and to protect the interests of consumers.

7.7 Debt finance is usually cheaper than equity finance. There are two main reasons for this: debt holders have a prior claim on the distribution of a company's income ahead of equity holders and so face lower risk; and debt can be a tax efficient form of finance. In these circumstances, companies may be able to reduce their weighted average cost of capital (WACC) by increasing the proportion of debt finance. However, increasing gearing will tend to put some upward pressure on the underlying cost of both debt and equity finance. At higher levels of gearing a company may no longer be able to access finance at a reasonable cost. If these relatively high levels of gearing are reached, then the advantages of debt in terms of tax management are likely to be more than offset by the higher levels of risk premia. This suggests that there is some notional level, or more likely a range, of gearing at which the WACC is minimised. This range will reflect an efficient capital structure.

7.8 In the 1996 price control review of Transco, Ofgas based its calculations on Transco's actual level of gearing. In the past, the Competition Commission has also tended to

base its calculations of the cost of capital on the actual rather the efficient level of gearing. However, in its September 2000 report on the references of two water-only companies it calculated the cost of capital under a variety of gearing assumptions. Ofgem's 1999 review of the PES distribution businesses and its 2000 review of NGC's transmission business used an efficient level of gearing, on the grounds that management has had the opportunity to influence the financing structures supporting each business in the period since Vesting. The 1999 financial restructuring of BG plc and the subsequent demerger of the Lattice Group indicates that Transco has had an opportunity to influence its financial structure.

7.9 In determining the efficient level of gearing, it will be necessary to consider the impact of increasing gearing on the cost and availability of debt and equity finance. Specialist credit rating agencies assign rating grades to issuers and to individual debt issues by assessing the degree of credit risk. These ratings are reviewed on a regular basis. Those rating categories which represent the lowest risk are classified as investment grade, indicating suitability for a wide range of investors. Ratings representing higher risk are classified as speculative, indicating suitability only for limited types of investor. In consequence, there is a marked difference in the ease of access to and cost of debt finance for speculative grade borrowers. Ofgem has modified Transco's licence to require it to maintain an investment grade credit rating on its debt. A similar condition is proposed to be included in the new standard electricity distribution licences, and in the transmission licences held by NGC, Scottish Power and Scottish and Southern Energy. This condition is designed to ensure that operators of the principal national and regional energy networks manage their affairs so as to maintain access to a wide range of sources of finance, readily and at reasonable cost.

7.10 Transco's gearing (measured as net debt over net debt plus balance sheet equity) was 52 per cent in December 2000. Measured as net debt over regulatory value[27] it was 41 per cent.

7.11 The two main credit rating agencies are Moody's and Standard and Poor's, their minimum investment grade categories being Baa3 and BBB- respectively. Transco Holdings' current credit ratings from these agencies are A3 and A- while Transco's are A2 and A. Ofgem is currently undertaking further work to determine the appropriate

[27] Calculated on an "unfocused" basis, as described later in this chapter.

gearing assumption for Transco, as discussed in the section on financial modelling below.

Cost of debt

7.12 The cost of debt finance can be thought of as having two components: a risk-free component and a company-specific risk premium.

Risk-free rate

7.13 Although the real risk-free rate is not directly observable, it is possible to derive an estimate from the return available on UK government index-linked gilts (ILGs) and treasury bills. At the time of the last Transco price control review, Ofgas estimated a range for the risk-free rate of 3.5 to 3.8 per cent. Since then, redemption yields on ILGs, particularly those with longer maturities, have fallen significantly. This has led Ofgem to estimate a risk-free rate of 2.5 per cent in the 1999 electricity distribution review and a range of 2.5 to 2.75 per cent during NGC review carried out in 2000. In its report on two water only companies in September 2000, the Competition Commission used an estimate of 3.0 per cent for the risk free rate, based on a range of 2.75 to 3.25 per cent.

7.14 Ofgem assumed a range of 2.5 to 2.75 per cent in its final proposals for NGC's price control last September, at a time when the observed yield on ILGs with more than five years to maturity was in the range 1.8 to 2.7, with an average of 2.1 per cent. The average yield for these ILGs over the previous two years was also 2.1 per cent and over the previous three years was 2.4 per cent. Since then yields have declined fractionally, and observed yields at the end of February are in the range 1.7 to 2.6 per cent with an average of 2.0 per cent. This appears to confirm that the lower yields observed in recent years are persisting. In coming to a final view on the risk-free rate it will be necessary to consider also estimates of the real yields on conventional gilts.

Debt risk premium

7.15 The debt risk premium reflects the additional return required by the providers of debt finance to hold corporate rather than government debt and can be estimated as a premium over the real risk-free rate. It will depend on a number of company-specific factors including the company's level of gearing and its overall financial position, the

size and liquidity of the debt issue and its maturity, and wider economic factors. A measure of the debt risk premium is the differential (or "spread") between the yield on outstanding corporate bonds and those on gilts of comparable maturity. There is a correlation between such yield spreads and the issuer's credit ratings. In deciding on the appropriate debt risk premium for Transco, Ofgem will assume that Transco maintains a credit rating on its debt issues consistent with an efficient capital structure. As explained in the previous section, it will be appropriate to assume that Transco's debt maintains at least an investment grade credit rating.

Cost of equity finance

7.16 There are a number of methods for estimating a company's cost of equity, including the Capital Asset Pricing Model (CAPM), the Dividend Growth Model (DGM) and the Arbitrage Pricing Theory (APT). CAPM has been widely used by UK regulators and the Competition Commission to estimate the cost of equity capital. DGM has been used to provide a supporting check on the results provided by CAPM. The APT is not widely used in the UK.

7.17 CAPM derives an estimate for the cost of equity finance by adding an estimate of the real risk-free rate to an estimate of the appropriate equity risk premium (ERP). The estimation of the risk-free rate was discussed in the section on the cost of debt above. In estimating the appropriate ERP two factors are taken into consideration, the ERP for the market as a whole and the riskiness of the company relative to the market.

Equity risk premium

7.18 The appropriate method of estimating the ERP for the market as a whole has been the subject of considerable debate. This has mainly focused on whether the ERP should be based on observing historic returns, surveying investors' expectations or combining estimates of dividend yields and of real dividend growth.

7.19 In 1996, Ofgas estimated a range of 3.5 to 4.5 per cent for the equity risk premium for the market as a whole in its estimate of Transco's cost of capital. Since then, various estimates for the ERP based on the present expectations of City institutions and investors have suggested a range for the ERP of between 2 and 5 per cent with an average value of 3.5 per cent. Ofgem, Ofwat and ORR have taken the view that it is appropriate to use this average for the estimation of the cost of capital in recent price

control reviews. Accordingly, Ofgem's final proposals for the PES distribution businesses and NGC, in 1999 and 2000 respectively, were based on an ERP of 3.5 per cent. In its 2000 report on the two water-only companies, the Competition Commission used an estimate of 4.0 per cent, consistent with the MMC's 1998 report on Cellnet and Vodafone, in which it used a range of 3.5 per cent to 5.0 per cent. The Commission noted that the longer that equity valuations remain high, the more confidence it is possible to have that the ERP is lower than the historical average.

7.20 In setting a price control for the next five years, the relevant ERP is the forward-looking risk premium. Some recent studies have suggested that previous estimates based on long-term historic data may overstate the forward-looking ERP. For example, the authors of the "Millennium Book II" argue that historic data are distorted by higher than anticipated returns during the twentieth century and do not reflect factors which will have reduced risk-premia. Taking account of these factors they estimate a range for the forward-looking ERP of 2.4 to around 3.5 per cent.[28] Another commentator has argued that "it would be difficult to arrive at a risk premium expectation above 3% per annum in the present environment".[29] The most recent evidence therefore suggests that the 3.5 per cent value used previously by Ofgem may be towards the high end of the range of forward-looking expectations.

Beta values

7.21 An indication of the specific riskiness of a company relative to the market is given by the beta coefficient. This aims to predict the extent to which a company's share price would tend to change in response to changes in the level of the overall market, and seeks to measure a company's non-diversifiable risk relative to equities generally. Beta estimates are usually based on historic data: for example, the London Business School (LBS) publishes beta values estimated on monthly observations over a five-year period. It is debatable whether such estimates accurately reflect the market's forward-looking expectations of risk. Nevertheless, it will be worthwhile to consider the information that is available on beta estimates for Transco.

7.22 The main difficulty in using observed betas to estimate a beta for Transco's regulated business is that Transco is not, and never has been, a separately quoted company. It

[28] Elroy Dimson, Paul Marsh and Mike Staunton, "Millennium Book II: 101 Years of Investment Returns", AMB-AMRO/London Business School 2001, Table 29.
[29] Adrian Fitzgerald, "Still puzzling over the equity risk premium", Professional Investor, February 2001, p.14.

will be possible to use estimates of Lattice Group's and of the former BG Group's betas. However, Lattice Group will have a relatively short trading history by the conclusion of this review, and will reflect the other businesses owned by Lattice. In the case of the BG Group, at the time that Transco was part of this group there were a number of other components (including BG International) and there is no reason to suppose that the hypothetical beta for Transco's business is the same as that for BG's or Lattice's other businesses.

7.23 In the light of these factors there appear to be three methods for deriving an estimate for Transco's equity beta:

- **beta decomposition**: obtain an estimate for Transco's beta by eliminating the effects of the other businesses within the former BG Group plc;
- **comparator companies**: estimate the betas for comparator companies and use these as a basis for estimating Transco's beta; and
- **regulatory precedents**: use other Regulators' estimates of betas for the network utilities which they regulate to inform an estimate of Transco's beta.

7.24 Evidence on each is considered below.

Beta decomposition

7.25 BG Group's beta can be expressed, in terms of the betas of BG Group's businesses, as:

$$\beta_{BG} = w_{Transco}\beta_{Transco} + w_{BGInternational}\beta_{BGInternational} + \ldots$$

Where, for each of BG's businesses, βi would be the beta of business i and wi is the weighting given to the businesses. Transco and BG International were the largest elements of BG Group at the time of the Lattice demerger (accounting for 90 per cent of profits and 95 percent of net assets). If other parts of the group are therefore ignored, the beta of Transco might be estimated using this equation. However, a number of assumptions are required.

7.26 Since, until recently, the BG International assets were not listed separately there is no reliable estimate available of BG International's beta. However, it may be appropriate to use an oil and gas industry average beta as a reasonable measure of BG International's beta. The London Business School publishes industry average beta's on

a quarterly basis and the five-year average beta's for the oil and gas exploration industry, are shown in Table 7.1 below.

Table 7.1: Oil and gas business beta coefficients

Weighting	*Beta*
Equally weighted average	0.94
Market capitalisation average	0.98

Source: LBS Risk Management Service, January-March 2001

7.27 In order to use this data, and the equation in paragraph 7.25, to estimate Transco's beta it is necessary to decide how to weight the betas of Transco and BG International. In principle this should be based on the market value of the two businesses. The current market capitalisation of Lattice Group and BG Group could be used as proxies for this. Alternatively relative profits or, arguably less appropriately, turnover of the two businesses might be used. Table 7.2 below shows the relative profits and turnover of Transco and BG International for the three years 1997 to 1999, and Table 7.3 shows the relative average market capitalisations of Lattice Group and BG Group since demerger.

Table 7.2: Results of Transco and BG International, 1997 to 1999 (nominal prices)

	Profits before tax (£ million)			*Share of total*	
	1997	*1998*	*1999*	*1999*	*three year average*
Transco	1,030	1,224	1,160	78%	83%
BG International	145	225	322	22%	17%
Total	1,175	1,449	1,482	100%	100%

Source: BG Group annual reports

	Turnover (£ million)			*Share of total*	
	1997	*1998*	*1999*	*1999*	*three year average*
Transco	3,084	3,062	3,058	71%	70%
BG International	971	1216	1600	29%	30%
Total	4,055	4,278	4,658	100%	100%

Source: BG Group annual reports

Table 7.3: Market capitalisation of BG Group and Lattice Group

	Market capitalisation *(£ million)*	Share of total
Lattice Group	5,328	37%
BG Group	9,244	63%
Total	14,572	100%

Source: LBS Risk Management Service, January-March 2001

7.28 Based on these results Ofgem has attached a weight of between 20%and 63% for BG International's beta and a weight of between 37% and 80% for Transco's beta. Ofgem has then estimated a range for Transco's beta as shown in the two Table 7.4 below.

Table 7.4: Disaggregation of BG Group's beta

	BG Group	**Transco**	**BG International***
Weighted by market capitalisation	0.79	0.49	0.94
Weighted by revenues	0.79	0.71	0.94
Weighted by profits	0.79	0.74	0.94

*Using an oil and gas industry average beta calculated on an equally-weighted basis as a proxy

	BG Group	**Transco**	**BG International***
Weighted by market capitalisation	0.79	0.45	0.98
Weighted by revenues	0.79	0.70	0.98
Weighted by profits	0.79	0.74	0.98

*Using an oil and gas industry average beta calculated on a market-capitalisation weighted basis as a proxy

7.29 It is necessary to consider the effect of gearing on beta estimates. This can be achieved by calculating asset beta values. Given Transco's current gearing (the ratio of debt to regulatory value) of 54 per cent, table 7.4 implies an asset beta for Transco of between 0.21 and 0.34. In view of the differing profitability and rates of return of the two businesses it is arguable that weightings based on relative turnover or profits (which produce the top of this range) are less valid.

7.30 These asset betas have been calculated using the following equation:

$$\beta_{ASSET} = (1-g)*\beta_{EQUITY}$$

where "g" is gearing. However, there are a number of approaches that can be used to produce asset beta values. Generally there is only limited empirical evidence showing a mechanical link between higher gearing and higher equity betas. In the light of this it may be sensible to take a conservative view of the adjustments to equity betas to take account of higher gearing.

Comparator companies

7.31 Relevant comparators for Transco include Railtrack, the water and sewerage businesses, the PESs, and National Grid Group plc. Table 7.5 lists the equity and asset betas for selected network utilities in January 2000 and January 2001. BG Group's equity beta was 0.62 in January 2000 and 0.75 in January 2001. For the reasons given above, it is reasonable to suppose (as shown in table 7.4) that the beta for Transco's gas transportation business is lower than that for the former BG Group as a whole.

Table 7.5: The equity and asset betas and gearing for selected comparator companies of Transco

Company	Gearing	Equity beta (Jan 2000)	Asset beta (Jan 2000)	Equity beta (Jan 2001)	Asset beta (Jan 2001)
Scottish & Southern	49	0.70	0.36	0.57	0.29
Scottish Power	18	0.65	0.53	0.59	0.48
United Utilities	29	0.63	0.45	0.46	0.33
Hyder	33	0.50	0.34	0.60	0.40
Anglian Water	31	0.46	0.32	0.81	0.56
Thames Water	23	0.35	0.27	0.20	0.15
National Grid	26	0.56	0.41	0.62	0.45
Railtrack	54	0.56	0.26	0.70	0.32

Notes:
Gearing calculated as average net debt (derived from latest annual reports over the last five years) divided by the value of equity plus net debt.
The value of equity betas are based on five year averages calculated by the LBS Risk Measurement Service (January-March 2000 and January-March 2001).
The asset beta is calculated using the following adjustment: $\beta_{ASSET} = (1-g)*\beta_{EQUITY.}$

7.32 The utilities in the table above have asset betas calculated in January 2001 of between 0.15 and 0.56.

Regulatory precedent

7.33 During the NGC price control review Ofgem estimated an asset beta for NGC of between 0.3 and 0.4, at the lower end of the range for January 2000 shown in table 7.5 of between 0.27 and 0.53, because:

- a national network monopoly would appear to be less exposed to a local downturn in one region than a regional electricity or water distribution company, though it is arguable that this additional risk may be 'diversifiable', and hence should not be counted in the estimate for an asset beta, where only 'non-diversifiable' risk is counted;

- the regional electricity companies for the most part have significant competitive supply businesses, which exposes them to greater, non-diversifiable risk, hence raising their asset betas; and

- NGC does not incur the risks from having a large programme of capital expenditure to complete in the next two decades, unlike Railtrack or the water and sewerage companies.

7.34 Given Ofgem's assumption of 60-70 per cent gearing for NGC, this translated to an equity beta of 1.0, consistent with that used for the final proposals at the PES and Scottish transmission price control reviews. The higher gearing which Ofgem assumed for NGC offsets the lower risk of NGC's transmission business relative to a PES distribution business.

7.35 OFWAT in its determination of the cost of capital for the water and sewerage companies in December 1999 used an equity beta of 0.9-1.0. ORR used a beta of 1.0 to 1.1 for Railtrack. Ofgem used an asset beta of 0.5, giving an equity beta of 1.0, for the PES distribution price control reviews. In its September 2000 report on two water-only companies the Competition Commission assumed asset betas for these businesses of 0.5, implying an equity beta of 1.0 with a gearing of 50 per cent.

Conclusion

7.36 In the PES distribution reviews Ofgem assumed that these electricity distribution businesses had an equity beta of 1.0 at a 50 per cent gearing. In the review of NGC's transmission business price control Ofgem assumed an equity beta of 1.0 based on an asset beta in the range 0.3 to 0.4. This lower asset beta for NGC reflected several factors, principally the fact that NGC was a larger business with consequently relatively lower exposure to individual business risks. This argument would appear to apply equally to Transco, which is a larger business than NGC, implying that the asset beta of Transco's regulated business is unlikely to be higher than, and may be lower than,

NGC's. The evidence from the disaggregration of BG Group's beta would also suggest a somewhat lower figure.

Dividend growth model (DGM)

7.37 Dividend growth model (DGM) provides an alternative method for the estimation of a company's post-tax cost of equity. It estimates the post-tax cost of equity as equal to the discounted sum of all future dividends, from which it can be shown that it is equal to the current dividend yield plus a growth assumption. In UK price control reviews, the DGM has mainly been used as a supporting check on the results provided by CAPM. During the NGC price control review, Ofgem undertook a study of the application of the dividend growth model, both by regulators in other jurisdictions and by analysts in the UK financial services industry. Ofgem's study indicated that:

- CAPM appears to be more widely used in the City than the DGM;
- world-wide, CAPM seems to be used more widely by regulators than the DGM, although the DGM is used by many American regulators;
- most American regulators who use the DGM, including the Federal Energy Regulatory Commission (FERC), use a two-stage model to determine the return on equity. FERC uses a combination of IBES forecasts for the short term assumption and economic growth forecasts for the long-term;
- Ofgem's discussions with equity analysts and fund managers indicate that, when they use the DGM, a two-stage approach is used most widely; and
- the lack of a consensus on the proxies which should be used for the growth and dividend yield assumptions, and the range of estimates which can be derived, can undermine the usefulness of the DGM.

7.38 The Competition Commission did not use the DGM in its recent report on two WOCs, stating that it required assumptions on future dividends, which themselves were likely to be dependent on the price control set. The Commission felt that this circularity undermined the usefulness of the DGM for estimating the cost of capital to be used in setting the price controls of regulated companies. It can be argued that this circularity can be avoided by using a range of comparators to derive the estimates of market growth expectations. However, the most directly appropriate comparators (other

network utilities) are likely to be regulated in the same way, and using a range of such comparators is likely to lead to similar circularity. Using a wider range of comparators is likely to introduce greater variation. Accordingly, Ofgem considers that, while it is still appropriate to consider the evidence from all relevant sources in estimating the cost of equity, greater weight should be allocated to CAPM compared to the DGM in estimating Transco's cost of capital.

Adjusting for taxation

7.39 As well as paying dividends and interest, companies must also finance corporation tax payments. As interest payments are allowable against corporation tax, the cost of debt finance does not need to be adjusted upwards to take account of corporation tax.

7.40 In its report on Cellnet and Vodafone, the MMC adjusted the cost of equity finance upwards by a tax wedge to take account of corporation tax payments. In calculating the tax wedge, the MMC assumed that the companies would pay the mainstream rate of corporation tax of 30%, giving a multiplier of 1/(1-0.3) or 1.429. Ofgem used this approach in its final proposals for the electricity distribution and transmission price control reviews (published in December 1999 and September 2000 respectively). In its September 2000 reports on two WOCs, however, the Competition Commission estimated an effective tax rate of 20 per cent based on its financial modelling. Ofgem is currently minded to use the mainstream rate, rather than the actual rate. However, it is for consideration which approach produces an appropriate amount of cash to meet the corporation tax liabilities associated with Transco's business.

Relevant determinations by Ofgem and Ofgas

7.41 Table 7.6 contains a summary of relevant determinations of the cost of capital by Ofgas for Transco in 1996 and by Ofgem for the PES distribution (and Scottish transmission) businesses in 1999 and NGC in 2000.

Table 7.6: Coast of capital estimates (per cent)

Component	Transco (1996)	PES (1999)	NGC (2000)
Cost of debt			
Risk-free rate	3.5-3.8	2.5	2.5-2.75
Debt risk premium	0.3-0.5	1.8	1.7
Cost of debt	3.8-4.3	4.3	4.2-4.45
Cost of equity			
Risk-free rate	3.5-3.8	2.5	2.75
Equity risk premium	3.5-4.5	3.5	3.5
Asset beta	0.45-0.6	0.5	0.3-0.4
Equity beta	0.549-0.732	1.0	1.0
Post-tax cost of equity	5.422-7.096	6.0	6.0-6.25
Taxation adjustment	1.194	1.429	1.429
Pre-tax cost of equity	6.474-8.472	8.6	8.6-8.9
WACC			
Gearing	0.208	0.5	0.6-0.7
Pre-tax WACC	7.0	6.5	6.25

Notes: PES debt risk premium includes an embedded debt premium of 0.4 per cent
Transco's and NGC's cost of capital ranges were published in draft proposals. The final pre-tax WACC was published in the final proposals

7.42 Ofgem intends to develop a cost of capital estimate for Transco using a similar approach to that used to estimate the cost of capital for the PES distribution businesses and NGC. During the NGC review Ofgem published in its draft proposals the ranges for each component set out in table 7.6, which implied a range for the pre-tax WACC of between 5.5 and 6.25 per cent. In its final proposals Ofgem assumed a cost of capital at the top of this range.

7.43 Taking Ofgem's assumptions underlying its estimate of NGC's cost of capital as a starting point, two questions arise:

- whether new evidence has emerged since September last year which affect those assumptions; and
- whether there are differences between Transco and NGC which justify the adoption of a different cost of capital.

7.44 Ofgem will assess the first question further when setting out its draft proposals in June and final proposals in September. However, the evidence available at present suggests that the lower risk-free rates observed in recent years are persisting. Recent evidence

also suggests that that the expected equity risk premium may be lower than previous studies had indicated.

7.45 On the second question, Ofgem would expect Transco, as a national energy transportation business, subject to a similar regulatory regime as NGC, to face a level of business risks no higher than that faced by NGC. As discussed at paragraph 7.36 above, it may be appropriate to assume that Transco's beta is slightly lower than the range assumed for NGC. As part of its financial modelling, described below, Ofgem will assess the optimal level of gearing for Transco consistent with the maintenance of a credit rating of at least investment-grade level, and any impact of this on its beta.

7.46 Taking these factors together it may be appropriate to assume a cost of capital for Transco below the top of the 5.5 to 6.25 per cent range referred to in paragraph 7.42 above.

Regulatory asset base

7.47 In order to secure continuing access to funds on acceptable terms, an enterprise needs to provide a return on the capital invested in its business. In the last Transco price control review, the capital invested in Transco's business was considered in two parts: an initial valuation and the value of subsequent investments.

Initial valuation of assets

7.48 Transco's regulatory value was calculated by the MMC in 1997 with reference to its current cost book value at 31 December 1991. The same approach had been used by the MMC in its 1993 report and by Ofgas in its initial and final proposals in 1996. The May consultation document and November update paper described the issues surrounding the valuation of Transco's assets at 31 December 1991, and the two alternative approaches that can be used to arrive at this value.

7.49 As British Gas's market value in 1991 was significantly less than its current cost book value, assuming a regulatory value equal to its book value would have resulted in windfall gains to shareholders. Accordingly, the MMC calculated a regulatory value for British Gas plc in December 1991 based on its current cost book value, but discounted to its market value by the application of a market-to-asset ratio (MAR) of 60 per cent.

7.50 In December 1991, the then British Gas consisted of some assets associated with its unregulated activities, such as its exploration and production (E&P) business, as well as its regulated activities (its gas transportation, storage and supply businesses). In order to determine the value of the assets of the regulated activities, it was necessary to estimate a value for the unregulated assets, which could be subtracted from the MAR-adjusted value of BG. Ofgas and the MMC identified two possible valuations during the 1997 review: the unregulated assets can be valued at a market value or at their full current cost book value (the 'focused' approach), or they can be valued at their MAR-adjusted current cost book value (the 'unfocused' approach). The difference between the regulatory value calculated using the focused and unfocused approaches at the last review was approximately £1.7 billion in 1994 prices.

7.51 During the 1997 price control review, Ofgas calculated Transco's regulatory value using both the focused and unfocused approaches. In its evidence to the MMC, Ofgas included an estimate of the implicit market value for BG's unregulated businesses. The principal unregulated businesses were BG's exploration and production business and its Global Gas businesses. Using data published by NatWest Securities, Ofgas estimated the market value of these businesses at £3,078 million and £512 million respectively in 1994 prices. Deducting these estimates from the MAR-adjusted value of BG produced a value for the regulated business at 1 April 1997 of £8.7 billion in 1994 prices as set out in table 7.7. This result was close to the value of £8.8 billion in 1994 prices produced by focusing the MAR solely on the regulated business.

Table 7.7: Calculation of Transco's regulatory value from Ofgas submission to the MMC (1994 prices)

	£ million
Unfocused value of Transco	10,272
Transco fixed assets	16,821
British Gas assets	22,188
less Centrica assets	2.115
BG plc assets	20,073
Effective BG plc assets (10,272/16,821 x 20,073)	12,258
less market value of E&P	3,078
less market value of Global Gas	512
Focused value of Transco	8,668

Reproduced from: Ofgas "Submission to the Monopolies and Mergers Commission in relation to its inquiry under the Gas Act 1996 into BG Transco's price control", table 5.6, p.35.

7.52 In the November update paper Ofgem committed to set out in this document the impact on Transco's regulatory value of using a focused or unfocused approach, inviting respondents to comment on the appropriate methodology for the calculation of Transco's initial regulatory value. Table 7.8 below shows the difference in regulatory value between the focussed and unfocussed approaches and calculates the opening value of the regulatory value on a focussed basis.

Table 7.8: Calculation of the focused regulatory value

Unfocused regulatory value, December 1991 (MMC,1994 average prices) [*a*].	10,521
Focused regulatory value, December 1991 (Ofgas evidence to the MMC,1994 average prices) [*b*].	8,818
Difference between the focused and unfocused approaches (1994 average prices) [$c = a - b$]	1,702
Inflation factor [*d*]	1.181
Difference revalued to 2000 average prices [$e = c \times d$]	2,010
Unfocused regulatory value, April 1997, revalued to average 2000 prices (Transco's estimate derived from MMC Table 2.5) [*f*]	12,201
Focused regulatory value, April 1997 (average 2000 prices) [$f - e$]	10,191

7.53 Table 7.9 rolls forward the regulatory value on a focused and unfocused basis.

Table 7.9: Roll forward of the regulatory value from 1997 to 2002 (2000 prices)

Focused

Description	*1997/98*	*1998/99*	*1999/00*	*2000/01*	*2001/02*
Opening value	10191.0	10173.4	10227.9	10250.1	10514.9
Depreciation	-611.0	-592.5	-596.0	-604.8	-604.0
Capex	593.4	647.0	618.2	869.6	1049.0
Closing value	10173.4	10227.9	10250.1	10514.9	10959.9

Unfocused

Description	*1997/98*	*1998/99*	*1999/00*	*2000/01*	*2001/02*
Opening value	12201.0	12183.4	12237.9	12260.1	12525.0
Depreciation	-611.0	-592.5	-596.0	-604.8	-604.0
Capex	593.4	647.0	618.2	869.6	1049.0
Closing value	12183.4	12237.9	12260.1	12525.0	12970

7.54 The calculations shown above imply a difference in regulatory value of approximately £2 billion. Based on the cost of capital used to set the existing price control, this implies a difference in Transco's revenues of approximately £140 million per year, or a difference in transportation charges for each customer of approximately £7 per year on average.

7.55 The focused approach has been calculated by valuing the unregulated assets at their full current cost book value in 1991, which is consistent with Ofgas's conclusion in 1997 that this produces broadly the same result as using estimated implicit market values of the two principal unregulated businesses. In rolling forward the regulatory value on a focused basis, depreciation has not been adjusted from the unfocused approach. This means that the roll forward is consistent with the basis on which the depreciation allowance used to set Transco's allowed revenues for the present price control period was calculated. However, if a focused approach is adopted it may be appropriate to adjust the depreciation allowance.

7.56 Ofgem intends to review the evidence on the market value of the unregulated assets at 31 December 1991 to confirm the extent to which this supports the use of a focused approach. However, whatever the results of that work, Ofgem does not intend to use an estimate of Transco's regulatory value at 31 December 1991 on a focused basis that is lower than that set out in Table 7.8. The values in table 7.9 can therefore be taken as setting the range of possible opening regulatory values at 1 April 2002, unless evidence

from the efficiency study described in Chapter 6 indicates that it is appropriate to make adjustments to the capital expenditure to 1 April 2002 reported and forecast in Transco's BPQ response.

7.57 In choosing whether to adopt a focused or unfocused approach a number of factors will be relevant including:

- ensuring that the regulatory value used accurately reflects shareholders' and debt providers' accumulated investment in the different British Gas businesses in 1991;
- consistency with regulatory reviews of other UK price-controlled businesses, where in all cases other than Transco a focused approach to the valuation of regulatory assets has been used;
- the views of the MMC in 1993 and 1997 which on both occasions used an unfocused approach to value Transco's assets; and
- the views of both customers and investors.

7.58 Ofgem welcomes views on the appropriate method for valuing Transco's assets at 31 December 1991. Ofgem wishes to take these views into account before reaching a decision on the approach to be used in setting future price controls, a decision which Ofgem will set out in its draft proposals in June.

Valuation of subsequent investments

7.59 As well as providing a return on December 1991 assets, the present Transco price control was designed to allow for the financing network capital expenditure between December 1991 and the end of the current price control in 2002. The next price control will allow for the financing of Transco's past efficiently-incurred network capital expenditure between December 1991 and the present, and an efficient level of projected capital expenditure to the end of the next price control period in 2007 (assuming a five year duration for the next control). There is no MAR adjustment to the investment made since 1991 so Transco is able to earn a full return on allowed capital expenditure.

7.60 In order to roll forward the regulatory value over the next price control period, it is necessary to establish the level of investment undertaken since the last review and

whether this has been efficient. Ofgem's monitoring of Transco's capital expenditure is explained in Chapter 6 above. It is also necessary to estimate the capital expenditure which an efficient company would incur over the next price control period in order to roll forward the regulatory value to 31 March 2007. This work forms part of the efficiency study described in Chapter 6.

7.61 The capital expenditure incurred also needs to be uprated to take account of inflation since the year in which the money was spent in order to reflect the real, rather than the nominal, value of the additions. This approach is consistent with that adopted during the PES distribution businesses and NGC price control reviews.

Impact of separate controls

7.62 In implementing separate controls Ofgem will need to assign the existing regulatory value between these businesses. There are a number of potential methods for carrying this out, which include using: the ratio of historic-cost book value of these assets, the ratio of the replacement values, the ratio of physical assets (for example, pipeline lengths) or estimates of the market value of the assets.

7.63 The approach used to carry this out may be influenced by the choice of whether a focused or unfocused approach to the valuation of pre-December 1991 assets is used. If the regulatory value of Transco's regulated business as a whole is established on a focused basis, consistency would suggest that the this should be attributed between different activities on a focused basis. In contrast, if the overall regulatory value is established using an unfocused approach, it may be more appropriate to attribute this value between activities on an unfocused basis. In addition, it will be important to ensure that the separate price controls will allow the relevant businesses to finance their future activities.

Asset lives

7.64 At the last price control review, the depreciation charge for Transco's assets was calculated based on different assumed asset lives for different categories of asset. This contrasts with other price control reviews (for example for NGC and the PES distribution businesses) where single asset lives have been used for each of pre- and post-privatisation assets. Ofgem considers that there may be an argument for moving towards a single asset life for Transco's pre-1991 assets and a single asset life for its post-1991 assets. After consideration of the different mix of assets types, it might be appropriate to set separate asset lives for the proposed separately price controlled activities. This might aid regulatory transparency, as it would simplify the calculation of Transco's depreciation charges, and would be consistent with the approach adopted for the PES distribution businesses and NGC's transmission business.

7.65 It is also for consideration whether it is appropriate to continue to depreciate assets on a straight-line basis, rather than an annuity basis. An annuity basis involves calculating regulatory depreciation such that the sum of the depreciation and return on the investment is constant over the life of the asset. It can be argued that this approach ensures that prices more accurately reflect the costs of using an asset in each year of its

expected life. Nevertheless, it will be necessary to take account of wider considerations, such as the affect on the financial position of Transco and on the path of prices in the longer term.

7.66 If it is considered appropriate to change these assumptions, it will be important to ensure that the net present value of Transco's depreciation charges over the life of the asset remains unchanged, that no significant price instability results and that Transco (if efficiently managed) will be able to finance its activities during the next price control period and beyond.

Financial modelling

7.67 Ofgem has developed a financial model, which will incorporate Ofgem's projections of the efficient level of costs to give an appropriate level of revenues for Transco. The model will be shown to Transco and audited before the publication of the draft proposals.

7.68 In the light of Ofgem's duty to ensure that Transco is able to finance its licensed activities, Ofgem will undertake supporting checks on the financial position and viability of the licence holder. In assessing financial viability, it is important to consider which tests are most appropriate. The Competition Commission has indicated that to maintain financial viability, it is essential for the regulated company to have access to requisite finance on acceptable terms. This can be ensured by the maintenance of an investment grade credit rating for the debt of the company. Transco is required under special condition 4 of Transco's gas transporter licence, to maintain such a rating. In the light of this, it appears reasonable to focus checks for financial viability on the ability of Transco to maintain an investment grade credit rating for its debt. This approach is consistent with the approach, which Ofgem adopted in the 2000 review of the transmission business of The National Grid Company and the 1999 review of electricity distribution businesses.

7.69 Moody's and Standard and Poor's, the two main credit rating agencies, both stress the importance in determining credit ratings of qualitative factors such as overall management strategy and perceptions of the regulatory environment, as well as of quantitative assessments based on modelling. Nevertheless, both agencies have published guidance on the financial analysis they undertake, both generally and specifically in respect of public utilities. The general approach is to examine earnings,

cashflow and capital structure in relation to debt service obligations, working capital and capital expenditure requirements. This analysis is carried out using both historic results and future projections. Particular emphasis is placed on levels of debt, cash and cash flow in view of the difficulty of comparing reported earnings and balance sheet data between companies operating under different regulatory regimes and following different accounting conventions. Therefore measures such as the coverage of interest charges by free cashflow and the ratio of free cash flow to total debt are considered more relevant and reliable than earnings coverage or balance sheet gearing.

7.70 Measures of financial protection, as revealed by such analysis, are considered in the context of the utility's business profile. A company with a strong business profile may have less financial protection than one with a weaker business profile yet achieve a similar credit rating (and vice versa). A gas transportation business faces limited business risk and is thus able to sustain lower interest coverage and higher gearing compared, for example, to gas production and supply businesses which operate in a more competitive environment with greater cash flow volatility. In its September final proposals on the transmission-business price control review of NGC, Ofgem, following discussions with city institutions, rating agencies and investors, set out the indicators in Table 7.10 which it used to asses the impact of the proposed new NGC price control. Ratios for Transco plc (rather than Lattice Group or Transco Holdings) at December 2000 are also shown.

Table 7.10: Ofgem's financial indicators for NGC

Indicator	*Minimum and maximum levels for NGC*	*Transco plc actuals (December 2000)**
EBIT interest coverage	Min 1.5x	2.39
EBITDA interest coverage	Min2.25x	3.72
FFO interest coverage	Min 2x	3.49
FFO to total debt	Min 12%	17.6%
Balance sheet gearing	Max 70%	52%

Source: Transco estimates.

7.71 In assessing the potential reaction of credit rating agencies to changes in the Transco's financial position over the period of the revised price control, Ofgem will pay close attention to the above ratios. It may be argued that Transco's transportation business is less risky than the transmission business of NGC and therefore Transco may be able to sustain an investment grade credit rating at interest coverage ratio levels lower than

those set out above for NGC. Nevertheless, it will be important to ensure that Transco's credit rating will be expected to remain within the investment grade category throughout the price control period.

Views invited

7.72 Views are invited on any of the issues discussed in this chapter, but in particular on:

- whether the approach to assessing Transco's cost of capital is appropriate;
- whether the approach to estimating each component within the capital asset pricing model (CAPM) (risk-free rate, debt risk premium, equity risk premium, company specific beta, taxation wedge and optimal gearing) is appropriate;
- which approach ("focused" or "unfocused") should be used value Transco's assets at 31 December 1991;
- whether it is appropriate to alter the method by which depreciation of the regulatory value is calculated; and
- whether the approach to financial modelling and the financial indicators described are suitable for assessing Transco's financial position.

8 The way forward

8.1 Ofgem is developing its price control proposals in line with the timetable set out in the May 2000 consultation document:

Progress to date	
Initial consultation document published	May 2000
Related seminar	August 2000
Draft Business Plan Questionnaire sent to Transco	September 2000
Final Business Plan Questionnaire sent to Transco	October 2000
Update paper published	November 2000
Related seminar	December 2000
Completed Business Plan Questionnaire received from Transco	December 2000
Initial thoughts consultation document published (including summary provided by Transco of information obtained in the Business Plan Questionnaire)	February 2001
Future programme	
Initial thoughts seminar	April 2001
Draft proposals consultation document published	June 2001
Final proposals decision document published	September 2001
Implementation of new price control	From April 2002

8.2 This document has reported on progress since the May 2000 consultation document and the November 2000 update paper and has set out the further work Ofgem will be carrying out between now and the publication of the Draft proposals consultation document in June 2001. Specifically:

- Ofgem will hold a seminar on 5th April to discuss the proposals set out in this paper including those related to output measures and associated incentives and to guaranteed and overall standards; and

- Ofgem will set out in June its draft revenue projections for the next price control period. As regards the NTS, these will reflect the final proposals from its review of Transco's long-term investment signals which will also be published by Ofgem in February. These revenue estimates will take into account decisions made regarding the method for calculating the regulatory value and the cost of capital.

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Appendix 1 Summary of responses to Update Paper November 2000

Subject	Comment
Business Boundaries & Forms of Control	Support the separation of NTS & LDZ and TO/SO within NTS & LDZ. Do not believe that the industry currently would be able to support LDZ separation but do not rule it out. Believe it would be over ambitious for the next price control period. Believe information should be shared with the market so that an informed decision can be made at the appropriate time. Think it is necessary that all parties establish the overlaps between the price control review and the long-term investment signals recommendations so that a consistent approach can be adopted.
	State they have had to accept the increased overall budget for metering of some £400m but would still contest the distribution of this charge. State that common view is that 25% of meters installed are oversized. State that if the distribution of costs is based on these oversized meters, then, the individual unit costs are too low because 25% of the market is paying significant overcharges. Suggest to prevent further anomalies in the market place for the future, the cost of metering should be distributed over the real efficient metering base. This would then alleviate overcharging to consumers with oversized meters. State that with the increase in competitive parts of the business there has been an increase in the number of databases used and that this cannot be efficient and would offer greater opportunities for inaccuracies. Believe that putting separate controls on LDZs would be no more effective than installing strong management and that the underlying purpose is that individual LDZs could be sold off. State that this separation would create region specific monopolies, which unfortunately could give some customers higher gas costs, because they live in a highly priced or inefficient LDZ. Would like to remind Ofgem that, as parts of the business are unbundled the core business remains a monopoly and therefore believe that this should be reflected in Transco's return on capital.
	Note that although it may seem logical for Ofgem to impose separate controls upon Transco (TO/SO LDZ/NTS), the costs and benefits of any change in regulatory structure must be considered. State that in particular Ofgem may wish to ensure that the aggregate customer benefits from any changes will be greater than the additional costs of implementation and ongoing regulation.
	Welcome the separation of the NTS controls and the further separation of TO and SO roles. Support the collection of data by LDZ, as there would be no extra costs incurred but do not believe that the benefits of introducing separate LDZ controls out weigh the costs of installing them. Believe separate controls would also introduce more complexity and risk to suppliers thus increasing perceived barriers to entry.
	Agree with the objectives and the proposed implementation of: ▪ Separate controls for NTS and LDZs ▪ Disaggregation of the SO and TO roles for the NTS but not the LDZs ▪ The lack of need for connections to be price controlled ▪ RPI-X controls for the NTS TO and LDZs, but supplemented by cost pass through mechanisms ▪ NTS SO to be incentivised through NGTA, but need to co-ordinate processes with review of transportation price controls Agree with the objective but disagree with proposed implementation of NTS TO investment relying on auctions to inform changes in target NTS capacity. Disagree with the Ofgem's position on the proposed single control of all LDZs and the possible regulation of emergency service provided to third parties.
	Concerned that the unbundling of metering has been carried out in a way that has not led to proper cost reflectivity, particularly for domestic meters.
	Believe that there are separate cost and service regimes for the NTS and for each LDZ. However advocate that regulation be kept to a minimum and consequently do not believe that the amount of time, effort and resources required for these separate controls can be justified.
	Support the establishment of separate price controls for the NTS and LDZs (in aggregate). Do not support the establishment of separate controls for individual LDZs until it can be demonstrated that the operational activity and respective performance of each LDZ is to an agreed standard following a period of comparative monitoring and benchmarking.

	Support the separation of SO and TO roles of the NTS, subject to a clear identification and division of the respective responsibilities. They do not believe that it is appropriate to make this separation within LDZs.
	Believe that separate controls on individual LDZs are necessary. Suggest that in the short run incentives for efficiency would be improved and in the long run it would enable Transco to sell off an LDZ, promoting competition in providing network services and allowing greater flexibility in the options for structural developments in the utilities market. Believe that both of these routes would provide opportunities for more rapid capture of efficiency improvements and therefore be in consumer's best interest. Believe that until there is effective competition there should be a separate price control for connections and ideally for each individual LDZ's connection business. Believe that the work that is undertaken to formulate the controls should ensure that cross subsidy to the connections business does not occur which in turn would reduce the unfair advantage which Transco has over its competitors. Believe that leaving Transco with a national connections business would also cause Transco to have an unfair advantage.
	Agree with the proposal to have separate price controls for the NTS and LDZs but do not agree with the proposal to have separate controls for NTS TO/SO as this may lead to economic inefficiencies. Recognise that it would be over ambitious to attempt individual LDZ controls and so support the single control for all LDZs as this approach should aim to enhance the performance as a whole while raising the standards of those LDZs that under perform.
	Agree with separation of the NTS from the LDZs for price control purposes. Agree broadly with the separation of TO/SO but do not feel the paper covered how these would work in practice.
	Broadly support the proposed separation of NTS / LDZ and the following split in to SO/TO however are cautious that this could cause high transaction costs between units which were previously all part of the same business. Are concerned that disputes or conflicts of interest between SO and TO could arise and expect clear priorities and dispute resolution procedures be set up.
Output Measures	Agree that output measures are necessary in determining Transco's failures or over achievement during the price control period. Believe that these outputs should improve transparency and cost reflectivity of service. Recognise the importance of the Base Plan Assumptions (BPA) as part of the output measure process and believe it essential that data be validated and agreed by the community before it is used to define the capacity that Transco will make available through the auction process. Feel that the BPA should be enhanced prior to the commencement of the next price control. Believe NTS output measures be contained within the price control so Transco obtains key signals as to what is required of them. Believe that it is necessary to define separate measures for TO & SO services. Are Supportive of TO measures on entry capacity. Believe SO measure such as gas quality and balancing incentives will also need to be identified and discussed to agree the appropriateness of setting and attaching measures to them. Believe LDZ measures should consist of a measure on interruption and speed of reinstatement. Believe Shipper Services from Transco are very important and valuing some services above others is difficult, however believe that the following are services that should be measured and have incentives attached. ▪ Accurate and accessible IT systems ▪ Timely query resolutions ▪ Correct transportation invoices ▪ Timely completion of connections ▪ Timely provision of connection Quotations ▪ Timely and correct transferee of customers. Recognise need to limit the number of measures to preserve transparency of control, however do not believe that the remaining services should be added to the current network code and covered by the present liabilities cap. Believe that use of a cap on liabilities is not appropriate in a business, which is providing a quality service and are concerned about the behaviour that a fixed income and liabilities cap could produce. Believe that once boundaries have been defined and necessary services stipulated, measures which would

	be best served by direct links to the price control and which should result in a modification to the current code and liability mechanism.
	Suggest that it should be the consumer who receives compensation from Transco not the shipper, who they suggest, do not pass on the benefits to end consumers in the form of lower charges.
	Value foremost reliable, safe gas transportation but also value : ▪ The timely commissioning and completion of network investment, ▪ Greater choice between interruptible and firm capacity, ▪ Timely and generally available access to information regarding ▪ Transco's balancing actions, levels of gas held in storage And gas flows through the interconnector, ▪ Timely and accurate supply point transfers between suppliers. Note that Ofgem is concerned that the RPI-X price control will force Transco to cut costs by cutting capital investment. Believe Transco should incur severe penalties for under-investment in NTS Capacity. Believe that if accurate demand forecasts can be obtained then an incentive scheme, and the potential costs incurred, is not justified on long-term investment in NTS capacity. View it important that Ofgem consider carefully the cost/ benefit trade-off for customers together with the potential for unintended consequences and/or perverse incentives if it considers there is a strong case for introducing NTS capacity incentives within the proposed price control. Do not believe that it is necessarily appropriate that the price control give Transco incentives for either a reduction in the number of interruptions or a reduction in the average duration of interruptions. Believe that incentives should not be given for providing an average level of service rather penalties should be put in place as part of Transco's guaranteed standards of services. Believe further guaranteed standards of service should be set at a level that is consistent with the costs incurred by the customers effected together with the additional regulatory costs in monitoring LDZ continuity of supply. Believe that customers will always prefer a quick reconnection after an interruption unless they specify otherwise.
	Support suggested incentives on network management activities but believe that it is important that there is a balance between these services and those supporting competition. State that Transco is a critical service provider for shippers and suppliers and to meet their standard of service it is necessary to receive a high quality service from Transco. Suggest that an important element of the price control should be that Transco's standards of service have a positive impact on the strength of competition in supply. Suggest that Transco be encouraged to offer a variety of service level packages to suppliers as this will enable suppliers to choose how they differentiate themselves from their competitors. Go on to suggest that these service packages must subsequently demonstrate uniform delivery within their respective bands to prevent distortion of the competitive advantage they offer. Believe that additional output measures should be examined in areas such as: Quality of Transco's address and metering data, specifically to communicate changes to current suppliers so that unnecessary delays are avoided in the customer transfer process due to discrepancies between historical and current data. The number of customer visits required to achieve a particular task should be kept to a minimum with targets set so that minimum customer disruption is rewarded and unnecessary disturbance penalised. Suggest that it should be possible to achieve a balance of service obligations between network and competitive market services. Further consideration could be given to the separation of the two activities.
	Agree with Ofgem on implementing: Clearer incentives specified through identifying outputs relevant to customers Single regulation on the standards of service Minimum numbers of outputs subject to financial incentives. Agree that identifying what services customers value is highly important but believe that IIP evidence from electricity may not map to gas and systematic research would be a preferred approach. Disagree with the proposal to link revenue and outputs, which would require improved reporting of Capex and Opex. Disagree with introducing additional outputs within the price control period and that exit capacity should be under NTS control.

	Do not believe that the use of linepack as a measure of NTS flexibility is suitable.
	Believe that Transco as TO should be measured against the provision of capacity possibly based on a peak flow, however also state that a balance needs to be struck to ensure that 'gold plating' of the NTS does not occur. Acknowledge the significance of number and duration of interruptions, especially for domestic customers and note that gas interruptions are very different from those in electricity, as they are comparatively rare and affect relatively few customers. State that most interruptions are usually caused by 3rd party damage and this is outside of Transco's controls. Point out that the above situation might be different for business customers who cannot get a firm gas supply and believe that, as this is within Transco's control, this might be an appropriate output measure. Suggest that Transco be incentivised on reducing shrinkage as this would reduce shipper costs and would also have environmental benefits as leaking gas contributes to the greenhouse gases. Believe that Transco should be incentivised to promote competition in the supply market and suggest that one way in which this could be done is with the visibility and accuracy of data. Have concerns with the quality of data in Transco's invoices, which they believe, appear overly complex and frequently inaccurate. They then state that the costs associated with checking these could be greatly reduced if Transco were incentivised to improve quality and reduce their complexity. Are also aware that Transco receives revenues from IPGTs and believe that it would be appropriate for the revenue that they receive to be price controlled.
	Agrees with concern relating to correct invoices, timely completion of connections and timely and correct customer transfers. Support work being undertaken to achieve immediate improvements in shipper query management and the proposals to introduce a standard of service related to the percentage of queries resolved by Transco within 10 and 20 days. Agree that a key output measure for the NTS is the level of peak capacity made available at individual entry points and note that to enable these peak capacity levels to be calculated it is necessary to develop an accurate assessment of future supply/demand for the UK. Are not convinced that the current BPA process is sufficiently robust for the industry to have confidence in the supply / demand scenarios developed by Transco for the period of the price control. They continue to point out that it is essential that such scenarios are made as transparent as possible and should be validated against independently developed scenarios. Agree that the number and duration of non-voluntary contractual and non-contractual interruptions due to factors upstream of the meter are the most relevant measures of quality of service in meeting the demand for LDZ capacity. Believe that Transco, as NTS SO, should be incentivised to minimise its' day to day running costs and believe this should be developed through the NGTA workstream. Believe that where standards of service are defined under the Utilities Act, Transco's licence, Network Code or other contractual arrangements, financial incentives should be included within these mechanisms, rather than within the price control. Agree that there is a need to quantify output measures against which Transco's incentives are set and that these are likely to be measures that have a direct effect on the gas market as a whole rather than on individual shippers or end customers. Believe that with regards to continuity of supply on the LDZs, meaningful levels of compensation should be through the Network Code to ensure that only parties who were directly affected by supply outages are recompensed. Agree that it would be beneficial to collect information on the quality of data held on Transco's IT systems.
	Support the regular monitoring of Output measures and the linkage of incentives and revenues. Wish to see a more effective Network Code Standard of Service process and improvement of guaranteed and overall standards.
	Believe that customers, no matter who they are, value predictability and stability – both in price and in the continuity of supply. Suggest that the regimes under which Transco is currently assessed should be reviewed for suitability. Believe it necessary when developing a new incentive scheme that it is known what every single part will manipulate. Support the idea of output measures and agree that they should be key to the effective operation of the gas

	market as a whole. Agree that NTS entry capacity is a primary target for incentivisation and suggest that NTS exit and interruption may also warrant incentivisation. Do not agree with the placing incentives on Linepack, as they do not support the introduction of a linepack service as the trading of Linepack would enable greater manipulation of the system by larger shippers and further complicate the gas-trading regime. Believe that the SO function should be incentivised to minimise the cost of the day to day operation of the system. Do not support the suggestion of placing unlimited liabilities on Transco as this would affect their cost of capital and increase gas costs for end users. Suggest that that an output measure based around the number of involuntary interruptions to supply at an LDZ level may be more useful if targeted at the number of customer minutes lost, rather than the number of supply interruptions. Do not think it is appropriate that safety performance should be incentivised through a price control, as there should be no opportunity for Transco to arbitrage between safety and its financial position. Believe that, regarding information gathering, it is important that Transco does not risk longer-term reliability for short-term gain and consequently some form of monitoring will be required. Also believe that this information will assist in resetting /fine-tuning of incentives in the future however a balance between collecting of information for useful monitoring purposes and the operational cost of doing so.
	Welcomes the output-based incentive regime but is concerned that Transco may become conservative in its interpretation of the available supply data. Believe that the current proposal leaves Transco with too much influence in establishing both the future availability of gas supplies and capacity, although the proposed 'buy back' regime with a 'top-down' structure does go some way towards alleviating the problem, problems will still occur if these incentives are reduced. Believe that such an approach would only be effective if Transco is 100% responsible for the cost of 'buy-backs' paid to holders of entry capacity and that the 'buy-back' bids are allowed to reflect the full impact of non-availability of entry capacity on the upstream industry. Are keen to ensure that Transco pays adequate compensation if it fails to meet its agreed output targets for capacity availability.
	Argue that both Ofgem and Transco should incorporate the following guiding principles to justify setting any particular standard: ▪ The standards must not jeopardise the safe operation of the gas network ▪ The standards must not lose sight of Transco's primary function, to deliver gas to consumers ▪ The standard must ensure the economic running of the gas network. Believe that it is important to recognise not just the measurement of performance but also the level and severity of complaint that these regulated activities generate. Would also expect level and frequency of complain to be considered in future output based systems. Believe that the consumer research be undertaken as fairly as possible considering the findings' potential financial implications for consumers (and indeed Transco).
Operating and Capital expenditure	Hope to see from the consultancy work a detailed analysis of Transco's planned and actual expenditure on an annual basis as this would enable appropriate corrections to revenues to be made within the corresponding year. Believe that this would improve transparency and efficiency by providing incentives to Transco to manage their cost annually. Suggest Ofgem bring forward the August target date so to allow sufficient time for the findings to be fully incorporated into the price control debate.
	Suggest that a common view is that Transco's further £541m allowance should have been spent on other items of capital expenditure. Believe that if the outputs have been met, the capital should not then be raised and should not be a cost against the customer.
	Agree that a key element of capital expenditure will be replacement of cast iron and ductile iron mains in line with policies agreed with HSE. Believe there must be a consideration of the capital and operating expenditure trade off. Agree that there is a difficulty of maintaining present rate of cost reduction while maintaining or improving standards. Disagree that allowed revenue should potentially be reduced even when outputs are achieved more

	efficiently than projected.
	Welcome the review, being carried out by Ofgem's consultants, of Operating and Capital Expenditure under the price control.
	Welcome the proposal to undertake more detailed monitoring of Transco's planned and actual capital and operational expenditure. Would like to see a detailed annual analysis of Transco's planned and actual expenditure since this should provide a more transparent form of accountability. Suggest that this monitoring be undertaken as soon as possible at the end of each year to ensure that any corrections to Transco's allowed revenues are made within the formula period.
Financial Issues	Wish to remind Ofgem that the focused/unfocused issue has been reviewed twice in the past and on both occasions the gas regulator and the MMC agreed that the unfocused approach was most appropriate. Feel that changing to a focused approach would create regulatory instability and investor uncertainty. In reference to the regulatory stability, noted that moving to a focused approach would significantly increase the cost of capital to Lattice and other regulated companies. Believe that investors would never see this issue as closed as it could be reopened again at a later date, this would cause great uncertainty amongst investors. Pointed out that there would be a difficulty in calculating a focused valuation as the value that shareholders attributed to the different parts of the business at the time of vesting will need to be estimated. Believe that this calculation will be impossible to any degree of accuracy as investors at the Cont.... *Cont....* time of vesting may well have viewed British Gas as an integrated business on a yield basis rather than taking a sum of the parts methodology. Believe that the only reason to consider a focused approach is to have uniformity across UK regulated industry but note that this goes against the industry by industry approach that was previously adopted by regulatory authorities. Believe the arguments against far outweigh the reasons for. Are of the view that the uncertainty caused by adopting the focused approach would deter investors and hence the Lattice group would find it more expensive to obtain investment to provide a safe, efficient and reliable infrastructure. Note that the shareholders which this decision would have greatest effect on are also the largest holders of other UK regulated assets and this would mean that any decision would have far reaching effects on the rest of the UK regulated sector.
	Agree that capital expenditure additions should be uprated by inflation and agree that additions, disposals and depreciation should be rolled forward but have concerns over potential operation of capital monitoring. Do not believe that revisiting the regulatory value of Transco's pre 1992 assets is an appropriate operation.
	Believe that revisiting the focused/unfocused issue is inadvisable, as it would lead to increased regulatory risk.
	Do not support any move to revisit Transco's regulatory asset value.
	Do not advise revisiting the focused/unfocused, as it would lead to increased regulatory risk, investor uncertainty and would have knock on effects to other regulated utilities. Pointed out that shares have changed hands many times since the original share issue and that by changing the assigned market value would only serve to punish current shareholders when it was the initial shareholders who reaped the benefits. Believe that the figure obtained would be totally inaccurate, as it isn't possible to see how a valuation given now could be more accurate than one made at the time.
Other concerns	Believe that the safety and stewardship of the network must at all times remain a priority to Ofgem and the industry. Believe that the important nature of this issue means that it should be treated as a separate part of the price control and measurement should be put in place in order to maintain and monitor the network.
	Support the relaxation of price controls in areas of activity open to competition but only when it can be demonstrated that effective competition is in place.
	Believe it is important that the data and subsequent analysis undertaken by Transco in the BPA process is validated by independent auditors and where possible benchmarked against other supply/demand studies. Believe it is essential that the BPA process is as transparent as possible, to enable the industry to provide meaningful comment on the scenarios developed by Transco.

List of Respondents

BP Gas Marketing Ltd.
British Gas Trading
Corus UK Ltd.
energywatch
ExxonMobil International
Local Authority and Govt. Utilities Resource (LAGUR)
Schroeder Salomon Smith Barney
Scottish and Southern Energy
Seeboard
Transco
TXU Europe
Yorkshire Electricity
UK Offshore Operators Association

Appendix 2 Summary of Outputs Seminar held at the Rembrandt Hotel on 11th December 2000

1. Introduction

Following publication of the November 2000 price control update paper, Ofgem held a public seminar on the 11th December to discuss output measures.

The speakers were:

- Chairman, Richard Morse, Deputy Director General, Ofgem.
- Justin Coombs, Director of Price Controls, Ofgem.
- Steve Smith, Director of Trading Arrangements, Ofgem.
- Chris Bolt, Director of Regulation and Corporate Affairs, Transco.
- Brian Withington, Director NGTA, Transco.
- Peter Massey, Asset Information Manager, Transco.

2. Opening

Richard Morse introduced the speakers and set out the agenda for the morning. He explained that the purpose of the seminar was to discuss Ofgem's current thinking on potential output measures. He emphasised that nothing had yet been finalised and Ofgem was open to new ideas.

3. Introductory presentations

Ofgem: setting the framework

Ofgem noted that RPI–X price controls provide strong incentives for regulated companies to reduce costs. However, there was a danger that improvements in efficiency may be achieved at the expense of lower standards of service. Ofgem explained that its objectives were to set outputs measures, which provided sufficient incentives on Transco to deliver an appropriate level of service to its customers and cope with areas where there is uncertainty such as NTS supply/demand patterns. These measures needed to be clear and unambiguous.

Ofgem noted that it would be important to achieve comprehensive coverage of the services that Transco provides, but overlaps should be avoided. Firstly, there would a set of outputs that were important to measure without imposing direct financial incentives. This included medium and longer-term measures of the reliability of Transco's network. Secondly, there would services for which it was considered appropriate to impose financial incentives. There was a question of how these outputs should be treated. They may be most appropriately covered by guaranteed or overall standards of performance, network code standards or by financially incentivised output measures under the price control.

Ofgem explained that the next steps would be to:

- develop key output measures defined as part of the price control;
- develop guaranteed and overall standards of performance for Transco to apply from April 2002;
- ensure that there are appropriate definitions and reliable methods of measuring these outputs and standards;
- consider the appropriate method of monitoring the longer-term condition of Transco's networks; and
- consider the proportion of Transco's allowed revenues which should be exposed to output-related incentives.

Transco presentation

Transco noted that it was important to achieve clarity about the range of services customers' value. It had therefore commissioned independent customer research, which informed Transco's view of the appropriate output measures.

Transco welcomed the approach developed in the November update paper of establishing the relevance of particular services for the outputs framework and then deciding how they should be treated. Transco had developed such a framework.

Firstly, there are stewardship or longer-term measures, which ensure that performance is maintained or improved over time. Secondly, there are delivery outputs, which measure what customers actually experience. Finally, there are responsiveness outputs, which measure how quickly Transco reacts when things go wrong. Transco explained that this framework made it easier to determine which outputs were important and which should be incentivised.

On the basis of the results of the customer research Transco had proposed a number of areas for marginal cost analysis:

- reducing the number of customer minutes supply loss following interruptions;
- reducing the number of shipper queries;
- managing traffic disruption;
- reducing greenhouse gas emissions; and
- improving the speed of the emergency response.

Transco discussed what they believed to be the next steps in developing output measures. Ofgem and Transco needed to:

- agree measures for customer valued outputs;
- agree mechanisms for managing changes;
- agree mechanism for reporting performance; and
- agree incentives to support output targets.

This might build on the capex monitoring framework and look at the total cost of achieving outputs.

3. Defining output measures for Transco's NTS

Ofgem presentation

Ofgem explained that as part of the price control process would set NTS outputs to cover entry capacity, exit capacity (LDZ connections and I&C connections), line-pack and other areas viewed as being appropriate.

It was noted that, in order to determine the appropriate output measures, Transco had been asked to produce forecasts of the efficient levels of capital expenditure and operating expenditure associated with a number of investment scenarios and associated output measures. Some of these scenarios were based on low levels of demand growth, others on high levels of growth. The scenarios would be presented to the industry for consultation. It was recognised that, although Ofgem would like to maintain transparency in setting the output measures, some of these discussions would need to take place on a confidential basis. The output measures would then be defined based on the results of the consultation.

Transco presentation

Transco noted that there were a number of options for setting output measures for the NTS TO role. These included measures of throughput, capacity and a number of other outputs such as new connections, linepack and pressure services. Throughput was believed to be a relatively poor measure of costs and value for system users. Capacity was argued to be a more relevant measure, although the locational requirements for entry capacity were a source of considerable cost uncertainty.

Transco asked for views on whether the sum of entry capacity should exceed the sum of exit capacity to allow for flexibility in sourcing supplies.

Transco explained that there were a number of important outputs for the SO role including:

- the safe and reliable operation of the system;
- balancing the system;
- fine-tuning capacity;
- gas blending;and
- information provision.

Discussion

Discussion at the end of the session covered a number of issues.

Entry vs exit capacity

Ofgem argued that exit capacity would become a more important issue because of NETA and interconnector flows. Increasing within-day profiling of flows by power stations and through the interconnector would probably cause exit constraints. Transco noted that the focus to date has been on entry because of the uncertainty regarding imports at St Fergus and Bacton.

Base plan assumptions process

There was a debate as to how the BPA process could be improved and made more comprehensive and how the work on setting output measures for the NTS should be taken forward. Ofgem noted that licence holders may be compelled to submit data, but this is not the case for producers. It was therefore important to open avenues for discussion by allowing some degree of confidentiality.

A number of participants were concerned that Ofgem and Transco's decisions were often not in the best interest of the market. There therefore needed to be close contact between Ofgem, Transco and the wider community, such as an industry-working group, to develop output measures for the NTS.

Transco suggested that it was important to tap into market information in real time, though there were problems as a result of Ofgem regulating the onshore regime and the DTI regulating the offshore regime.

Ofgem emphasised that there was no easy answer on how to develop output measures. There was a trade-off between transparency and the confidentiality/completeness of information. Ofgem intended to a pragmatic approach to the development of output measures.

Gold-plating

There was some concern that increased flexibility in entry capacity might lead to Transco gold-plating the system. Transco replied that investment in capacity was based on regular discussions with end users. Gold-plating was no longer an issue. It was appropriate to invest in the NTS to provide flexibility of supply sources in order to improve security and to support a competitive supply market.

Ofgem explained that this was a reason for developing output measures. Consultation on the appropriate supply/demand scenarios and an examination of the efficiency of the associated capital expenditure would avoid any goldplating.

Security of supply

There was a discussion of whether the current 1 in 20 legislative standard for security of supply was still appropriate and whether customers would be willing to accept lower standards for security.

Ofgem noted that because of the structure of interruptible contracts there was considerable uncertainty for customers with I&C loads. The existing 45-day interruptible contracts potentially mean a very non-firm service. Ofgem's work on the interruption regime aimed to develop a greater range of interruptible services.

Peak deliverability or seasonal profile

A participant argued that ultimately there was a need to deliver customers' needs efficiently at the appropriate time of year. However, in the short-run it was impossible to develop a realistic profile. Therefore there may be a need to use peak deliverability for the beginning of the price control, and create incentives for Transco to fine-tune the amount of capacity made available on the day.

Linepack outputs

A number of participants were concerned about how linepack outputs might work. Ofgem explained that it would be necessary to define the intrinsic flexibility in the system and then for Transco to make this available to shippers.

4. NTS incentives

Ofgem presentation

Ofgem explained the form of future TO incentives. Ex-ante output measures would be set for the next price control period after a process of consultation. Transco would sell the agreed entry capacity through a combination of shorter and longer-term auctions. Complementary arrangements would be introduced for the sale of exit capacity rights. Transco would retain any revenue associated with capacity sold over and above the agreed output levels but would be exposed to the costs of buy-back at market prices.

This mechanism would create symmetric incentives for the TO as it would retain the benefit of exceeding output measures, while being exposed to the costs of failing to deliver capacity.

Ofgem noted that its forthcoming document on gas balancing would consider SO incentives. It believed that balancing incentives should be widened to include shrinkage and gas quality. SO incentives would need to be aligned with the framework for capacity sales to reduce the scope for inefficient arbitrage.

Transco presentation

Transco suggested that NTS allowed revenues could comprise a fixed element plus a number of entry capacity adjustments, based on the difference between actual and planned capacity at different entry points multiplied by appropriate marginal cost factors. Modelling work would be needed to determine robust cost factors.

Transco noted that Ofgem's proposed incentives mechanism went a step further. It suggested that the determination of revenues should be integrated with investment decisions.

Transco argued that SO incentives should continue to be based on profit-sharing regulation with appropriate caps and collars. There were a number of important SO costs such as balancing costs,

shrinkage costs, the cost of buy-backs and the costs of blending. The key issue was whether there should be a single incentive scheme or separate incentives to minimise these costs.

Discussion

Discussion at the end of the session covered a number of issues.

Relationship between TO and SO

A delegate asked about the TO/SO roles for the NTS. Transco felt that the interface was fairly clear with the TO responsible for building capacity efficiently and the SO taking this capacity and managing it efficiently on a day-to-day basis.

Benefits of TO/SO split

A delegate questioned whether splitting the NTS business into a TO and SO would generate any real efficiencies and suggested that it might generate significant costs. Although different skills are needed for both roles it is difficult to see why these could not be provided by a single entity. Transco felt that having separate SO and TO roles separated could bring more focus on delivery. The roles are already split managerially. The delegate remained unconvinced that splitting the TO and SO functions would bring any cost reductions.

Ofgem noted that the direct costs of the SO business were small, but there may be large indirect costs in terms of the system operator's impact on the wider market. Further, exposing NGC to more of the system and energy balancing costs had led to substantial reductions in the overall costs of system operation. Similar benefits were expected for Transco.

Exposure to system and energy balancing costs

Transco did not feel that it was appropriate to have uncapped liabilities, particularly for an "asset light" SO business. Ofgem replied that in the commercial market liabilities are capped within contracts. The same would apply for Transco. Transco must set out what it will deliver but there should be no artificially low limit (e.g. £5 million) on liabilities. Transco said that reasonable compensation was not being contested, but that uncapped exposure was. Transco pointed out that in a commercial environment the acceptance of risk is factored into the agreed price. Transco felt that it is not in the interests of either side to have unlimited liabilities.

Auctions and investment incentives

There was a discussion of whether it was appropriate for auctions to drive investment decisions or whether alternatively these should be based on a consultation process.

A participant commented that Ofgem's suggested approach was to use auctions to drive the investment process. Transco would retain additional revenue for the sale of capacity above the agreed output measures.

Transco said that the definition of outputs ought to be tied back to the consultation process. It was an attractive idea for Transco's investment programme to be directly driven by auctions. However, a large number of issues needed to be resolved before such a mechanism would be possible. Transco had therefore focused on a more general approach, which would rely on future consultation.

Ofgem noted that it was not proposing a mechanistic process. Fixed output measures would be agreed on the basis of consultation. The auction of this capacity or the secondary market may indicate the need for further adjustment mid-period. However, a view would need to be taken on whether to invest in 40-

yr assets of the basis of five year sales. The auctions would provide an extra valuable source of information.

Exit capacity

A participant argued that it was not obvious that similar arrangements should apply for exit capacity as well as entry capacity. He asked Ofgem when this area would be discussed further. Ofgem noted that there may not be price auctions for exit capacity. However, once the outputs were determined they would need to be made available for sale. Ofgem's forthcoming interruptions document would set out the problems with the existing interruption regime. In particular, it would consider whether there was a real choice between firm and interruptible capacity.

5. LDZ and shipper services outputs

Ofgem presentation

Ofgem noted that RPI-X price controls provide incentives to improve efficiency. However, there was a need to provide focused incentives on Transco to deliver the appropriate quality of performance and ensure that short-term performance is not improved at the expense of long-term integrity of the LDZ networks.

Clearly, there were a number of ways of incentivising the quality of service, such as guaranteed or overall standards of performance or other contractual mechanisms. Ofgem believed that price controls should incentivise the quality of performance in key areas that affect gas the market as a whole.

Ofgem noted that it considered continuity of supply to be a key area of LDZ asset performance. Possible LDZ output measures included the total number of customer interrupted and the total number of customer minutes supply loss due to LDZ factors upstream of the meter. Such measures would need to be disaggregated by cause and by LDZ.

Ofgem also considered it important to monitor the longer-term reliability of Transco's networks. One possible approach was for Transco to provide an annual narrative statement of the medium and longer-term condition of individual LDZs. Relevant indicators included the number of publicly reported gas escapes and the safety confidence level for mains.

Ofgem recognised that shippers have a number of key concerns such as timely query resolution and correct transfers. Ofgem had asked for data on these as part of the BPQ process. However, it considered that the quality of such services was most appropriately covered by Network Code standards and associated liabilities.

Transco presentation

Transco gave a detailed presentation of its outputs model in the context of the LDZ networks. It discussed how the model would apply to a particular aspect of its performance such as the continuity of supply. The symptom or delivery measure that customers saw was an interruption to their supply. There were a number of possible causes such as water ingress or escapes on service pipes. When a customer called the Transco helpline a service engineer would be sent out. The standard of service or responsiveness measure was the time taken to make safe and reconnect the customer's supply.

Performance could be improved be investing in making safe and faster reconnections. However, improvements in responsiveness needed to be balanced with longer-term measures such as replacing service pipes and mains. Appropriate stewardship was one of the key ways of meeting performance targets.

Transco gave examples of relevant output measures for safety and the environment, reliability and facilitating competition and choice. Possible stewardship measures for safety included the safety confidence level for mains and services. A possible delivery measure was the number of instances of uncontrolled gas entry into buildings. Relevant responsiveness measures included the speed of the emergency response.

Transco discussed a number of outputs for the reliability of the gas supply. The number of customers whose supply is safeguarded at 1 in 20 conditions was a possible stewardship measure. The continuity of supply to end-users was a relevant measure of delivery, although Transco noted that it did not measure the number of minutes supply lost at present.

Discussion

General

There was a discussion of which LDZ services should be covered by guaranteed and overall standards of performance or contractual mechanisms and which services should be covered by the price control.

One delegate suggested that the only service appropriate to cover in the price control was continuity of supply. Ofgem noted that this view was in line with its own thinking. Ofgem felt that it was appropriate to have outputs as part of the price control where they are not covered elsewhere and also applicable to the whole of the market.

Some delegates did not see the need for outputs to be part of the price control. They argued that Transco should meet minimum standards of service and fulfil all its statutory obligations without the need for further incentives. Ofgem suggested that in practice this was difficult to police, the threat of withdrawing Transco's licence for failing to meet a minor output was inappropriate. However, micro management by the regulator should be avoided.

Transco noted that there was a difference in the relationship between Transco and shippers and Transco and end customers. The price control dealt primarily with the relationship with shippers. Transco pointed out that, if some of the outputs discussed were covered through the price control, there needed to be a mechanism to allocate the changes in transportation charges to different shippers.

Ofgem noted that it was important to record data separately for each LDZ. A delegate suggested that at least one LDZ should be sold off to provide a benchmark for others. Transco felt that this would clearly require separate LDZ controls.

Continuity of supply

There was a discussion of whether continuity of supply should be covered by a guaranteed standard of performance or by incentives under the price control. One delegate suggested that only a very small number of customers were interrupted. They should be paid compensation through a guaranteed standard of performance. Another participant argued that the net effect on Transco's performance would be the same. The difference was which customers received compensation payments. Ofgem suggested that it might be easier in gas to compensate the relevant customers through guaranteed standards of performance. In electricity the situation was different because it was not always possible to identify the customers affected.

Ofgem noted that a guaranteed standard of performance might relate to a particular time frame. This could create perverse incentives for Transco to reconnect customers too quickly. There may therefore be justification for an overall standard or for incentives under the price control on the total number of minutes supply loss to offset this effect.

One participant argued that the reliable delivery of gas by was aspect of Transco's performance. It was therefore appropriate to have both a guaranteed standard and incentives under the price control.

Safety

Ofgem asked for views on whether safety issues should be dealt with in the price control. There was clearly a trade-off between the price of gas and safety. The question was what target was acceptable to society at large and whether Transco achieving this in an effective way.

Participants' views were mixed. A number of participants expressed concern about the possibility of safety being incentivised through the price control. They argued that safety standards were adequately covered by legislation and Transco should not be rewarded for complying with the law. However, some other participants felt that it would be reasonable for Transco to be incentivised to improve safety standards above the minimum level established by legislation.

One participant argued that Ofgem was an economic regulator and not responsible for Health and Safety. The HSE should therefore incentivise Transco to improve safety. Ofgem replied that the Director General has a responsibility in relation to safety, but to date Ofgem's view has been that the statutory provisions for safety were sufficient.

Another participant suggested that a major part of Transco's cost base related to meeting standards for safety and security of supplies. These needed to be examined to understand the stream of allowed revenues. He argued that the number of incidents of uncontrolled gas entering buildings was a proxy for fatalities. There had not been an extreme incident in a number of years, but there may well be some in the future.

Appendix 3 Initial definitions of output measures

1. Output measures incentivised under the price control

(a) Number of customer interruptions

The number of non-contractual interruptions of supply to customers connected to Transco's LDZ network per 100 connected customers per annum.

A customer is defined by their unique Meter Point Reference Number (MPRN) or connected system exit point (CSEP).

Inclusions

- All planned (pre-arranged interruptions)
- All unplanned interruptions to supply resulting directly from Transco's management, operation and design (including lack of available capacity) and maintenance of the LDZ networks .
- Interruptions due to 3rd party damage including force majeure
- Non-availability of gas at LDZ entry points

Exclusions[30]

Loss of supply from:

- causes downstream of the meter control valve; and
- contractual interruptions instigated by Transco, end customers or shippers.

[30] Additional exclusions may be added as the definitions are refined or in the light of responses to Chapter 4.

(b) Duration of customer interruptions

The average number of customer minutes lost per connected customer per year, for customers fed directly from Transco's LDZ networks, resulting from non-contractual interruptions of gas supply.

A customer is defined as above.

Inclusions

- All planned (pre-arranged interruptions)
- All unplanned interruptions to supply resulting directly from Transco's management, design (including lack of available capacity), operation and maintenance of the LDZ networks .
- Interruptions due to 3rd party damage including force majeure
- Non-availability of gas at LDZ entry points

Exclusions

Loss of supply resulting from:

- causes downstream of the meter control valve; and
- contractual interruptions instigated by Transco, end customers or shippers.

2. Outputs measures to monitor delivery between reviews

(a) Availability of the internet data access service

Possible definitions include measures include the number of number of times the internet service is down, the length of time the service is down, the number of (un)successful hits and the accuracy of information.

(b) Speed of resolution of shipper queries

The number of transportation related queries received per [month/annum] per consumer and per shipper

% of all queries received by Transco that were investigated and resolved within [10] Business Days.

% of all queries received by Transco that were investigated and resolved within [20] Business Days.

Mean time taken to investigate and resolve queries outstanding after [20] Business Days

Definition of a query:

Transportation queries were defined at the Bosworth Customer Service Summit as a "*...reasoned opposition to the validity of data held or issued by Transco which is related to a specific Shipper" and which is "... intended to require action from Transco to correct invalid or missing data and, if necessary, correct any information which is derived from that data".*

This includes Invoicing and Operational queries.

(c) Gas Safety

Rolling average number of incidents arising from the metallic mains population over a ten-year period.

Incidents in this context are defined as mains failures, leading to gas ingress to property, with subsequent ignition causing death, serious injury, or significant structural damage.

Appendix 4 Examples of possible medium-term performance measures

Note: Ofgem would only expect data to be provided in relation to faults[31] (or failures) that would lead to a loss in serviceability for individual workstreams.

NTS

The number unscheduled repairs (or replacements in components)[32] by duration band for:

- Terminals;
- Pipeline Systems;
- Compressors; and
- Off-takes.

Number of new features revealed by on-line inspection.

Number of occasions where preventative measures were taken.

Estimated methane emissions from planned operations and operation of release valves.
NOx emissions (tonnes)

LDZ networks (to be reported on an individual basis)

Forecast demand in a 1 in 20 peak year. (Forecasts should be provided for the next five years.

LTS

The number of unscheduled repairs (or replacement in components) by duration band for:

- Pipeline systems;
- Off-takes; and
- High Pressure Storage Plant.

Number of new features revealed by on-line inspection.

[31] Includes failures addressed by system design (e.g. standby regulator streams) and failures relating to control systems

Number of occasions where preventative measures were taken.

Distribution IP tier

The number of unscheduled repairs (or replacement in components) by duration band for:

- Pipeline systems
- Offtakes

Number of Publicly Reported Escapes.
Number of reports where no escape is found.

Distribution MP tier

Number of Gas in Buildings disaggregated by material type.

Number and duration of unscheduled repairs (or replacement in components) for:

- Pipeline systems; and
- Offtakes.

Number of Public Reported Escapes.
Number of reports where no escape is found.

Tonnes of methane lost through leakage.

Distribution LP tier

Number of Gas in Buildings disaggregated by material type.

The number of unscheduled repairs (or replacement in components) by duration band for:

- LP Network;
- Off-takes; and
- LP holders.

Number of Public Reported Escapes.
Number of reports where no escape is found.

Tonnes of methane lost through leakage.

Data should be normalised to reflect the size of the particular asset population and broad asset categories. It should expressed, for example, as repairs per 100km of spun iron main or new features per 100km of NTS pipeline inspected (on-line inspection). For those measures where third party damage is a factor, this should be reported separately.

Appendix 5 Initial thoughts Seminar

FORMAT

1.1 The seminar will last for a full day. The main sessions will include short presentations by Ofgem and Transco, and periods for open discussion.

1.2 The themes to be covered on the day are as follows:

- Form and structure of controls;
- Output measures and framework;
- Investment requirements and efficiency; and
- Financial issues.

A buffet lunch will be available

VENUE

1.3 The venue is the British Library, 96 Euston Road, London NW1 2DB

DATE AND TIME

1.4 The seminar will be held on 5th April 2001, starting at 9.30am.

INVITATION

RESPONSE FORM FOR ATTENDANCE AT THE SEMINAR ON THE TRANSCO PRICE CONTROL REVIEW

Initial thoughts Seminar 5th April 2001, commencing at 9.30am

Name and position

Organisation

Address

Telephone No.

e-mail

Do you have any special dietary requirements?

Do you have any other special requirements?

Please send your response by **16 March 2001** to

Graham Jones
Regulation and Financial Affairs
Office of Gas and Electricity Markets
9 Millbank
London SW1P 3GE

e-mail: graham.jones@ofgem.gov.uk

FAX: 020 7901 7478

Appendix 6 Summary of Business Plan Questionnaire provided by Transco

Periodic Review

Summary of Transco's Response to the Business Plan Questionnaire

February 2001

Contents **Page**

Schedules:-

- Annual Throughput and Peak Day Demand
- Operating Costs by major category of expenditure
- Operating Costs by Business Area
- Investment (Gross and Net)
- Investment Expenditure by Output Category

Introduction

As part of the Periodic Review process, Transco has responded to Ofgem's Business Plan Questionnaire (BPQ). That BPQ response contains a summary of Transco's performance in the present price control period and forecasts of future operating and capital costs assuming a continuation of the present business model.

This paper (Business Plan Overview) was submitted to Ofgem on 18th December to provide an overview of Transco's BPQ response, together with Transco's assessment of the wider environment in which the present Periodic Review is being conducted. The paper was also published by Transco on its website. It is now being published as part of Ofgem's Initial Thoughts document to assist in the consultation process.

In addition, a number of data schedules summarising throughputs, operating expenditure and investment, as submitted to Ofgem in the BPQ response, are appended. The investment schedules refer to a set of scenarios that Transco has developed, as described further in section 5.14. (It should be noted that data for year 2000 represents the forecast as submitted to Ofgem.)

Transco believes that it is facing a period of particular uncertainty due to the changing external context, and that this should be reflected in the Periodic Review.

1 Key Messages

Transco's objectives are clear

1. Transco's top priority is to operate a safe and reliable gas transportation system as efficiently as possible.

2. Transco is committed to meeting the priorities of the users of its network, gas customers and the public at large as regards the outputs – performance levels, system capacity, customer service standards, etc. - delivered under the regulatory framework.

3. Within the regulatory framework Transco needs to finance its functions efficiently and sustainably, securely servicing its debt and bonds, and providing a competitive risk-related return to shareholders.

Past performance is exemplary

4. Transco is meeting increasingly higher outputs for lower unit costs. Since 1992, Transco has met increased gas demand of 8% a year, and while doing so has reduced unit operating costs by 11% a year in real terms, one of the highest rates among the regulated utilities.

5. Over the period 1997 to 1999, Transco met or exceeded 18 out of 19 output targets related to its investment programme, and did so at lower cost than allowed for in its price control.

The scope for future efficiency improvements is limited

6. Transco's cost structure and the maturity of the productivity drive over successive regulatory cycles mean that the historic rate of cost reduction is not sustainable. Nonetheless, Transco's response to Ofgem's BPQ is based on significant reductions in underlying costs.

7. Transco plans to achieve these savings using existing techniques, such as internal benchmarking of Local Distribution Zones (LDZs), which can be nationally driven. To access further savings, Transco's structure will probably need to be broken down to give greater responsibility to individual management teams.

8. Transco is actively unbundling its connections, metering and meter reading activities in order that they become subject to normal market forces. This should be done on a basis that recognises past investment while preserving service standards during the transition to competition.

Investment requirements are uncertain

9. Against the background of continuing growth in gas demand and potentially growing dependence on gas imports, there is considerable uncertainty over the supply patterns which Transco's National Transmission System (NTS) will need to accommodate. Providing flexibility to cater for this could entail of the order of £1 billion of incremental investment in addition to that already planned. If Transco is to be able to raise the capital to provide this flexibility, the regulatory framework needs to take proper account of continuing uncertainty, and the cost of capital must be competitive.

10. Increasing investment demands are being placed upon Transco as a result of emerging public policy objectives and priorities, some - such as social and environmental considerations - now enshrined in the Utilities Act 2000.

11. While Transco has maintained safety levels, there are heightened concerns over public safety generally, and increasing consideration of the appropriateness and practical timescales associated with the rate of replacement of metallic mains. Transco will work with the Health and Safety Executive (HSE) and Ofgem to establish a clear framework for determining the required investment and the revenues needed to finance it. This may require specific funding mechanisms.

The current regulatory regime may need to be modified to reflect broader customer valued outputs

12. The current approach to economic regulation has helped deliver substantial cost savings to consumers, but it focuses on the achievement of continually increasing efficiency under existing circumstances rather than on the basis for meeting new investment demands, or providing resilience to handle unexpected events. Transco believes that a different approach may be appropriate which broadens the focus and analysis of trade-offs to a wider definition of customer value – a balance of economic efficiency, reliability, safety, social and environmental benefits.

13. One aspect of this would be a framework which recognises the inherent unpredictability of important elements of Transco's investment programmes and allows required outputs, and the associated investment programme, to be revisited on a rolling basis.

14. Establishing NTS and individual LDZ price controls would provide a basis for greater autonomy and accountability, while encouraging greater responsiveness to customers' local needs. Transco believes it would be possible to minimise any price disruption through a transition to separate LDZ controls.

Access to finance is essential

15. Transco is one of the largest investors in Britain's infrastructure and needs continual access to deep and diverse sources of funds in order to efficiently raise the capital needed to meet customer requirements for safety and service standards. Having regard to the relatively high level of gearing required for financial efficiency, Transco needs, amongst other factors governing its status as a borrower, to be able to retain a mid single A grade credit rating on its debt.

16. The ability to finance new investment in the gas network is critically dependent on equity holders and lenders receiving competitive rates of return on their capital. More specifically, the terms of the new price control should recognise the turning point in Transco's investment cycle and the need to facilitate the projected phase of substantially increased investment.

17. The perception of regulatory risk will have a material bearing on Transco's cost of capital, especially given the prospect of a substantially increased investment programme. To provide the stability which debt and equity investors require, Transco's regulatory value should be rolled forward from current levels taking into account actual net investment.

2 Transco's Objectives

2.1 Transco's corporate objectives are to:

- operate a safe and reliable gas transportation system as efficiently as possible;
- meet consumers' and customers' priorities, including:
  - meeting Gas Act and Licence obligations;
  - meeting appropriate service standards; and
- increase efficiency so as to:
  - improve value for money for consumers; and
  - enhance shareholder value through a regulatory framework which gives a reasonable return and management incentives.

2.2 Subject to not prejudicing the above objectives, Transco also seeks to:

- meet social and environmental objectives; and
- assist the Government in achieving a diverse and viable energy supply.

2.3 Transco's core objective is to build, maintain and operate an efficient, safe and reliable gas transportation system. This includes not only the physical gas transportation network but also providing the infrastructure and procuring or developing the systems needed to support the commercial regime underpinning competition to supply over 20 million gas consumers.

2.4 Safety is Transco's number one priority. Commitment to achieving high standards of safety performance is underpinned by wide-ranging statutory and regulatory obligations. Whilst Transco puts enormous effort into the safe and reliable operation of the gas transportation system, incidents will nevertheless occur. Transco's response has always been to attend quickly, make the situation safe, and then to ensure a timely, efficient and effective restoration of supplies. Transco also puts significant resources into improving performance in respect of its employees safety and has recently been subject to an HSE audit in this respect.

2.5 Consumers also expect gas to be available whenever they wish to use it. Transco's transportation system is at the heart of how reliability is assured, with security of supply being an important consideration as the network is maintained and developed. Transco also seeks to meet shippers' and customers' other priorities, in particular as set out in standards of service. These include Public Standards of Service, under Standard Condition 19 of the PGT Licence, and Transportation Standards under the terms of the Network Code. In addition, Transco delivers a number of standards of service for its connection activities and also maintains a number of service level agreements with service providing companies.

2.6 While aiming at all times to meet standards, Transco is also focussed on doing so efficiently. This is in order both to provide value for money for consumers and to meet shareholder expectations. The drive for innovation and efficiency is a critical element which enhances shareholder value. However, this needs to be within a regulatory framework which allows a reasonable return on funds already invested as well as future investment and which provides incentives for management to improve returns to shareholders, in order to be able to attract the capital necessary to finance Transco's functions.

2.7 Transco also recognises that it has a wider social and environmental role, which can be met subject to appropriate recognition in the regulatory framework. The Utilities Act 2000 reflects these wider objectives and requires the Secretary of State to issue guidance to the Gas and Electricity Markets Authority (GEMA) about social and environmental matters.

3 Delivering Obligations

Performance against required outputs

3.1 Transco's performance is focused on cost-effective delivery of outputs (for example, safety, standards of service, system capacity, market liberalisation). The importance of focusing employees on the achievement of outputs, together with the drive for on-going efficiency improvements, is reinforced through Transco's reward and recognition mechanisms.

3.2 Under incentive regulation Transco is motivated to deliver its obligations more efficiently than allowed for in determining the price control. Such out-performance creates shareholder value during the price control period – thus balancing the downside risk for equity investors - with benefits passed on to customers through reductions in the cost base underpinning the next price control.

3.3 Alongside this paper, Transco is publishing a report that sets out its achievement over the period 1997 to 1999 in delivering investment related outputs. This performance is compared with that expected at the time Transco's present price control was set by Ofgas in 1997, following a report by the Monopolies and Mergers Commission (MMC). Over the three years from 1997 to 1999, Transco has met or exceeded eighteen out of the nineteen agreed outputs. This strong investment performance has been delivered whilst continuing to balance over-riding obligations to transport gas throughout Great Britain safely and reliably.

3.4 Highlights of Transco's achievements over the three years 1997 to 1999 include:

- replacing around 6,000 kilometres of mains and 500,000 service connection pipes to reduce levels of risk, and hence maintain safety, at a cost of around £500 million;
- transporting increasing volumes of gas with minimal disruption;
- facilitating the introduction of competition into the domestic gas market within extremely demanding timescales;
- maintaining the continuous operational and commercial integrity of Britain's highly developed gas network, facilitated by one of the largest and most complex information systems in Europe;
- enabling the introduction of new gas trading arrangements for gas balancing and capacity trading;
- underlining commitment to the environment by achieving ISO14001 accreditation for environmental management systems throughout the company, becoming the first national based utility in the world to achieve this internationally recognised standard for all its operating sites;
- designing and introducing the Transco Affordable Warmth programme to improve the level of comfort in up to one million fuel poor households; and

- ensuring that the transition to the year 2000 passed without material disruption from the so called “Millennium Bug”.

Past performance on operational efficiency

3.5 A feature of past price control reviews has been the focus on operational efficiency, underpinned by a desire to secure continually lower prices for consumers. This has been sought through reductions in the real costs of operating the business and the introduction of market liberalisation reforms to facilitate greater competition and thereby expand customer choice. Transco has responded with major operational improvements. Headline statistics are summarised in Table 1.

Table 1: Summary of Performance 1992-2000

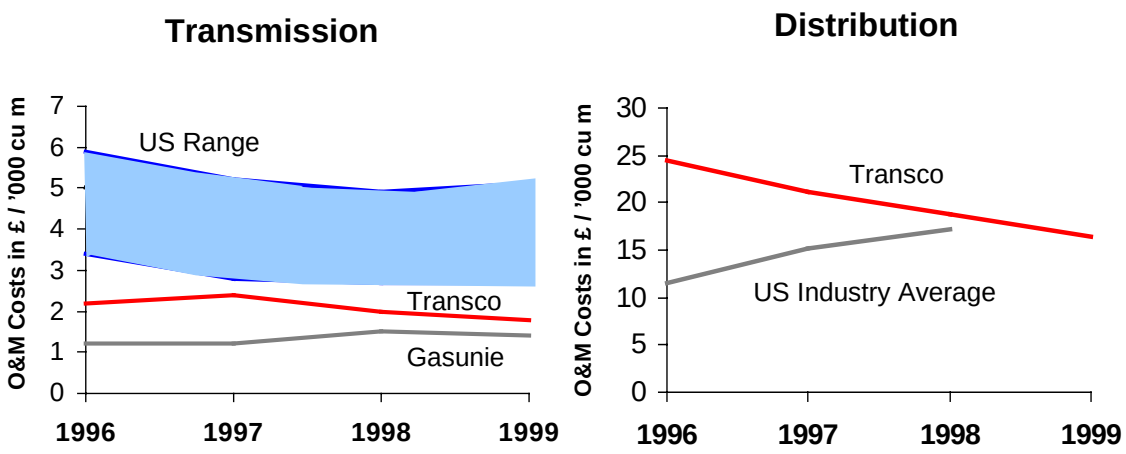
2000 prices	**Change**	
Total Operating Expenditure	**-£530m**	**-29%**
Total Manpower (FTE)	**-9,900**	**-38%**
Average annual increase in throughput	**8% pa**	
Average annual reduction in Real Unit Operating Expenditure	**11% pa**	

3.6 Table 1 demonstrates how nearly a decade of restructuring has transformed Transco’s cost base and delivered high productivity growth, such that Transco can now claim to be an efficient company. Changes on this scale are not repeatable.

3.7 This is supported by a range of indicators, which show that the GB gas sector in general is now close to best international levels of productivity. Transco specifically is shown to be a top quartile performer based on comparisons with its peers. The graphs in Figure 1 below show the available data on Transco’s transmission and distribution activities relative to American and European counterparts. It should be noted that the graphs:

- are in money of the day terms (not real terms), and hence understate the underlying rate of productivity improvement; and
- show absolute levels of costs per unit of throughput.

Figure 1: Operations and Maintenance Costs per Unit of Throughput



Compiled from published data.
All costs exclude depreciation. Costs are in money of the day.
Estimate of UK supplier costs based on Ofgem figures has been added to Transco distribution costs.

3.8 Another possible comparison of Transco's performance is with that of the British electricity industry (transmission and distribution). This may be considered a particularly valid comparison in view of the shared regulatory climate. It should be noted, however, that Transco differs in a number of structural and operational respects – most notably that, unlike electricity, gas fails to danger, and hence carries additional major safety obligations that have to be met, such as the requirement to speedily investigate any reported gas escape.

3.9 Bearing this qualification in mind, the productivity growth numbers published by Ofgem as part of the National Grid Company (NGC) Price Control Review (August 2000, Table 8.1) suggest that both gas and electricity have significantly outperformed other sectors of the GB economy throughout the 1990s. Gas achieved a 7.5% pa improvement in Real Unit Operating Expenditure for nine years between 1987 and 1996, and electricity about 6 to 7% pa for seven years between 1991 and 1998.

3.10 Transco recognises that this comparison favours gas because of the higher output growth of gas in the 1990s compared with electricity. Nevertheless, the comparisons suggest that productivity improvements in gas transportation have been sustained over a long period and at a higher rate than electricity in the 1990s. At the same time, the gas industry also made more rapid progress in terms of introducing domestic competition and market-based energy balancing and capacity allocation systems.

Future efficiency improvements

3.11 Transco believes that it is now moving into a phase where productivity improvement can be expected to progress more in line with economy wide average rates rather than the high rates achieved over the past decade. This is

also consistent with a prospective slowing in the rate of growth of gas throughput.

3.12 Two other factors are also important in the projections. As agreed with Ofgem, Transco has:

- responded to Ofgem's BPQ by providing a business plan based on achieving present standards of service and fulfilling known regulatory and legislative requirements; and
- based the projections on the current "as is" organisational structure.

3.13 On this basis, Transco's aggregate operating costs that are broadly flat over the projected period. However, within this profile, operational efficiency improvements are masked by increases in externally driven costs. Over the period to 2007 Transco is faced with:

- the impact of real earnings growth, which Transco must match in order to retain and recruit an appropriately skilled workforce. Employment costs currently account for around 40% of Transco's total operating costs of £1.3 billion;
- Government reviews of, for example, formula rates which Transco forecasts may increase costs by nearly £40 million (18%) by 2006 compared with current levels;
- energy market developments that are seeing gas market prices rising in response to increases in world oil prices and the strong link between oil and gas prices that exists in Continental Europe. This has a knock-on effect on the real unit cost of shrinkage (system loss and gas used for own purposes), which, together with rising gas volume requirements, leads to a forecast increase of almost £60 million in shrinkage and storage costs by 2006; and
- Government and other regulatory developments ranging from the European Union's Working Time Directive and the possible introduction of Economic and Monetary Union, to the adoption of Financial Reporting Statement 17 on Retirement Benefits. The latter, for example, could increase Transco's costs by about £40 million per annum.

3.14 The impact of external drivers on Transco's cost base demonstrates the need to consider underlying cost performance when establishing the scope for further operational efficiencies. Should other external cost pressures arise, it cannot be assumed that Transco would be able to deliver additional offsetting productivity improvements.

3.15 The measure of underlying business costs shown in Table 2 below excludes the following major cost categories over which Transco expects to have limited or no influence: formula rates; shrinkage and storage costs (due to gas price exposure); FRS17 effects on pensions requirements; external fees and obligations

(including the PGT Licence fee); and various other adjustments including one-off costs in 2000.

3.16 Currently, underlying business costs amount to about £920 million. Table 2 summarises the forecast trend in underlying business costs.

Table 2: Summary of Forecast Performance

2000 prices	**Change 2000 – 2006**		**Change pa**
Underlying Business Costs	**-£76m**	**-8%**	**-1.4%**
Underlying Unit Costs (Cost/TWh - £000)	**-£106**	**-13%**	**-2.3%**

3.17 The forecast reduction in underlying real costs of 1.4% pa represents a productivity improvement of 2.3% pa based on throughput as the measure of output. This reflects efficiency gains built into the underlying business cost projections amounting to over £140 million in 2006 compared with 2000. Part of this gain is required to fund projected real increases in employee pay, in line with economy wide trends, and some is offset by the effect of higher projected workloads. Additionally, almost 40% of underlying business costs is already sourced externally with third parties and is therefore subject to market forces and contractual arrangements.

4 Periodic Review Context

4.1 In its July response to Ofgem's initial consultation paper, Transco pointed out that this review of its price control was taking place at a time of rapid change for energy markets, and for utilities and regulation generally, leading to increased uncertainty. This has been confirmed by subsequent events which, if anything, have increased this uncertainty as regards the impact of structural changes and public policy issues on Transco's future investment and operational programmes.

Energy market developments

4.2 In terms of energy markets, Transco's July response suggested that one of the developments which should be factored into the review was the closer integration between gas and electricity markets in Great Britain. With the New Electricity Trading Arrangements due to come into effect next year, it has been suggested that the gas trading arrangements may need to account for transactions and settlements on a more frequent basis. The practical implications for the gas industry, and particularly for Transco's operations, could be considerable. The gas supply system may need to be responsive to load-following gas-fired power stations – the more so if gas prices remain high. The recent lifting of the Government's 'stricter consents policy' on the construction of new gas-fired power stations may also increase the degree of integration.

4.3 Concerns regarding security of energy supplies have also been brought to the fore, for example as a result of the recent road fuels crisis. Hitherto, there had been little questioning of the assumption that efficient markets would deliver both lower prices and supply security. However, in light of the disturbance caused by road fuel shortages, it is also relevant to question the security of other energy supplies and whether a market solution alone is sufficient to provide assurance of supply security. This is an issue in which the HSE also has a role.

4.4 Potential concerns about security of supply also derive from the prospective tightness of gas supplies. For the first time, Transco's systematic annual review of the gas supply/demand outlook for the British market[33] has indicated a shift from a medium-term supply surplus to potential supply tightness and growing dependence on gas imports. Overlaid on this is the short-term impact of the Interconnector pipeline to Continental Europe, which has both increased net exports and helped establish a link between British and European gas prices. Another emerging trend is declining reliability of offshore gas production and the producers' increasing reliance on Transco's ability to accommodate short-term supply disruptions.

Changes in the external environment

4.5 The Utilities Act 2000 has introduced a specific objective of securing a diverse and viable energy supply. It has also added greater focus to the social and

[33] Ten Year Statement, Transco, September 2000

environmental dimensions of utility regulation, consistent with the views expressed in Transco's July response. The Utilities Act 2000 paves the way for utility regulation to accommodate social and environmental dimensions within a system which has so far concentrated on delivering lower consumer prices. Both in central government and in Ofgem attention is being focused on the practical realisation of this requirement.

4.6 Recent months have also highlighted the importance of maintaining and, where practical, increasing safety standards. The fatal rail incidents at Ladbroke Grove and Hatfield have highlighted public concerns about the safety of complex, potentially dangerous infrastructure networks and about the balance between economic efficiency, through privatisation and market-based industry structures, and the safety and integrity of the system.

4.7 The financial market context has also changed since Transco's present price control was set. Some relevant developments are:

- the Russian crisis in October 1998, when short term capital markets were all but closed for borrowers without prime credit ratings. During the last two months, spreads on non-prime debt have widened by over 1%, conditions not seen by borrowers with prime ratings;
- disruption in the bond markets throughout 2000, with a general widening of corporate spreads (i.e. margins over Government borrowing rates);
- increasing gearing among utilities, such as Hyder, illustrating that increased debt does not necessarily lead to a lower cost of capital; and
- increasing evidence that equity investors are seeking to extract capital from utility companies.

Implications for the regulatory framework

4.8 Transco remains convinced that continued delivery of safe, efficient services, in a way which is responsive to customer requirements, will be dependent on reflecting these changing circumstances in the regulatory framework. An approach is needed which balances the facilitation of industry development with conditions that encourage the additional capital investment needed to promote innovation, improve customer service and choice, and increase efficiency.

4.9 Transco believes the present Periodic Review provides an opportunity to consider whether the interplay between economic efficiency, supply security, safety, and social and environmental considerations is properly balanced. In the existing regime, economic regulation has been dominant, with the drive to reduce consumer prices generally regarded as the primary objective. Economic regulators have pressed for operational and capital efficiency on the assumption that safety and supply security will continue to be delivered. Structural changes to extend and promote competition in the interest of greater economic efficiency have been encouraged, so far with little direct consideration of potential trade-offs against operational integrity and safety.

4.10 For the future, a different view may be appropriate which broadens the focus and analysis of trade-offs to a wider definition of customer value – a balance of

economic efficiency, reliability, safety, social and environmental benefits. This potentially implies a reduction in the pace of change, with the adoption of a more cautious approach to structural complexity and new market mechanisms. A measure of insurance against shocks, in the form of flexible capacity and reserve operational capabilities, could be beneficial for consumers. Innovation which delivers social and environmental benefits would also be supported. To achieve this, utility finances and structures must be robust enough to carry the risks and uncertainties relating to safety and supply security.

5 Strategic Issues

5.1 Forward-looking incentive-based utility regulation, typically operating in five year periods, potentially works best when there is a clear definition of the scope of future investment and operational programmes. In Transco's case, the period covered by the next price control is expected to extend until March 2007. Yet the current issues for Transco and the gas industry, as outlined above, are not readily susceptible to such predictability of outcomes. This suggests there may be a need to make more extensive use of flexibility mechanisms so as to reduce risk and uncertainty and facilitate the efficient financing of Transco's functions.

5.2 The need to consider alternative approaches in recognition of the inherent uncertainties which must be faced can be illustrated by briefly considering the issues facing the gas industry in a number of key areas:

- the need to meet concerns about safety;
- the evolution of customer requirements;
- the part to be played by Transco in the delivery of the Government's social and environmental agenda; and
- the impact of changes in the supply and demand balance on investment by Transco.

Safety

5.3 Transco's gas transportation network has a good safety record. Transco has clearly demonstrated its commitment to investment in the network to meet its safety obligations. However, it is vital to continually assess the integrity of the network using sound methodology. This methodology itself is subject to regular review to ensure that it takes account of up to date best practice. The methodology used to assess the risk of failure of Transco's network is overseen by the HSE. Transco, together with the HSE and Ofgem, must continue to work very closely together to maintain the highest standards of safety.

5.4 All of this work determines the programming of replacement of metallic mains. Recent HSE findings have resulted in an agreed accelerated programme to replace medium pressure ductile iron mains within 30 metres of property by December 2002. This has been formally recorded under the terms of an HSE Improvement Notice.

5.5 Transco will work to comply with the Improvement Notice. It is also working with the HSE and Ofgem to determine an appropriate replacement programme for the remainder of its metallic mains, given that they are more likely to fail than those constructed from newer polyethylene. Should the HSE recommend a phased programme to replace all metallic mains, Transco stands ready to increase its replacement programme accordingly. The cost of such a programme would need to be reflected in the new price control, and would depend on the extent and rate of replacement but could be significantly greater than the current accelerated programme.

5.6 It is possible that agreement on appropriate standards and hence investment levels, may not be reached prior to the completion of the Periodic Review. In that event, it may be necessary to create as part of the Periodic Review outcome a mechanism by which changes in safety levels and associated investment can be reviewed.

5.7 A further potential safety issue relates to the way in which the emergency service is provided. To respond to safety concerns, the impact of the Working Time Regulations and the unbundling of metering services, it will be necessary to establish the gas emergency service on a stand-alone basis within the regulatory ring-fence. The cost implications of such a development are currently being reviewed within Transco, but will also need to be reflected in the price control to ensure proper funding of Transco's safety obligations.

Customer requirements

5.8 The requirements placed on Transco by shippers and customers are continuously evolving. For example, customers demand timed appointments for meter work while shippers value additional flexibility in standards of service. The Periodic Review provides an opportunity to set revenues for the next five years on the basis of the levels and standards of service required by customers.

5.9 Transco is committed to meeting customer requirements, but needs to be properly incentivised to do so. Hence Transco believes it is important to specify, as part of the outcome of the Periodic Review, the full range of outputs that Transco is expected to deliver. This will provide both a clear basis for monitoring delivery and for assessing the impact of any changes in required outputs during the next price control period. It will also assist in the development of a framework within which additional services could be provided only to customers that require them.

Social and environmental agenda

5.10 The developing social and environmental agenda introduces factors which impact the scope of Transco's activities and the way in which it carries out those activities. Examples include the growing pressure on Transco to connect 'non-gas areas' to the mains network and the provision for introduction of 'lane rentals' on Transco and its contractors. More broadly, new requirements may be introduced as a result of the provision in the Utilities Act 2000 whereby the Secretary of State is expected to issue guidance which the new Gas and Electricity Markets Authority (GEMA) should follow regarding social and environmental issues. Ofgem has also been developing a Social Action Plan in consultation with interested parties.

5.11 Gas has an important part to play in the eradication of fuel poverty and the reduction of greenhouse gas emissions. Where this leads to the introduction of new obligations, a mechanism is needed to ensure they are properly funded.

5.12 Transco has already been actively developing innovative approaches to meet social and environmental objectives, most notably the Affordable Warmth Programme. Provided the regulatory framework supports it, Transco will also co-operate with the Government to meet the objective, as set out in the Utilities Act

2000, of securing a diverse and viable energy supply. In particular, Transco has a role in helping to ensure the security of energy supply by managing a flexible and efficient gas transportation system.

Supply/demand balance and the impact on investment

5.13 A key investment uncertainty relates to the degree of flexibility which should be built into the NTS to accommodate differing patterns of supply. There is considerable uncertainty surrounding future levels of demand, and the sources of supply to meet that demand. This leads to significant potential variation in the requirements for NTS capacity. Equally concerns have been expressed about high gas prices and it has been suggested that there may be scope for greater competition between producers, and greater confidence among investors in offshore production, if the NTS offered greater flexibility.

5.14 To illustrate how investment costs might vary to meet differing circumstances, Transco has developed a set of scenarios to illustrate a plausible, but not extreme, envelope of potential investment costs. For the NTS, total investment forecasts over the next price control period range from about £½ billion to £1½ billion; in some circumstances the required investment could be even greater. This range illustrates the uncertainty which surrounds this element of the present Periodic Review, and the importance of providing a clear framework for determining and remunerating investment in NTS capacity.

Efficiency and restructuring

5.15 The RPI-X based approach to regulation has been effective in encouraging efficiency and significant customer benefits have been seen in all sectors subject to this form of regulation. Transco supports the promotion of effective competition, which offers the best protection for customers. To that end, it is working to unbundle its metering, meter reading and connections activities on a basis that recognises past investment and includes appropriate transitional arrangements to protect standards of customer service.

5.16 Transco would anticipate that an outcome of a traditional price control would be further limited restructuring, in order to drive efficiency, and continuing initiatives to reduce expenditure without impairing safety and standards of service. Beyond this, however, Transco believes that further business separation has the potential to give increased focus and management accountability which would encourage innovation and offer the best prospect of generating the further efficiency improvements which would deliver lower prices for consumers in the long term.

5.17 While a continuing drive for efficiency gains is in the interests of all stakeholders, it should be recognised that a continuation of the present approach would also maintain an incentive to minimise investment expenditure. While market mechanisms might help to inform investment decisions, Transco is concerned that there could be over-reliance on such mechanisms against the background of a relatively immature competitive gas regime in Great Britain, and comparatively illiberal European markets. In addition, market mechanisms cannot be expected to provide investment signals consistent with a wider definition of the public interest, since market derived prices do not generally

reflect national strategic concerns and wider social and environmental expectations.

5.18 Transco therefore believes there is merit in considering an approach which would be consistent with increased focus on output based regulation, with the desired outputs determined through a broad based approach encompassing the interests of all stakeholders. This would establish clearly the key outputs which are expected to be delivered, and would support subsequent adjustment factors to reflect variations in both the outputs required and the outputs delivered.

5.19 This could be put into practice by introducing formal mechanisms for recording the effect of changes in obligations and agreed outputs, with changes taken into account at the next Periodic Review on a basis which provides a reasonable return on capital or, in some circumstances, with adjustment of specific revenue allowances within the price control period. In addition to facilitating delivery of wider social and environmental objectives, such an approach offers the prospect of reduced regulatory risk leading to a lower cost of capital. This would in turn be expected to feed through to lower prices for all consumers.

5.20 Regardless of the approach adopted, decisions would need to be underpinned by revised price control formulae which reflect the degree of uncertainty which is foreseen. However, Transco believes that separate price controls for each of its existing LDZs would represent a key step since it would allow proper allocation and accountability for revenues, costs and regulatory value. In addition to helping to deliver more focussed management, separate LDZ price controls would also facilitate comparisons between LDZs, with the emphasis on benchmarking and identifying best practice being enhanced by the visible impact on LDZ specific financial results. In addition, ownership changes may be easier to achieve than when operating under a single price control.

5.21 The appropriate financial conditions also need to be established, as set out in the following section.

Financial issues

5.22 Ofgem is required to secure that Transco is able to finance the carrying on of its licensed activities. It is also required to promote efficiency and economy on the part of Transco in carrying them out.

5.23 Transco estimates that at the beginning of the new price control period its regulatory value will be approximately £13 billion, of which around £7 billion is expected to be financed through the debt markets (including the £1.5 billion of bonds issued by Transco Holdings, as part of the 1999 restructuring). Transco's debt book is the largest of any UK regulated utility, excluding BT.

5.24 Transco's objective to minimise its costs requires it to raise capital efficiently. Critical conditions for this are that Transco:

- operates under a stable regulatory regime;
- receives a reasonable return on its investment;

- is able to pay shareholders a dividend consistent with the required equity return;
- is able to maintain a stable, mid single A grade credit rating on its debt; and
- has access to deep and diverse sources of funds.

5.25 There is some doubt, particularly in the capital markets, whether all these conditions are met. Following the regulatory reviews of water and electricity distribution industries in late 1999 there has been a material change in investors' attitudes towards utilities. This has increased the cost of both debt and equity, and restricted such companies access to new capital. Utilities' corporate debt margins have risen over the last 18 months and remain at historically high levels, with most commentators anticipating further rises. Bond investors are concerned about credit deterioration and that they are likely to be the prime source of funding for utilities' investment requirements. Institutional investors' leverage over corporates, and utilities in particular, is increasing, with a corresponding reduction in financing terms for corporates.

5.26 One essential pre-condition for financial stability is that the regulatory value should continue to be rolled forward to take account of the capital investment programme in line with the well established regulatory methodology and provide the essential asset backing for Transco's debt.

5.27 On the basis of market evidence, Transco believes that its cost of capital on a real pre-tax basis is in excess of 7% (10% equity and 4.4% debt, including an appropriate allowance for existing debt obligations), assuming an efficiently capitalised company and a standard tax rate. This is conditional upon the maintenance of a mid single A rating on Transco's debt. Any deterioration from this rating would increase the premium on the cost of debt as well as limit Transco's access to certain markets. Both would increase Transco's cost of capital and hence prices for customers.

5.28 Transco has discussed with rating agencies and providers of debt capital the levels of key financial indicators which would need to be maintained in order to preserve the current rating. The main financial indicators are interest cover (both in cash and accounting terms) and other cashflow measures. Financial modelling has been carried out on a modified historic cost basis to forecast the revenues which an efficiently managed Transco would require to preserve these and other indicators at levels which maintain a mid single A rating.

5.29 A further relevant issue concerns the capitalisation of maintenance expenditure. A considerable increase in the rate of replacement of Transco's metallic mains may be required as a result of increasing safety standards. The present regulatory treatment of capitalising such expenditure in the regulatory value would not allow Transco to finance it. Transco believes it needs to be able to recoup such non-discretionary maintenance costs in its revenues on a "pay-as-you-go" basis. This would align the regulatory treatment of such expenditure with those for tax and accounting purposes as well as those in other regulated industries, notably rail and water. It would not increase prices for customers in the long run.

5.30 Further details on these financial issues are set out in the Annex below.

6 Next steps

6.1 In this paper, Transco has argued that a number of considerations are important in moving towards a revised framework which recognises all stakeholders' legitimate requirements. Transco is discussing these issues with Ofgem in order to inform the consultation paper which Ofgem plan to publish in February 2001. Transco would also welcome comments from any interested parties on the issues raised.

6.2 The paper provides an overview of the business plan which Transco has submitted to Ofgem in response to its Business Plan Questionnaire. As agreed with Ofgem, this plan was produced on an "as is" basis, incorporating existing obligations and standards, together with known developments. However, some of the strategic uncertainties outlined in the previous section may be clarified over the next few months, and Transco intends to submit revised projections to Ofgem in April, to inform the initial proposals for new price controls.

Annex: Financial Issues

A.1 As set out in section 5 of this document, Ofgem is required to secure that Transco is able to finance the carrying on of its licensed activities. It is also required to promote efficiency and economy on the part of Transco in carrying them out. This raises a number of important financial issues, which are considered in further detail in this Annex.

Transco's financing requirements and credit rating

A.2 Transco estimates that at the beginning of the new price control period its regulatory value will be approximately £13 billion, of which around £7 billion is expected to be financed through the debt markets (including the £1.5 billion of bonds issued by Transco Holdings, as part of the 1999 restructuring). Transco's debt book is the largest of any GB regulated utility, excluding BT.

A.3 Depending upon the capacity requirements for the NTS system, Transco might need to finance total capital and replacement investment of up to £5 billion over the period 2002/07, leading to a 30% increase in the regulatory value, to about £17 billion by 31 March 2007. £2 billion of existing debt finance will also need to be refinanced during the same period. Together these form a significant new funding requirement. Transco would be competing in the capital markets with other companies, including other regulated utilities, in particular Railtrack and the water industry, which together have investment requirements of about £23 billion over the same period. Large sums are also needed by telecoms companies. All this is against the backdrop of greater uncertainty in the capital markets, poorer liquidity and more efficient credit differentiation by debt investors.

A.4 Transco's objective to minimise its costs requires it to raise capital efficiently. Critical conditions for this are that Transco:

- operates under a stable regulatory regime;
- receives a reasonable return on its investment;
- is able to pay shareholders a dividend consistent with the required equity return;
- is able to maintain a stable, mid single A grade credit rating on its debt; and
- has access to deep and diverse sources of funds.

A.5 There is some doubt, particularly in the capital markets, whether all these conditions are met. Following the regulatory reviews of water and electricity distribution industries in late 1999 there has been a material change in investors' attitudes towards utilities. This has increased the cost of both debt and equity, and restricted such companies access to new capital. Utilities' corporate debt margins have risen over the last 18 months and remain at historically high levels, with most commentators anticipating further rises. Bond investors are concerned about credit deterioration and that they are likely to be the prime source of funding for utilities' investment requirements. Institutional investors' leverage over corporates, and utilities in particular, is increasing, with a corresponding reduction in financing terms for corporates.

A.6 One essential pre-condition for financial stability is that the regulatory value should continue to be rolled forward to take account of the capital investment programme in line with the well established regulatory methodology and provide the essential asset backing for Transco's debt.

A.7 On the basis of market evidence, Transco believes that its cost of capital on a real pre-tax basis is in excess of 7% (10% equity and 4.4% debt, including an appropriate allowance for existing debt obligations), assuming an efficiently capitalised company and a standard tax rate. This is conditional upon the maintenance of a mid single A rating on Transco's debt. Any deterioration

from this rating would increase the premium on the cost of debt as well as limit Transco's access to certain markets. Both would increase Transco's cost of capital and hence prices for customers.

A.8 Transco's treasury strategy is to balance the twin objectives of securing the lowest overall cost of funds while simultaneously controlling re-financing risk. Under the first of these, a review of the UK inflationary and interest rate outlook following a sustained period of successful independent management of monetary policy by the Bank of England led to Transco adopting its present policy of maintaining a significant proportion (about 70%) of its debt book in floating rate borrowings. On the second, Transco controls refinancing risk by placing limits on the financing obligations which will arise in any 12 or 36 month period. Nevertheless, Transco needs to raise considerable funds in the short term commercial paper markets, where its typical debt book is around £1 billion. The average maturity of this debt is of the order of one month, and hence refinancing needs to be transacted continually throughout the year. Efficient and unrestrained access to this important source of finance requires a prime rating (A1/P1) on such debt. A rating on Transco's long term debt below the current mid single A level would prevent the company from maintaining such a prime rating on its short-term debt, and hence would increase its average cost of capital. Furthermore, at times of significant market disruption, such as October 1998 (the Russian crisis), the short term capital markets tend only to be open to A1/P1 issuers.

A.9 Transco has discussed with rating agencies and providers of debt capital the levels of key financial indicators which would need to be maintained in order to preserve the current rating. The main financial indicators are interest cover (both in cash and accounting terms) and other cashflow measures. Financial modelling has been carried out on a modified historic cost basis to forecast the revenues which an efficiently managed Transco would require to preserve these and other indicators at levels which maintain a mid single A rating.

Dividends

A.10 Transco's cost of equity capital is at least 7% in real terms after tax. To provide its shareholder with this return on the equity invested in the regulatory value, Transco would need to pay a dividend of about 11p per share, growing in line with the regulatory value. Of this, approximately 2p per share is required to finance the debt in Transco Holdings. The remaining 9p compares with the current Lattice Group dividend of 7p per share, although shareholders have also received substantial special dividends. Transco recognises that it would not be appropriate for the company to increase its ordinary dividend at a time when the cash demands on the company to finance the replacement programme were increasing. Consequently, the business plan Transco has submitted to Ofgem assumes that the Lattice Group 2002 dividend is held at 7p per share in real terms, thus effectively reinvesting part of the required dividend in the regulatory value. Transco believes that this represents a reasonable balance between the interests of customers and shareholders.

Treatment of additional safety related expenditure

A.11 A further relevant issue concerns the capitalisation of maintenance expenditure. A considerable increase in the rate of replacement of Transco's metallic mains would be required as a result of increasing safety standards. The current regulatory treatment of capitalising such expenditure in the regulatory value would not allow Transco to finance it. Transco believes it needs to be able to recoup such non-discretionary maintenance costs in its revenues on a "pay-as-you-go" basis. This would align the regulatory treatment of such expenditure with those for tax and accounting purposes as well as those in other regulated industries, notably rail and water. It would not increase prices for customers in the long run.

A.12 An alternative approach, of capitalising such investment in both the company's accounts and for the purposes of setting price controls, would not in Transco's opinion be viable because:-

- it could lead to a significant increase in Transco's tax charge, which would increase the pre-tax cost of capital, and hence, in the long term, increase prices for customers;
- reported and regulatory profits should be broadly in line, but such an accounting treatment is contrary to FRS 15, and could be misleading;
- replacement or repair of assets for safety reasons is a revenue item which should be funded out of current income, not via long term capital, since it does not improve the ability of the business to generate revenues;
- it would require a substantial increase in Transco's annual borrowing requirement, in addition to borrowings needed to finance the NTS investment programme, which together could result in Transco's debt rising to inefficient levels; and
- it is a more appropriate way to accommodate the uncertainty, at the time of the review and subsequently, in the level of replacement expenditure.

Asset lives and capital allowances

A.13 In 1999, the company carried out a comprehensive review of its asset lives, which were last reviewed in 1994. As a result, average asset lives for network assets were generally extended from 35-60 years to 55-65 years. These lives are now typically longer than those of other regulated utilities, leading to lower prices for current customers. The Board's depreciation policy, in its accounts and financial modelling, has been to use these asset lives on a straight-line basis.

A.14 Transco's effective tax rate depends heavily on the projected investment programme, and in particular whether 100% first year allowances continue to be available on all replacement expenditure. Should this treatment not continue, the company's effective tax rate would increase significantly. This would need to be reflected in Transco's allowed revenues through an adjustment to the tax wedge.

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Table: A.1

Transco

Annual Throughput

TWh	Actuals 1997	1998	1999	Forecast 2000	2001	2002	2003	2004	2005	2006	2007
System throughput	836	882	998								
Weather corrected throughput @ 10 year trend	877	918	1,039								
Forecast throughput @ 35 year trend											
Baseline Demand				1,126	1,150	1,191	1,218	1,212	1,190	1,187	1,177
Strong Demand				1,127	1,156	1,214	1,258	1,284	1,293	1,293	1,289

1 in 20 Peak Day Firm Demand GWh / Day	Gas Years 00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Peak Day - Baseline Demand								
NTS	1,100	1,253	1,338	1,371	1,292	1,325	1,336	1,368
LDZ	4,522	4,598	4,669	4,720	4,760	4,793	4,825	4,858
Peak Day - Strong Demand								
NTS	1,102	1,256	1,373	1,409	1,461	1,493	1,509	1,541
LDZ	4,532	4,633	4,737	4,815	4,878	4,934	4,988	5,042

Details are published by Transco in the 2000 Ten Year Statement

Table A.2

Transco - Excluding LNG

Total Operating Costs - Scenario C - Baseline Demand, Interconnector Balance

	Actual.....			Forecast.....							
£million 2000 real	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Uplift Factors	1.0808	1.0451	1.0290	note 1	note 2						
Employment Costs	623	580	544	518	***	525	514	503	494	488	493
Materials and Sub-Contractor	122	114	124	121	***	110	104	104	104	101	102
Office and Facility Costs	95	113	101	115	***	113	108	105	103	102	101
Shrinkage and Storage	152	96	89	102	***	140	143	150	153	160	166
Formula Rates	237	223	233	212	***	218	221	225	238	250	275
Other non-payroll	369	220	171	226	***	210	195	185	183	178	177
Total Operating Expenditure	1,598	1,346	1,262	1,294	***	1,316	1,285	1,272	1,275	1,279	1,314
MHC	516	441	484	450	***	500	513	532	539	546	542
Total MHC	2,114	1,787	1,746	1,744	***	1,816	1,798	1,804	1,814	1,825	1,856
* Of which:											
Underlying Business Costs - note				917	***	913	885	862	856	842	848

Total Operating Costs - Scenario A - Strong Demand, Interconnector Balance

Total Operating				1294	***	1325	1295	1284	1291	1299	1337

Total Operating Costs - Scenario B - Strong Demand, St Fergus Expansion

Total Operating				1294	***	1327	1301	1300	1309	1317	1359

Note 1-Year 2000 figures are projections as submitted in the BPQ response in December 2000.
(Transco published year 2000 results on 27 February 2001)

Note 2-Year 2001 figures are omitted as agreed with Ofgem.

Note 3-Definition is provided in paragraph 3.16.

Table A.3

Transco - Excluding LNG

Total Operating Costs - Scenario C - Baseline Demand, Interconnector Balance

	Actual……			Forecast……							
£million 2000 real prices	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Uplift Factors	1.0808	1.0451	1.029	note 1	note 2						
Business Area											
NTS	34	33	45	33	***	36	36	37	37	37	39
LDZ's - note 3											
Scotland	49	44	41	47	***	46	45	44	43	43	42
North	26	22	24	25	***	26	27	26	26	26	26
North West	59	55	54	53	***	55	53	53	52	52	52
Yorkshire	28	27	27	29	***	28	27	26	26	25	25
East Midlands	37	37	38	38	***	39	38	38	37	36	37
West Midlands	38	36	36	36	***	36	36	35	34	34	34
Wales	27	23	25	25	***	27	26	25	25	25	25
East Anglia	28	27	28	29	***	30	30	30	30	29	30
North London	53	46	46	49	***	48	47	47	47	47	46
South East	45	44	41	46	***	47	43	43	49	43	43
South	30	25	24	27	***	28	28	27	27	27	27
South West	29	27	29	27	***	30	30	30	29	29	29
Call Centre and Management	69	64	73	66	***	70	68	67	66	66	65
Total LDZ	517	477	485	496	***	510	498	490	490	482	481
Connections	included in LDZ		19	24	***	36	33	30	28	27	27
System Operations	174	114	110	126	***	169	169	172	174	181	187
Formula Rates	237	223	233	212	***	218	221	225	238	250	275
IS	131	154	142	133	***	138	130	121	114	115	115
Shipper Services	152	35	65	52	***	44	42	42	42	42	42
Other Support Services - note 4	354	310	164	218	***	165	157	156	151	144	148
Total Operating Expenditure *	1598	1346	1262	1294	***	1316	1285	1272	1275	1279	1314
* Of which:											
Underlying Business Costs				917	***	913	885	862	856	842	848

Note 1-Year 2000 figures are projections as submitted in the BPQ response in December 2000.
(Transco published year 2000 results on 27 February 2001)

Note 2-Year 2001 figures are omitted as agreed with Ofgem.

Note 3-LDZ includes Asset Management and Operations.

Note 4-Other Support Services includes Central items, HQ and Support Services.

Table A.4

Transco - Excluding LNG

Investment - Scenario C - Baseline Demand, Interconnector Balance

	Actual…….			Forecast…….							
£million 2000 real prices	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Uplift factors	1.0808	1.0451	1.0290	note 1	note 2						
NTS	124	216	115	215	***	206	118	52	73	82	69
LDZ	326	294	281	361	***	450	314	315	274	262	314
Other - note 3	93	67	33	73	***	87	87	40	50	57	44
Gross Capital	543	577	429	648	***	743	519	407	397	401	427
Gross Replacement	196	202	228	262	***	401	393	389	416	409	332
Total Gross Investment	739	779	657	910	***	1,144	912	796	813	810	759
Replacement contributions	-32	-28	-23	-21	***	-30	-30	-28	-28	-28	-28
Total investment	707	751	634	889	***	1,114	882	768	785	782	731
Capital contributions	-89	-82	-68	-66	***	-93	-83	-74	-64	-60	-57
Net investment	618	669	566	823	***	1,021	799	694	721	722	674

Investment - Scenario A - Strong Demand, Interconnector Balance

Net investment	824	***	1,120	875	760	773	776	698
of which: NTS	215	***	278	165	88	90	109	62

Investment - Scenario B - Strong Demand, St Fergus Expansion

Net investment	824	***	1,077	906	940	1,130	980	912
of which: NTS	215	***	234	197	267	447	312	276

Note 1-Year 2000 figures are projections as submitted in the BPQ response in December 2000.
(Transco published year 2000 results on 27 February 2001)

Note 2-Year 2001 figures are omitted as agreed with Ofgem.

Note 3-Other includes IS, System Operations, Transport etc.

Table A.5

Transco - Excluding LNG

Gross Investment - Scenario C - Baseline Demand, Interconnector Balance

	Actual……			Forecast……							
£million 2000 real prices	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Uplift Factors	1.0808	1.0451	1.029	note 1	note 2						
Investment Expenditure by Outputs * - see footnote											
Peak Demand	180	278	172	309	***	363	175	96	91	86	142
New Connections	90	90	96	134	***	132	95	88	65	60	73
Safety and Environment (Excluding Meters)	204	207	233	265	***	425	431	426	461	467	363
Meters	172	137	123	129	***	137	124	146	146	140	137
Other	93	67	33	73	***	87	87	40	50	57	44
Total Gross Investment	739	779	657	910	***	1144	912	796	813	810	759

Note 1-Year 2000 figures are projections as submitted in the BPQ response in December 2000.
(Transco published year 2000 results on 27 February 2001)

Note 2-Year 2001 figures are omitted as agreed with Ofgem.

*** The allocation is based on current formula mapping rules.**