

The review of top up arrangements in gas

A Consultation Document

May 2004

117/04

Summary

Transco, part of National Grid Transco, is responsible for operating the National Transmission System (NTS) for gas in Great Britain. Transco has a number of statutory and licence obligations, regulated by Ofgem, that govern its ownership and operation of the transmission system. Transco also has a safety case, regulated by the Health and Safety Executive (HSE), setting out how it ensures the safe operation of the gas transmission system. Finally, Transco has in place a multi-lateral contract, known as the 'network code', that sets out the terms under which gas shippers can have access to, and use, the gas transmission system.

The network code provides commercial incentives on gas shippers and suppliers to balance their inputs to, and offtakes from, the system by the end of the day¹. These incentives are created by the 'cash out' arrangements that set the price that shippers pay for any imbalances at the end of the day. These arrangements are important for ensuring that the market delivers secure supplies by providing incentives for gas producers, suppliers and storage operators to contract to meet their customers' demands and manage the risk of gas supply failures.

Transco, as System Operator, has two principle roles associated with keeping the system in balance. Transco is responsible for residual gas balancing, to the extent that shippers' aggregate inputs and offtakes do not balance at the end of the day. Transco is also responsible for keeping the system in balance within the day over operational timescales. System balancing includes, for example, actions taken when there is a sudden loss of offshore supply or change in demand within-day and additional gas needs to be secured and delivered before the end of the day.

Transco must demonstrate, as part of its safety case, that it has established adequate arrangements to minimise the risk of a gas supply emergency. Transco's safety case sets out the commercial incentives created under the network code and the range of daily balancing tools available to Transco, including 'top up' gas.

Top up gas is gas held (or placed) in store by Transco to meet any deficits that Transco identifies when its forecasts of available gas supplies from the market are compared with Transco's forecast of firm demand in a '1 in 50' severe winter. Under the top up rules

¹ Although the network code arrangements only apply directly to shippers, these arrangements are relevant for other parties, such as suppliers, through the contractual and market arrangements in place.

Transco sets a 'monitor level' of gas that must be maintained in certain storage sites. This monitor level of gas in store declines over the winter months. Transco is required to hold top up gas in store if the level of gas placed in store by the market is below Transco's monitor level. Transco is also required to place additional gas in store if the level of gas in store falls below the monitor level as a result of shippers' withdrawals of gas from storage during the winter. The detailed rules associated with the provision (and recovery of costs) of top up gas are set out in Transco's network code.

The top up arrangements were first put in place with the introduction of Transco's network code in 1996. Shortly after, Ofgas² initiated a review of the top up arrangements³. In April 1998⁴, Ofgas concluded that top up was no longer required given existing and likely future availability and diversity of peak gas supply sources. Ofgas also said that it expected Transco to make the necessary changes both to its network code and its safety case to remove top up.

In November 1998, Transco submitted a revised safety case to the HSE with the top up arrangements removed. The HSE was not persuaded, however, that Transco had demonstrated that there would be adequate arrangements to minimise the risk of a supply emergency without the top up provisions. Transco withdrew the submission in June 1999 to allow the arrangements for managing the Reform of Gas Trading Arrangements (RGTA) system to be considered by the HSE. In March 2000, Transco submitted another revised safety case to the HSE with the top up arrangements removed. Again the HSE was not persuaded that Transco had made the necessary case. In December 2000, following a meeting with the HSE in November 2000, Transco amended its March 2000 submission to remove top up only in respect of non-domestic load. The HSE responded in February 2001 stating that its legal advice was that both domestic and non-domestic customers need to be covered by the arrangements described in the safety case, and as such they could not consider this proposal further. In August 2001, Transco withdrew this submission.

There have, since 1996, been a number of proposals to modify the top up rules set out in Transco's network code. Some of these proposals relate to the top up mechanism,

² On 16 June 1999, the former regulatory offices, Ofgas and OFFER, were renamed the Office of Gas and Electricity Markets (Ofgem). References in the text to documents and events before this date use the name of the original regulatory office.

³ "Review of top-up gas, A Consultation Document", Ofgas, February 1998.

⁴ "Review of top-up gas, Conclusions", Ofgas, April 1998.

others relate to the rules for funding top up. Ofgem has approved some of the proposed changes and rejected others. Transco has also made some changes to the assumptions and methodologies that it uses to forecast demand and supply when calculating the top up requirement.

Following Ofgas' conclusions document in respect of the top up review, Ofgem approved a modification to Transco's network code to remove funding for top up costs incurred by Transco. Transco currently bears the net costs associated with the provision of top up gas (i.e. the difference between the costs of purchasing gas for top up less the revenues from any sales of top up gas). Transco has put forward a number of proposed modifications to restore this element of funding for top up. Consistent with Ofgas' original views on top up (i.e. that it was not required), each of these proposed modifications has been rejected on the basis that they would not better facilitate achievement of the relevant objectives of the network code. In particular, Ofgem considered that the existing network code arrangements provided shippers with strong commercial interests to balance their inputs and offtakes over the gas day. Transco's purchase and use of top up could therefore lead to inefficient costs being incurred or could distort competition in the wholesale market.

Since its second submission in March 2000, Transco has not made any further submissions to the HSE to revise its safety case in respect of top up. Therefore, although the top up arrangements remain in Transco's safety case and Transco's network code, the net costs associated with operating the top up regime cannot be charged back to shippers and customers.

The potential for the current top up rules to lead to substantial costs and/or distort the market has not been a significant issue in recent winters. This is because Transco's forecast levels of supply and demand in each year since Ofgas' review of top up have not required Transco to book significant top up gas or take significant volumes of actions over the winter to maintain top up.

This year, however, on the basis of Transco's forecast tightening of the levels of supply⁵, the rules governing the operation of top up may, in the absence of any further modifications, oblige Transco to intervene in the market to a much greater extent and at a much earlier stage than had been the case in the past⁶. In particular, even in mild

⁵ Transco's preliminary forecasts for this winter are published in NGT's Preliminary Winter Outlook Report 2004/05. NGT is the parent company of Transco.

⁶ In particular, NGT's view that the level of beach gas supply is decreasing and that the market is moving

conditions, the current arrangements may require Transco to purchase significant volumes of gas to place in storage. Clearly under such circumstances Transco could incur substantial costs in purchasing, storing and injecting this gas. Transco's actions could also lead to substantial indirect costs: Transco's purchases of gas would be likely to increase spot gas prices and, if the amount of gas purchased is significant, could also affect forward gas prices.

Ofgem therefore considers that it is important that this review is taking place to allow market participants, customers and Ofgem to review the current top up arrangements given the significant increase in the likely impact of top up on the market for the coming winter. The primary focus of this review is to determine whether, given market and other developments since Ofgas' review in 1998, the arguments for removing the top up provisions from the safety case and Transco's network code remain valid. Ofgem's initial assessment, which is set out in this document, is that the arguments remain valid and that top up should be removed.

During this assessment, Ofgem has also identified an additional concern with the current top up arrangements. The existing rules determine the price at which Transco sells top up gas into the market when it is used to balance the system. The effect of these rules may, under certain conditions, be to reduce cash out prices. This concern has been raised by Transco and is the subject of an existing modification proposal. The current top up rules may therefore reduce the incentives provided by the cash out arrangements on shippers and suppliers to balance their inputs and offtakes each day. This could reduce the commercial incentives under the current arrangements on shippers and suppliers to maintain security of supply.

Ofgem has also highlighted in this document a range of potentially significant issues with the assumptions and methodologies that Transco uses for its supply and demand forecasts that underpin Transco's top up calculations. Ofgem will be seeking further clarity and transparency from Transco with respect to the methodologies by which severe winter conditions are forecast. Ofgem would expect Transco to take proper account of the points that emerge from this consultation process with respect to these issues.

Ofgem would welcome views on our initial conclusions.

Removal of top up from Transco's safety case would require discussions with and the approval of the HSE and this process could take a number of months. It may not be possible, therefore, to remove top up completely from Transco's network code and its safety case ahead of this winter.

It may therefore be necessary to consider changes ahead of this winter to the current rules and/or the assumptions/methodologies that are used to calculate the top up requirement. In considering any changes, Ofgem will assess the extent to which the current rules could distort competition in the wholesale gas market, distort the commercial incentives on companies to maintain security of supply and/or inefficiently raise the costs to customers of delivering secure supplies.

Table of contents

1. Introduction.....	1
Purpose of this document	1
Background	2
Ofgas’ 1998 review of top up	3
Subsequent developments	4
Way forward	7
Outline of this document.....	9
2. Regulatory framework in respect of top up.....	10
The Gas Act 1986	10
Gas Safety (Management) Regulations	11
Transco’s gas transporter licence	11
Transco’s network code.....	13
Transco’s GT safety case.....	14
3. The current top up arrangements.....	15
The determination of opening top up requirements for a given winter.....	15
The setting of top up monitor levels.....	18
Top up counter-nominations within winter	19
The top up market offer price (TMOP)	20
The funding of top up costs	21
4. Ofgem’s assessment of top up.....	23
Transco’s top up obligations	23
Transco’s forecasting of supply and demand	25
Effectiveness of the current top up arrangements.....	27
5. Potential Options.....	31
Introduction	31
Option1: The complete removal of top up from the network code (and Transco’s safety case).....	32

Option 2: Changes to the way Transco assesses the need for top up gas.....	32
Option 3: Transco to develop alternative ways of contracting to address supply/demand shortfalls	33
Option 4: Modify the existing top up arrangements	34
Option 5: Redefine top up such that it focuses only on the domestic customer supply security standards.....	35
Option 6: No significant changes to the current top up arrangements	37
6. Way forward.....	38
Appendix 1 Relevant modifications.....	39
Appendix 2 Schedule 1 of the GS(M)R	42

1. Introduction

Purpose of this document

- 1.1. Transco has raised a number of specific concerns with respect to the current top up arrangements, including in relation to the calculation of the price at which top up gas is offered to market, the extent to which shippers are exposed to the costs of providing for top up and the likely effectiveness of top up counter-nomination actions at storage sites.
- 1.2. In its decision in respect of network code modification proposals 659⁷ and 660⁸, published on 1 December 2003, Ofgem stated that it would consider the possibility of reviewing the role that top up plays within the wider context of gas security of supply considerations. This consultation document, together with the associated documents which review the cash out arrangements in electricity and gas⁹, and consider more general security of supply issues for winter 2004/05¹⁰, is intended to start that review process.
- 1.3. As stated earlier in this document, Ofgem is particularly concerned that, on the basis of Transco's forecast of the likely supply/demand position for this winter, the current arrangements may require Transco to take substantial top up actions at an early stage this winter. This review sets out a number of arguments for the removal of top up from Transco's safety case and its network code, in particular in relation to the impact that top up can have on the efficient functioning of the market. Ofgem therefore considers that it is timely that this review is taking place now.
- 1.4. The primary focus of this review is to determine whether, given market and other developments since Ofgas' review of top up gas in 1998, the arguments for removing the top up provisions from the safety case and Transco's network code remain valid. Ofgem's initial assessment, which is set out in this

⁷ "Winter Injection Cost Allocation Based on User Daily Imbalances"

⁸ "Winter Injection Cost Allocation Based on User Daily Offtakes",

⁹ "Electricity and gas cash out review, a Consultation Document", Ofgem, May 2004.

¹⁰ "Review of electricity and gas arrangements for winter 2004/05, a Consultation Document", Ofgem, May 2004.

document, is that the arguments remain valid and that top up should be removed. Ofgem will be reviewing its initial assessment over the coming weeks and welcomes views on this issue.

- 1.5. In addition to considering the removal of top up, this review also considers the role of top up within the wider trading arrangements, in particular the adequacy of the top up arrangements as a mechanism for securing gas supplies, and sets out a number of potential options for reforming the top up arrangements. Ofgem welcomes the views of industry participants and customers on our initial conclusions.

Background

- 1.6. Transco, a subsidiary of National Grid Transco, is responsible for operating the national gas transmission system in Great Britain. Transco has a number of statutory and licence obligations, regulated by Ofgem, that govern its ownership and operation of the transmission system. Transco also has a safety case, overseen by the HSE, setting out how it should ensure the safe operation of the transmission system. Transco also has in place a multi-lateral contract, known as the network code, which sets out the terms under which gas shippers can have access to, and use, the gas transmission system.
- 1.7. Transco must demonstrate, as part of its safety case, that it has established adequate arrangements to minimise the risk of a gas supply emergency. Transco's safety case sets out the commercial incentives and the range of daily balancing tools available to it under Transco's network code, including top up gas.
- 1.8. The rules associated with the provision of top up gas are set out in Transco's network code. Top up¹¹ is gas that is held in store by Transco in response to a shortfall identified by Transco between the level of demand that it forecasts

¹¹ The comments in this document are focused on what is typically referred to as 'national' top up. In addition to national top up, Transco could under some circumstances be required to book what is referred to as 'Constrained LNG' (CLNG) top up. CLNG top up is concerned with ensuring that sufficient stocks are held in particular LNG facilities such that, given the location of the facilities (which are close to the extremities of the NTS), the stored gas can act as a substitute for transportation capacity at times of very high demand. Constrained LNG issues (including CLNG top up issues) were addressed as part of Ofgem's review of Transco's NTS System Operator incentives, and will be further considered as part of future developments to regulatory arrangements for LNG Storage. Since CLNG top up is related to transportation constraint

would be observed if the forthcoming winter – or what remains of it – turned out to be ‘severe’¹², and its assessment of the level of available supplies over that period. When a top up provision is made, the gas is subsequently made available to market participants (including Transco in its role as system operator) at times of high system demand at a price determined by rules set out in Transco’s network code.

Ofgas’ 1998 review of top up

1.9. The top up arrangements were put in place with the introduction of Transco’s network code in 1996. Shortly after the introduction, Ofgas initiated a review of the top up arrangements. In its consultation document, Ofgas set out its view that there should be no long term requirement for a top up type mechanism in the UK gas market. This view was underpinned by a number of factors, including:

- ◆ **Developments in peak supply.** Ofgas was of the view that developments in the UK gas market both planned and underway at that time meant that it would be unlikely that top up would be required in the long term. For instance, it was Ofgas’ view that the UK-Continent interconnector, which at that time was due to become operational in 1998, would be likely to offer possibilities for providing further peak supplies. It was also Ofgas’ view that demand side management was becoming increasingly sophisticated.
- ◆ **Perverse incentives on Transco.** Ofgas was of the view that, although the top up methodology was clearly defined in Transco’s network code, the decision as to whether top up was or was not required ultimately lay with Transco through the way it interpreted supply and demand information into forecasts. In particular, Ofgas highlighted the following points:
 - ◆ First, at that time, Transco was cash neutral with regard to the provision of top up. Ofgas was of the view that top up provided Transco with a potential means of increasing security at no cost to itself. The costs associated with top up were, at that time, recovered

issues, rather than aggregate supply/demand balancing, it is not considered further in this document.

¹² The term ‘severe winter’ is typically used to describe a ‘1 in 50’ winter. This is described in detail in

through a revenue neutrality mechanism in which all shippers were charged a percentage of the overall costs of providing top up according to the demand of their firm customers in the winter months. Ofgas considered, therefore, that there was little incentive on Transco to seek the most efficient level in terms of the top up requirement.

- ◆ Second, at that time, Transco and BG Storage were both part of BG plc. Ofgas was of the view that any overestimation of the top up requirement by Transco could potentially benefit BG Storage.

- ◆ **Effectiveness of top up:** Ofgas was of the view that the small volumes of top up booked for 1996/97 and 1997/98 would have little security benefit for domestic customers, and what benefits there were would be outweighed by the associated costs, both the direct costs in meeting the top up requirement and the indirect costs associated with the distortions to the market caused by top up.

1.10. In April 1998, Ofgas published its conclusions in respect of its review of top up gas. Ofgas confirmed its initial view that there was no longer term need for top up. Ofgas acknowledged that, due to timing issues, it may not be possible for Transco to modify its safety case for the removal of top up in time for the storage year 1998/99. However, Ofgas also stated that it expected the reconsideration of Transco's safety case would be completed in time for the 1999/2000 storage year, but that this was a matter for Transco and the HSE.

Subsequent developments

1.11. The top up arrangements were also considered as part of Ofgas' review of storage and related services¹³. The storage review identified the top up regime as being a key obstacle to the development of competition in the storage market. Furthermore, the ability of Transco to recover the costs of top up through smearing was found to distort purchases of storage capacity. In February 1999,

chapter 2.

¹³ "Review of the supply of gas storage and related services, the Director General's Initial Proposals", Ofgas, July 1998.

BG plc gave Ofgas a series of undertakings concerning the future provision of storage services at its Rough and Hornsea facilities¹⁴.

- 1.12. As part of the undertakings given by BG plc in February 1999, concerning the future provision of storage services, BG plc undertook to expedite discussions with the HSE with a view to obtaining the HSE's approval for the removal of top up from its safety case¹⁵. The expectation was that top up would be removed before the storage year 1999/00 commenced.
- 1.13. In November 1998, Transco had submitted a revised safety case to the HSE with the top up arrangements removed. The HSE was not persuaded, however, that Transco had demonstrated that there would be adequate arrangements to minimise the risk of a supply emergency without the top up provisions. Transco withdrew the submission in June 1999 to allow the arrangements for managing the RGTA¹⁶ to be considered by the HSE.
- 1.14. During the period when Transco was negotiating with the HSE for the removal of top up from its safety case, British Gas Trading proposed network code modification 297, "Top up cost treatment", which proposed to remove funding for the top up arrangements. The principle of this proposal was that Transco bear all of the costs associated with the provision of top up gas apart from in the circumstances where top up gas is used, in which case Transco would be able to recover the costs associated with the used top up gas from the revenue resulting from the sale of this top up gas, with any additional revenue distributed to shippers. In February 1999, Ofgas approved the modification on the basis that it did not consider that there was a need for top up gas given the increase in the availability and diversity of peak gas supplies. In addition, Ofgas stated that it expected that the top up provisions would be removed from Transco's network code but that, until then, Ofgas was of the view that Transco should bear the costs of top up.
- 1.15. In March 2000, Transco submitted another revised safety case to the HSE with the top up arrangements removed. Again the HSE was not persuaded that

¹⁴ Whilst the ownership of Transco is now fully separate to that of both Rough and Hornsea, Transco continues to own the LNG storage facilities.

¹⁵ "Review of the supply of gas storage and related services, a Decision Document", Ofgas, February 1999.

¹⁶ "Reform of Gas Trading Arrangements: Proposals and Consultation", Ofgas, February 1999.

Transco had made the necessary case. In December 2000, following a meeting with the HSE in November 2000, Transco amended its March 2000 submission to remove top up only in respect of non-domestic load. The HSE responded in February 2001 stating that its legal advice was such that both domestic and non-domestic customers need to be covered by the arrangements described in the safety case, and as such they could not consider this proposal further. In August 2001 Transco withdrew this submission. Since its second submission in March 2000, Transco has not made any further submissions to the HSE to revise its safety case in respect of top up.

1.16. A number of further modification proposals to Transco's network code have been proposed since network code modification 297 was approved by Ofgas. A detailed description of these modification proposals is given in Appendix 1 of this document. A summary follows here:

- ◆ Modification proposal 472, "Restoration of funding for national top up", was raised by Transco to reintroduce the provisions of Transco's network code relating to the recovery of top up costs which were removed by modification proposal 297. In January 2002, Ofgem rejected this modification proposal.
- ◆ Modification proposal 504, "Top up process enhancements", was raised by Transco to make a number of changes to the top up arrangements, primarily to allow Transco, acting as the top up manager, greater discretion in regard to taking top up related actions. In August 2002, Ofgem approved this modification proposal.
- ◆ Modification proposal 583, "Top up monitor cost recovery", was raised by Transco to recover the net costs of certain counter storage injection actions made by the top up manager. In August 2003, Ofgem rejected this modification proposal.
- ◆ Modification proposals 659, "Winter injection cost allocation based on user daily imbalances", and 660, "Winter injection cost allocation based on user daily offtakes", were raised by Transco to allow it to recover the net costs of winter injection. In December 2003, Ofgem rejected these modification proposals.

- ◆ In November 2003, Transco submitted modification proposal 671, “Enhancements to winter injection process”, seeking to amend the calculation of the top up market offer price to ensure that it is based upon prices available prior to the day and that this price reflects the cost of firm storage capacity. This proposal is currently with Ofgem for decision.
- 1.17. The top up arrangements therefore remain in Transco’s safety case and Transco’s network code, although the net costs associated with operating the top up regime cannot be charged back to shippers and customers.
- 1.18. However, in rejecting Transco’s modification proposals for cost recovery, Ofgem has made it clear that as part of its consideration it had given regard to the nature of Transco’s ongoing top up obligation and the basis on which any funding might be permitted¹⁷. Ofgem was of the view that, in allowing the recovery of any top up costs, it would have regard to whether these costs had been incurred efficiently and in particular the extent to which any other actions that would have been likely to reduce the total costs of any top up requirement had been taken by Transco.

Way forward

- 1.19. Ofgem has decided to publish this top up review, together with documents reviewing the cash out arrangements in gas and electricity, and other specific security of supply issues for 2004/05, at this early stage in the year to ensure that there will be sufficient time for the industry and Ofgem to assess and consider these aspects of the top up arrangements ahead of this winter.
- 1.20. To that end, Ofgem would like to ensure industry responses to this review are received by Friday 18 June 2004 to enable a careful consideration of those responses to be undertaken and for that feedback to be incorporated into a ‘Final Thoughts’ document on the top up review for publication in July. This document will indicate those areas (if any) that Ofgem considers merit further consideration by market participants.

¹⁷ Special condition 28B of Transco’s GT licence provides for adjustments to be made to Transco’s system operation revenue. Any such income adjusting event is subject to approval by the Authority.

- 1.21. To implement any changes to the top up arrangements before the start of this winter, Ofgem would like to emphasise that consideration should be given to the form of any potential modification such that it could be properly assessed and considered by industry in a timely fashion. In addition, Ofgem is aware that consideration of any potential changes under an urgent timetable may be appropriate.
- 1.22. In considering any potential changes to the top up arrangements for this winter, Ofgem will have regard to the fact that the 2004/05 storage year is underway and therefore that shippers have adopted contractual positions on the basis of the current arrangements. Ofgem would like to emphasise, however, that the nature of the flexible governance arrangements in respect of Transco's network code mean that the trading arrangements can be subject to change and revision by industry at any time.
- 1.23. Responses should be submitted either electronically to becky.neale@ofgem.gov.uk or by post, addressed to:

Kyran Hanks
Director, Wholesale Markets
Office of Gas and Electricity Markets
9 Millbank
London
SW1P 3GE

- 1.24. If you wish to discuss any aspect of this document, please contact any of the following people who will be pleased to help:
- ◆ Jo Witters – telephone number: 020 7901 7159, fax number: 020 7901 7452, email: jo.witters@ofgem.gov.uk; or
 - ◆ Matt Buffey – telephone number: 020 7901 7088, fax number: 020 7901 7452, email: matthew.buffey@ofgem.gov.uk.

Outline of this document

- 1.25. Chapter 2 of this document provides a review of Transco's responsibilities with respect to the gas security standards. Chapter 3 sets out the current top up arrangements. Chapter 4 describes Ofgem's preliminary assessment of the current top up arrangements, in particular with regard to how effective these arrangements are in enhancing security of supply, without distorting competition or imposing unreasonable costs to customers. Chapter 5 highlights the possible options for reform.

2. Regulatory framework in respect of top up

2.1. In this chapter, we set out the current regulatory framework for the gas market that is relevant to the determination and modification of the top up arrangements. This chapter outlines the current legislative, licensing and regulatory regimes and describes the relationship between the Gas Act 1986 as amended, licences and industry agreements. In addition, this chapter reviews the security standards that are set out in Transco's gas transporter licence and its safety case.

The Gas Act 1986

2.2. The Gas Act, as amended by the Utilities Act 2000, provides for the regulation of the onshore gas regime in Great Britain.

2.3. The principal objective of the Authority is to protect the interests of consumers in relation to gas conveyed through pipes, wherever appropriate by promoting effective competition between those engaged or concerned with the shipping, transportation or supply of gas or engaged in commercial activities relating to such activities. In carrying out its functions under the Gas Act in a manner which is best calculated to further the principal objective, the Authority is required to have regard to the following:

- ◆ The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met; and
- ◆ The need to secure that licence holders are able to finance the carrying on of the activities which they are authorised or required to do.

2.4. Section 9 of the Gas Act sets out, amongst other things, that it is the duty of a gas transporter as respects each authorised area of his to develop and maintain an efficient and economical pipe-line system for the conveyance of gas.

Gas Safety (Management) Regulations

- 2.5. The Gas Safety (Management) Regulations 1996 (GS(M)R) set out certain safety requirements with which gas transporters must comply. All gas transporters, including holders of a licence, must produce a safety case and have it accepted by the HSE before they can transport gas. The GS(M)R require that a safety case be revised as often as may be appropriate, and that material revisions are not made other than with the agreement of the HSE. Once accepted, the GS(M)R require that the provisions or arrangements described in a safety case must be followed.
- 2.6. Schedule 1 of the GS(M)R sets out the particulars to be included in the safety case of a person transporting gas. The Schedule can be found in full in Appendix 2 of this document. In relation to continuity of supply, paragraph 16 of this Schedule states that the safety case must contain particulars to demonstrate that the duty holder has established adequate arrangements to minimise the risk of a supply emergency.

Transco's gas transporter licence

- 2.7. Special Condition 27(1) of Transco's gas transporter (GT) licence requires Transco to operate the NTS in an efficient, economic and co-ordinated manner.
- 2.8. Transco's GT licence refers to two high-level security standards: the 1 in 20 network planning standard and the 1 in 50 domestic security standard. These are outlined below, and the relevance of each standard to the current top up arrangements is highlighted.

The 1 in 20 network planning standard

- 2.9. Under Standard Condition 16 of its GT licence, Transco is required to plan and develop its network such that it meets the 1 in 20 network planning standard. This requires Transco to plan and develop its network such that it meets the peak aggregate daily demand for the conveyance of gas for supply to premises which, having regard to historical weather data derived from at least the previous 50 years and other relevant factors, is likely to be exceeded (whether on one or more days) only in 1 year out of 20 years.

2.10. In planning the capacity of its network to meet the 1 in 20 planning standard, Standard Condition 16 requires that Transco has regard to:

- ◆ The extent to which the supply of gas to those premises might be interrupted or reduced¹⁸; and
- ◆ The operational measures available to Transco, including the use of storage.

2.11. Consequently, the 1 in 20 network planning standard relates to the capacity of the pipeline system and its ability to convey the gas delivered by shippers to its network in order to meet the demands of the customers contracted to receive gas from these shippers. As such, the 1 in 20 planning standard places no obligations on Transco in relation to securing the availability of gas to meet forecast demand levels, and, therefore, has no direct relevance to the top up arrangements¹⁹ - it relates solely to the planning and development of Transco's network.

The 1 in 50 domestic security standard

2.12. Under Standard Condition 9 of Transco's GT licence, Transco is required to develop a network code to facilitate the achievement of the following objectives:

1. The efficient and economic operation by the licensee of its pipeline system;
2. Subject to (1), the efficient discharge of Transco's licence obligations;
3. Subject to (2) and (1), the securing of effective competition between relevant shippers and between relevant suppliers; and
4. So far as is so consistent, the provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards are satisfied in relation to their domestic customers.

¹⁸ The licence explicitly notes that such interruption or reduction in supply levels could result from contracts between any of: Transco, shippers, suppliers and customers.

¹⁹ The 1 in 20 would be relevant to a consideration of Constrained LNG (CLNG) top up, but, as noted above, CLNG top up is not considered in this document. It can be noted that, to the extent that Transco contract for interruption services and the usage of stored gas to manage transportation constraints, these contracts can be expected to influence the assessment of top up requirements for a given winter under the current arrangements.

2.13. The definition of the domestic supply security standard is set out in the gas supplier's licence. In this licence, the "domestic supply security standards" are defined as:

- ◆ The availability of a supply of gas which would equal the peak aggregate daily demand for gas by domestic customers which is likely to be exceeded (whether on one or more days) only in 1 year out of 20 years; and
- ◆ The availability of supplies of gas:
 - ◆ Over a year which would equal the aggregate annual demand for gas by those customers; and
 - ◆ During the 6 months from October that would equal the aggregate demand for gas by those customers during such a 6 month period which is likely to be exceeded only in 1 year out of 50 years.

2.14. As such, the domestic supply security standard contains obligations in respect of both a peak demand day and a severe winter period, but importantly these relate only to demand from domestic customers.

Transco's network code

2.15. As stated earlier, Transco's GT licence places certain obligations on Transco, including the requirement that it prepares a network code (amended Standard Condition 9), which sets out the arrangements between the GT and shippers for the use of, and connection to, that GT's pipeline system. The network code is required to meet the relevant objectives as set out in Standard Condition 9 of the GT licence.

2.16. Transco's network code was put in place in 1996. Section P of Transco's network code relates to top up. The mechanism for modifying Transco's network code is set out in Standard Condition 9 of Transco's GT licence and in Transco's network code modification rules. Under the modification rules, shippers, Transco and third party participants are able to propose modifications to Transco's network code. Paragraph 6(a) of Standard Condition 9 also sets out the requirement for Transco's network code modification rules to identify the designated third party participants. Ofgem is not itself able to propose

modifications, although the implementation of all modifications requires the consent of the Authority.

- 2.17. The Authority may only direct that Transco's network code should be modified if, in its opinion, the proposed modification would, as compared with the existing provisions of Transco's network code or any alternative proposal, better facilitate the achievement of the relevant objectives as set out in Standard Condition 9 of the GT licence. In making such a direction, the Authority is also required to have regard to its statutory duties.

Transco's GT safety case

- 2.18. As stated earlier, the GS(M)R require that Transco must produce a safety case and have it accepted by the HSE. Section 4 of Transco's safety case concerns continuity of supply.
- 2.19. Section 4.1.10 of this document specifies the daily balancing tools available to Transco, of which one is top up gas. Top up gas is described as gas provided by Transco to meet any deficits that are identified when gas supplies are assessed against firm demands by the top up manager. In addition it states that monitoring of top up gas levels and running of the top up gas account is carried out by system operations.
- 2.20. Transco's safety case also states, however, that Transco has no obligation to ensure that 1 in 20 peak day demand and 1 in 50 severe winter demand can be met by top up gas or any other sources of gas.

3. The current top up arrangements

3.1. In this chapter we summarise the current top up arrangements, and in particular highlight the arrangements currently in place with respect to:

- ◆ The determination of whether there is an 'opening' top up requirement for a given winter;
- ◆ The determination of top up monitor levels for a given winter;
- ◆ Top up counter nomination arrangements within winter;
- ◆ The availability and pricing of top up market offers; and
- ◆ The funding of top up costs.

The determination of opening top up requirements for a given winter

3.2. Under section P of its network code, Transco must provide a statement of top up requirements for the coming winter by the beginning of each storage year (1 May)²⁰. This has two components:

- ◆ The top up deliverability requirement is defined as the amount (if any) by which the system 1 in 20 peak day demand exceeds the 'maximum daily supply'.
- ◆ The top up space requirement is defined as the area under the 1 in 50 winter load duration curve that lies above 'maximum daily supply'.

3.3. As set out in its review of electricity and gas arrangements for this winter²¹, Ofgem considers that it would be helpful to all market participants if the methodology used by NGT in undertaking these forecasts was made available to improve transparency and understanding of its forecasts. It may also help, through industry and customer discussion, to improve the methodologies and

²⁰ Although requirements can subsequently be revised.

²¹ "Review of electricity and gas arrangements for winter 2004/05", Ofgem, May 2004.

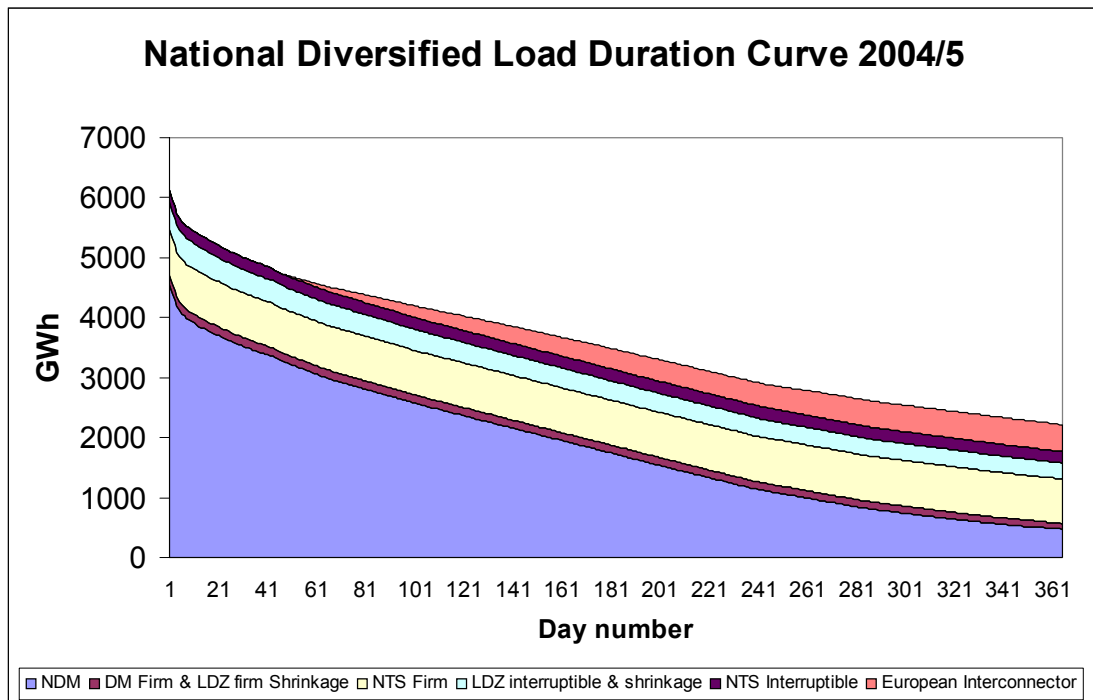
the accuracy of its forecasts. Ofgem has therefore asked NGT to publish the methodologies used to facilitate wider understanding and debate.

- 3.4. The process by which Transco make these forecasts is summarised below.

Demand Forecasting

- 3.5. Transco forecasts the demand for gas in a 1 in 50 winter using historic temperatures, as experienced over a long series of winters. Transco uses historical weather data to generate a series of demand levels from which the level of demand that would be likely to be experienced during a winter period with a probability of 1 in 50 can be calculated.
- 3.6. This process involves taking account of the level of connected load, and an assessment of the relationship between demand and temperature for different types of load. For power generation load, Transco assumes a largely constant level of daily demand which is broadly equivalent to the average daily historical demand, adjusted for known market changes (principally new connections). For other load types some temperature dependence is assumed in the relevant demand models.
- 3.7. If the resulting daily demands are aggregated, and ordered by the level of demand, starting with the highest daily demand on the left, a load duration curve can be constructed for the 1 in 50 winter. Figure 3.1 shows Transco's forecast 1 in 50 load duration curve for 2004/05 disaggregated by load type.

Figure 3.1: Transco's 1 in 50 load duration curve



Supply Forecasting

- 3.8. The likely supply of gas on any given day can be forecast using an assumed “merit order” - the order in which various competing supply sources will tend to deliver gas (due to the relevant opportunity costs), and an assumed level of deliverability of gas from each potential supply source. Starting with the peak demand day, supplies are stacked up in order to assess whether the 1 in 50 demand level could be met. As such, the ability of supply to meet the forecast demand level on the peak day depends upon the total deliverability of the various supply sources.
- 3.9. The supply on the next demand day is constructed using the deliverability available on that day, taking into account the gas that would be delivered on the highest demand day. After a few days the supplies of gas from the LNG storage facilities will have been exhausted, and as a result, the deliverability of these facilities is not taken as a relevant supply of gas on lower demand days.
- 3.10. Consequently, when assessing the availability of supplies of gas to meet a severe winter load duration curve, both the deliverability of various supply sources and the duration of available supplies from storage sites (that is, the number of days

at which the maximum supply level could potentially be maintained for) are important variables.

- 3.11. In this manner it is possible to construct a theoretical profile of supplies against the level of demand that is likely to be experienced in a 1 in 50 winter.

Determining initial top up requirements

- 3.12. If a shortfall is identified under the above approach, then Transco's network code states that:

- ◆ The top up manager must book storage capacity in line with the identified shortfall(s) (and subsequently buy and inject gas); or,
- ◆ If there is insufficient storage capacity available, then the top up manager should reduce the shortfall where it can, and declare the new, lower level of security of supply that is provided for (e.g. 1 in 15 peak day or a 1 in 30 winter).

Given the preliminary assessment of its 'base case' scenario for 2004/05, Transco has identified a potential shortfall, which, in the absence of a re-assessment of the supply/demand position, would necessitate a significant level of demand side response to ensure 1 in 50 security for 2004/05.

The setting of top up monitor levels

- 3.13. In addition to the initial top up assessment described above, Transco's network code requires that Transco monitors the relationship between available supply and what remains of the 1 in 50 curve throughout the winter. In particular, under Section P2.1.3 of its network code, the "Aggregate Remaining Stored Gas Requirement" is the amount determined, and from time to time re-determined, by Transco as the amount by which the estimated remaining 1 in 50 severe annual demand exceeds remaining maximum annual supply for the remaining part of the gas year after the day in question.
- 3.14. Transco undertakes this assessment process by setting 'monitor' levels for different categories of storage site that define the amount of gas that it considers would need to be held in store on each day throughout a given winter in order

to ensure that (what remains of) a 1 in 50 winter could be met. Storage sites are categorised in terms of their 'duration' - that is, the number of days that they can deliver gas onto the system at full deliverability – with Transco's network code distinguishing between short, medium and long duration. For each category of storage site, on the basis of the load duration curve analysis described above, Transco defines opening levels of stock that it considers need to be held in store at the beginning of the given winter in order that a 1 in 50 severe winter demand could be met.

- 3.15. Given these opening levels, Transco then determines monitor levels for the winter period given the declining probability of a prolonged period of severe weather as the winter elapses.
- 3.16. Transco has stated that, using the current methodology for determining top up monitor levels and on the basis of the assessment presented in NGT's Preliminary Winter Outlook Report, the initial monitor levels for LNG and Medium Range Storage facilities would be set at 100%, and the initial level at Rough would be set at around 75%.

Top up counter-nominations within winter

- 3.17. If usage patterns are such as to reduce stored levels of gas below a specific 'monitor' level, then Transco may have to intervene to avoid the monitor level being breached. The current process for intervening in such circumstances involves Transco counter-nominating a withdrawal nomination from a particular storage site such that the amount of gas in the facility remains at the monitor level. Transco would have to buy injection and space rights at the relevant facility and would secure rights to an amount of gas in store in line with the counter-nomination volume. If Transco does not trade out the imbalance resulting from counter-nomination action it will be 'cashed out' with an end-of-day shortfall equivalent to this volume.
- 3.18. Transco's preliminary assessment of the monitor levels for this winter (i.e., using the current methodology, the initial monitor levels for LNG and Medium Range Storage facilities would be set at 100%, and the initial level at Rough would be set at around 75%) sets these levels significantly higher than they have been in previous winters. Clearly, the higher the monitor level the more likely it is that

Transco will have to enter the market to maintain the monitor level should usage patterns be such that the levels of stored gas fall below the monitor level.

- 3.19. Transco does, however, have some flexibility with respect to intervention in such circumstances. Transco has in the past, for example, reallocated some part of the remaining monitor levels between sites. More generally, Transco's network code allows Transco discretion to 'from time to time' re-determine monitor levels. Such a re-determination could, for example, be triggered by a re-assessment of the supply/demand position for the remainder of a given winter on the basis of more up-to-date information (including experience of some part of that winter). Transco's network code also includes more specific provisions that allow for greater flexibility when responding to a breach of monitor level that occurs relatively late in a given winter.
- 3.20. Transco's network code allows the top up manager to review holdings of top up gas on a monthly basis to dispose of any gas surplus to the relevant monitor level.

The top up market offer price (TMOP)

- 3.21. Top up gas is made available to market by means of a 'top up market offer'. Transco's network code provides that the top up manager will make a top up market offer (in relation to each storage facility where top up gas is held) on any day for which forecast total system demand exceeds 85% of the System 1 in 20 peak day demand, and may make such offers in respect of any other day. The top up market offer price (TMOP) under such circumstances is the lesser of 99.9999 p/kWh (£29.30 per therm), and the price calculated from the following formula:

$TMOP = W + G + E + 20*(C/T)$, where:

W = the unit rate of storage withdrawal charge

G = the top up Weighted Average Cost of Gas (WACOG)

E = the system entry overrun charge

C = the total cost of storage capacity purchased

T = Total quantity of storage space purchased.

- 3.22. If top up gas is purchased by Transco in its role as system operator, then the TMOP could become the cash out buy price and would, therefore, be used to cash out negative imbalances on the relevant gas day.
- 3.23. Should this occur, the degree to which the top up market offer price would provide the appropriate signals to market participants as to the underlying system conditions, and therefore provide the appropriate incentives to balance, will depend critically on the inputs into the top up market offer formula. Although the formula for determining the top up price has been developed with the aim of reflecting the value of top up gas to the market, the fact that it is a partly administered price means that it is unlikely that it will accurately reflect the value of top up gas. Under the majority of scenarios, the top up market offer price could be either lower or higher (potentially to a significant degree) than the true value of the top up gas. In this respect, therefore, should the top up market offer form the cash out buy price, it is unlikely to provide the appropriate signals to market participants as to the underlying system conditions.
- 3.24. Transco has indicated that, based on storage capacity bookings at Rough in 2003/4, the top up market offer price would have been likely to be in the region of 50 to 250 pence per therm.

The funding of top up costs

- 3.25. In operating the top up regime, Transco can incur a number of costs. For instance, should Transco determine that there is a top up requirement for a given winter, Transco will incur the costs associated with purchasing storage capacity, purchasing gas for top up injection, commodity costs, entry capacity costs, as well as financing costs.
- 3.26. The only instance in which Transco can recover the costs that it has incurred in operating the top up mechanism is when top up gas is sold. If top up gas is sold, either as a result of the acceptance of a top up market offer or as a result of a disposal of top up gas, the revenues from this sale of gas are offset against the costs associated with providing for that top up gas. In situations where the top up manager has made a net gain, this gain is distributed to shippers.

3.27. Ofgem has made it clear, however, that as part of its consideration of top up funding issues, it has given regard to the nature of Transco's ongoing top up obligation. Ofgem was of the view that, in allowing the recovery of any top up costs, it would have regard to whether these costs had been incurred efficiently and in particular the extent to which any other actions that would have been likely to reduce the total costs of any top up requirement had been taken by Transco.

4. Ofgem's assessment of top up

- 4.1. In this chapter Ofgem sets out its preliminary view of the current top up arrangements. This view covers three main areas:
- ◆ Whether the current top up arrangements are an appropriate reflection of Transco's security of supply obligations;
 - ◆ Whether Transco's methodology for forecasting supply and demand is appropriate; and
 - ◆ Whether the top up arrangements are effective in terms of enhancing security of supply at a reasonable cost to customers.
- 4.2. Ofgem considers that these are the key issues associated with the current top up arrangements and intends to consider these issues more fully over the coming weeks with a view to including its views in the 'Final Thoughts' document. Ofgem welcomes the views of industry with regard to these issues.

Transco's top up obligations

- 4.3. Transco's obligations in relation to security of supply that have relevance for top up arise from its GT licence in connection with the domestic supply security standard and from its safety case in connection with continuity of supply.
- 4.4. With regard to the domestic supply security standard, rather than placing an explicit objective on Transco to ensure that the domestic supply security standard is met, Transco's GT licence requires it to ensure that incentives are placed on suppliers to secure that security standards are satisfied in relation to their domestic customers. It is clear that this obligation relates only to domestic customers rather than all firm demand.
- 4.5. However, with regard to Transco's continuity of supply obligation, the safety case states that top up is gas provided by Transco to meet any deficits in supply when assessed against firm demands – i.e. this assessment goes beyond the domestic customer supply security standards. The safety case does not, however, specify under what criteria deficits in supply should be assessed against firm demands (i.e. should it be 1 in 50 firm demand?).

- 4.6. There is no explicit reference in the regulatory framework, however, to Transco having ultimate responsibility for ensuring that these gas security standards can be met. Ofgem notes, for instance, that with regard to Transco's continuity of supply obligation, in Transco's safety case it states that Transco has no obligation to ensure that 1 in 20 peak day demand and 1 in 50 severe winter demand can be met by top up gas or any other sources of gas.
- 4.7. In addition, it is Ofgem's view that Transco's obligation in regard to the domestic supply security standard should only be discharged in so far as it is consistent with a number of other objectives, including the efficient and economic operation by Transco of its pipeline system. Ofgem considers that it is timely that this review is taking place in that it will allow market participants and Ofgem to reconsider whether the current top up arrangements are efficient and economic.
- 4.8. In addition Ofgem would like to note that under its GT licence Transco is obliged to establish and operate procedures for, amongst other things, the review of its network code, section P of which describes the current top up arrangements, with a view to considering any amendments that would better facilitate achievement of a number of objectives, including the efficient and economic operation by Transco of its pipeline system.
- 4.9. It is Ofgem's view that three key questions arise in relation to top up and Transco's security of supply obligations:
- ◆ Is it appropriate that top up be used as a means of providing for 1 in 50 security?
 - ◆ Is top up primarily relevant for domestic customers?
 - ◆ Are the current top up arrangements consistent with Transco's obligation to operate the system in an efficient and economic manner?
- 4.10. Ofgem welcomes the views of industry in relation to these questions and any other issues that respondents consider relevant.

Transco's forecasting of supply and demand

- 4.11. As set out in chapter 3, Transco undertakes an assessment of the overall supply/demand position and uses this assessment to determine whether there is a top up requirement. It is clear therefore that the adequacy of the supply and demand assumptions presented are important because of the impact that they can have on the likely existence or otherwise of a top up requirement. Transco's forecasts of supply and demand can also provide an important source of information for market participants to allow them to inform their own decisions concerning provisions for extreme conditions. Given this, it is important to recognise the potential impact that the adequacy of the information provided can have on the efficiency of market responses.
- 4.12. More generally, given the inherent uncertainties associated with supply and demand forecasts related to extreme conditions, it is important that those forecasts that Transco does present are put into context in a reasonable and balanced manner. Whilst, at least under the current arrangements, the top up assessment involves the determination of a single scenario, Ofgem has emphasised to Transco that it considers that the use of multiple scenarios is appropriate given the range of relevant uncertainties. Ofgem also considers it important that supply/demand assessments that Transco presents provide contextual information concerning the sensitivity of forecasts to alternative assumptions. We welcome the fact that Transco has evaluated a number of sensitivities as part of its preliminary assessment of the outlook for winter 2004/05.
- 4.13. In line with the above, there are a number of considerations that we consider to be of particular relevance when considering Transco's demand and supply assumptions and the impact that these have on Transco's actions in relation to top up:
- ◆ **Beach gas.** Transco's forecast of maximum beach flows for this winter is significantly lower than the maximum forecast last year. Ofgem consider that further analysis is required with respect to Transco's assumptions regarding beach supplies, and would welcome the views of companies who operate offshore gas fields on Transco's forecasts and assumptions.

- ◆ **Storage.** Transco's base case – which underpins its preliminary top up assessment – makes no allowance for storage cycling within winter. Whilst there are clearly limiting factors in terms of the extent of cycling that could be expected to take place in a severe winter, the potential impact of cycling could be substantial. Furthermore, a severe winter could be expected to give rise to extreme within winter price variations such that storage users would face very strong incentives to respond.
- ◆ **Isle of Grain.** Transco's base case takes no account of the additional gas that could be made available were the Isle of Grain importation terminal to begin importing in early 2005. We note that NGT has recently announced deliveries may start in the first quarter of 2005.
- ◆ **The absence of a 1 in 20 cap on demand forecasts.** Transco have used the 1 in 50 rather than the 1 in 20 standard for the assessment of peak day demand, implying that the peak demand forecasts are inappropriately high. The rationale for this is based on the usage of an 'undiversified' 1 in 20 demand forecast is higher than the peak day of the 'diversified' 1 in 50 forecast that is used for the assessment. We do not consider that the use of undiversified forecasts (for either the 1 in 20 or the 1 in 50) is appropriate for this type of supply/demand assessment.
- ◆ **The basis upon which the 1 in 50 load duration curve is forecast, and storage monitor levels are determined.** We will be seeking clear, step-by-step, statements of the processes used to forecast the 1 in 50 curve, and to determine storage monitor levels.
- ◆ **Demand forecasts for non-daily metered loads.** We will be seeking clarification in relation to the assumptions that drive the NDM forecasts, and generate the shape of the curve.
- ◆ **Assumed levels of interruption.** The 2bcm requirement presented in NGT's Preliminary Winter Outlook Report, based on Transco's preliminary gas supply/demand forecast for this winter, is calculated before any account has been taken of demand side response, including from NTS and LDZ interruptible customers (although Transco do refer to NTS interruption as 'already available to the market to initiate'). It can also be noted that

interruption due to transportation constraints is not taken into account in the assessment, and more generally no price responsiveness is assumed from firm customers.

Effectiveness of the current top up arrangements

- 4.14. Top up is intended to enhance security of supply in two ways: first, the physical presence of top up gas in store can potentially increase the level of supplies that could be called upon in severe conditions; second, the mechanism by which top up gas is priced and made available to market can potentially sharpen incentives on gas shippers in relation to their provisions to cover their likely peak requirements.
- 4.15. However, when considered in the light of Transco's licence and other obligations in relation to security of supply and the issues associated with Transco's forecast of supply and demand, it appears to Ofgem that there are number of issues associated with the effectiveness of the top up arrangements in enhancing security of supply that warrant further consideration:

- ◆ **Top up monitor levels.** Transco has stated that were top up monitors to be set on the basis of the assessment as presented in NGT's Preliminary Winter Outlook Report, then the initial monitor levels for LNG and Medium Range Storage facilities would be set at 100%, and the initial level at Rough would be set at around 75%. However, it appears to Ofgem that the rationale for setting such a high monitor level at Rough is based on the assumption that the monitor should provide sufficient stock levels to support uninterrupted supply to all load – including LDZ and NTS interruptible customers - as far as possible below the point at which Transco would interrupt for supply and demand reasons²².

It should also be noted that Transco's knowledge of the extent to which market participants have arrangements for demand side response can be expected to be relatively limited. Furthermore, the fact that market participants can adapt their positions as the winter progresses (and

²² At demand levels below 85% of the undiversified 1 in 20 peak demand level at which point Transco would interrupt for supply and demand reasons

information conditions improve) including with respect to demand side response options, suggests that setting monitor levels based on pre-winter assessments of 'provision for a 1 in 50 winter' are likely to be subject to major limitations in terms of assessing the potential for demand side responsiveness.

Ofgem considers that it would be helpful to market participants if the methodology used by Transco to set top up monitor levels was made available (together with the methodology for calculating the 1 in 50 as discussed in chapter 4), and Ofgem will be requesting that Transco make available such a methodology.

- ◆ **Top up counter nominations.** Top up counter nominations have the potential to restrict the ability of facilities to cycle within winter, as they would result in a defined level of stock being maintained and therefore reduce the extent to which storage facilities are utilised. Counter-nominations can reduce the amount of gas provided from storage on a particular day, and thus – other things equal – generate a shortfall that has to be met from other sources.

In addition, the mechanistic nature of the approach of setting monitor levels to be maintained by Transco intervention, as necessary, could generate potentially problematic incentives for market participants. For instance, by restricting available supplies, a counter-nomination can be expected to have an upward effect on prices. This may result in an increase in supplies from other sources relative to what would otherwise have been observed, and if these supplies come from storage holdings this may generate further counter-nomination actions. That is, counter-nominations could potentially lead to significantly higher prices and generate storage withdrawals at a significantly earlier stage and higher levels than would otherwise be the case.

- ◆ **Storage as the only source of top up.** Transco's current approach to top up issues is that, in seeking to 'fill' an identified supply/demand shortfall, the top up arrangements focus on only one source of response: storage. That is, when contracting to 'fill' an identified shortfall, Transco takes no account of the potential to contract for additional response capability from other sources. This assumes automatically that the use of storage is cheaper than

other options. It can also be noted that, to the extent that they influence commercial incentives with respect to the usage of storage facilities, the counter-nomination arrangements can be expected to distort competition in the provision of storage and other flexibility services.

- ◆ **Incentive effects of top up market offers.** Transco have argued that the current methodology for the calculation of the top up market offer price does not consistently provide the most appropriate incentives for shippers. However, the expectation of top up market offers under severe conditions can be expected to have a dampening effect on incentives on market participants to make security of supply provisions under a much broader set of circumstances. In particular, if any alternative supply or demand side response can be expected to be available at times when a top up market offer might be accepted, but at higher cost than the TMOP, then the likely effect of a top up market offer is to reduce the price that would be faced by a shipper that has a supply shortfall. This raises significant questions concerning the incentives generated by the top up market offer arrangements, and the extent to which they can be expected to have perverse effects on incentives to make security of supply provisions.

4.16. Ofgem considers that there are potentially significant costs associated with the current top up arrangements, and that there are significant questions concerning the extent to which these arrangements can be expected to actually enhance security of supply (as was noted above, the manner in which top up is priced can be expected to actually dampen incentives on market participants with respect to security of supply under a range of scenarios). In addition to the direct costs that might be associated with top up actions, there are potentially significant indirect costs given the extent to which the top up arrangements could give rise to market distortions.

4.17. As was highlighted above, given Transco's preliminary supply/demand assessment, the current top up arrangements could result in Transco buying significant quantities of gas in order to seek to ensure that monitor levels are not breached. As well as undermining security of supply, these actions - which could potentially be taken on a significant number of days even in relatively mild conditions - could generate significant distortions in prompt gas markets and could lead to significant increases in prompt gas prices. These actions

could, if the effect is significant, also affect forward prices. Finally, the current top up rules could distort the utilisation of physical storage capacity and, more generally, competition in the provision of storage and other flexibility services.

5. Potential Options

Introduction

5.1. This chapter sets out six potential options that could be adopted in order to seek to address the weaknesses of the current top up arrangements that have been identified in this document. In particular, the options considered are:

- ◆ The complete removal of top up from Transco's network code (and its safety case);
- ◆ Amend the current arrangements so that Transco changes the way it assesses the need for top up gas during the winter given Ofgem's concerns about the existing methodologies and assumptions that underpin the calculation of the top up requirement;
- ◆ Developing alternative ways of responding to situations where top up actions might otherwise be taken that are more efficient and generate less market distortions (for example, the substitution of top up gas by forward contracts with counter-parties);
- ◆ Other modifications to the current top up arrangements aimed at improving their effectiveness;
- ◆ Redefining top up such that it focuses only on the domestic customer supply security standards; and/or
- ◆ No significant changes to the current top up arrangements.

5.2. Not all of the options considered are mutually exclusive. Given the likely impact on the market of operating under the current rules this winter, it is Ofgem's initial view that, other things equal, the setting of monitor levels in line with the assessment in NGT's Preliminary Winter Outlook Report – that is, the setting of opening levels of 100% at the LNG and Mid-Range Storage facilities, and 75% at Rough – would not be consistent with the operation of a pipeline system in an efficient and economic manner.

- 5.3. We would welcome respondents' views on the options set out in this chapter. We would also welcome views on any alternative options that have not been covered in this chapter.

Option 1: The complete removal of top up from the network code (and Transco's safety case)

- 5.4. Ofgem's initial view is that the conclusions to the Ofgas 1998 review of top up remain valid, and that the most desirable approach would be for the top up arrangements to be removed from Transco's network code and for references to top up to be removed from Transco's safety case.
- 5.5. Whilst we consider this the most appropriate course of action, we recognise that removal of references to top up from Transco's GT safety case would require the approval of the HSE, and the process for making changes to the safety case can take a number of months. It may not be possible, therefore, to completely remove top up from Transco's network code and its safety case ahead of this winter.
- 5.6. Whilst we continue to consider that this is the most appropriate way forward, it may not provide an effective means of addressing the potential for significant distortions to be generated by the top up arrangements in 2004/05.

Option 2: Changes to the way Transco assesses the need for top up gas

- 5.7. As set out in chapter 4, it is clear that the adequacy of the supply and demand assumptions presented are important because of the impact that they can have on the likely existence or otherwise of a top up requirement and the impact they can have on the actions taken by market participants concerning their provisions for extreme conditions.
- 5.8. Under this option, Transco would change the way it assesses the need for top up gas. For instance, in undertaking its forecast of the overall supply/demand position for winter, Transco could include an assessment of the level of storage recycling and the level of demand side response that could be expected in a severe winter. Clearly the economics of factors such as demand side response

and storage recycling are different when assessed in the relatively mild winters that have been experienced recently as compared with a 1 in 50 severe winter, and account should be taken of this in Transco's forecasts.

- 5.9. Ofgem considers that a more sophisticated approach to supply and demand forecasting on the part of Transco would reduce the potential for top up to introduce market distortions and would reduce the scope for inefficient costs to be incurred as a result of the top up arrangements.

Option 3: Transco to develop alternative ways of contracting to address supply/demand shortfalls

- 5.10. Under this option, Transco would develop alternative, more flexible and innovative ways of contracting to address identified supply/demand shortfalls that are more efficient than the current approach which focuses only on one potential source of response: storage. For example, this option could involve Transco entering into forward agreements for physical response, for instance the interruption of gas. Under such an approach, consideration would need to be given to funding arrangements and the associated incentives faced by Transco. It would also be important to consider the ways in which such an approach influenced the incentives faced by market participants, and in particular, the most appropriate ways in which costs of such services could be fed through to cash out prices.
- 5.11. For example, rather than taking top up actions, given the distortion to market arrangements that might result, Transco could enter into forward agreements for demand side response. Agreements of this kind could be used to underpin changes in top up monitor levels that negated the need for top up actions, and could therefore be developed even in situations where the existing top up arrangements remained unchanged.
- 5.12. Whilst we have included this option for consideration, our initial view is that there is not a compelling case for developing such arrangements. As was highlighted above, we consider that the most appropriate option would be for the complete removal of top up from Transco's network code (and its safety case).

Option 4: Modify the existing top up arrangements

5.13. Transco has proposed a number of ways in which the current top up arrangements could be modified, and these are considered in turn below. Our initial view is that none of these options would materially address the weaknesses of the current top up arrangements that have been highlighted in this report. Indeed, in seeking to increase the effectiveness of the existing arrangements, some of these modifications could be expected to increase the level of distortions that could be generated by the top up arrangements.

5.14. Transco has set out a number of options for minor developments including:

- ◆ **Changing storage use it or lose it (UIOLI) rules so that top up counter nominations result in firm gas delivery.** Transco and others have raised concerns with respect to the extent to which counter-nomination actions may be effective given the current arrangements for accessing capacity at storage sites. In particular, where there are UIOLI arrangements in place, the effect of any top up counter-nomination could be off-set by additional withdrawal. Given this, Transco have suggested that storage UIOLI arrangements could be changed such that UIOLI capacity is not made available when top up counter-nominations are being made, in order to ensure that the counter-nomination action could not be undermined by subsequent withdrawal under the UIOLI arrangements.

By making that capacity available, UIOLI arrangements seek to ensure the efficient utilisation of facilities. As was highlighted in chapter 4, the potential for top up actions to result in the withholding of physical storage flexibility is a major source of concern in relation to the current top up arrangements. Removing the availability of UIOLI capacity would have the (intended) effect of making this withholding of physical flexibility by the top up manager more effective than would be the case under the current arrangement. That is, the proposed approach could increase the likelihood of top up actions resulting in less efficient patterns of storage utilisation. Furthermore, it can be noted that the approach would involve a significant extension of the scope of Transco intervention under the top up arrangements (to include influence on the manner in which capacity is provided to users at storage sites).

- ◆ **Publish storage stocks.** Transco has indicated that access to information concerning inventory levels held in different types of storage facility (i.e. long duration, medium duration and short duration) would be beneficial to the market. Furthermore, some market participants have argued that access to storage inventory and daily flow information would provide them with a better means of assessing overall system supply.

In principle, Ofgem considers that increasing the availability of storage inventory and flow information would be a desirable development. However, there are a number of issues that remain unresolved with respect to wider publication of information - in particular, in relation to potential commercial sensitivities – and discussions on this issue remain ongoing. However, we would note that to the extent that increased transparency would be likely to make Transco's top up actions more visible and predictable under the current arrangements, it is possible that such an approach could increase the potential for gaming.

- ◆ **The calculation of the TMOP.** Transco has argued that the current methodology for the calculation of the TMOP does not consistently provide the most appropriate incentives for shippers. In particular, Transco has highlighted the fact that if there is not an opening top up requirement (and since all available storage capacity is booked, no opening requirement is anticipated for 2004/05), but that top up is subsequently booked within winter, then the resulting TMOP is likely to be only slightly higher than the weighted average cost of purchasing the gas when the injection took place. Transco has proposed network code modification 671, which amongst other things seeks to change the basis upon which TMOP is calculated. This modification is currently being considered by the Authority.

Option 5: Redefine top up such that it focuses only on the domestic customer supply security standards

- 5.15. This option would involve the top up arrangements being retained (in some form), but the method for assessing top up requirements would be changed such that the assessment would focus only on provisions for the meeting of the domestic customer supply security standards. We would note that the domestic

supply security standards are explicitly referred to as a rationale for top up in Transco's GT safety case. However, the safety case also refers to top up as involving the assessment of gas supplies against firm demand. That is, it refers (albeit in a very general manner) to an assessment that goes beyond the domestic customer supply security standards. Similarly, the network code provides for a top up assessment that takes account of demand from non-domestic as well domestic customers.

- 5.16. This option would involve limiting the focus of the top up assessment to domestic customers. As noted above, we consider the removal of references to top up from Transco's GT safety case and its network code to be the most appropriate course of action. However, in the absence of this, we consider that it would be appropriate for the scope of the top up assessment to be redefined such that only the domestic supply security standards are considered. Such a change would, in Ofgem's view, bring the top up arrangements significantly more into line with the security standards provided for under the licensing arrangements.
- 5.17. Limiting the focus of the top up assessment to domestic customer demand could be expected to generate a situation where there would be no realistic prospect of Transco top up actions (given the extent to which total peak demand forecasts exceed peak demand forecasts for domestic customers).
- 5.18. As stated earlier, however, Transco has already attempted to revise its safety case to remove top up only in respect of non-domestic load. In February 2001 the HSE responded to this proposed revision stating that their legal advice was such that both domestic and non-domestic customers need to be covered by the arrangements described in the safety case, and as such they couldn't consider this proposal further. In August 2001 Transco withdrew this submission.
- 5.19. As with option 1, given that the process for making changes to the safety case can take a number of months and, in the case of this option the HSE has already rejected the principle of such a change, this option may not provide an effective means of addressing the potential for significant distortions to be generated by the top up arrangements in 2004/05.

Option 6: No significant changes to the current top up arrangements

- 5.20. All policy development must consider a “do nothing” option. However, as was highlighted in chapter 4, Ofgem has substantial concerns with respect to the extent to which the current top up arrangements could generate market distortions and undermine security of supply given Transco’s preliminary supply and demand forecasts. These concerns are of particular significance relative to previous years given that Transco has indicated that, on the basis of its preliminary supply/demand assessment, the current methodology for setting monitor levels would generate opening levels of 100% for LNG and medium duration storage facilities. It is Ofgem’s initial view that, other things equal, the setting of monitors at these levels would not be consistent with the operation of a pipeline system in an efficient and economic manner.

6. Way forward

- 6.1. Ofgem invites views on any of the issues raised in this document, and in particular where views have been specifically requested, as detailed above. Responses to this consultation will normally be made available in the Ofgem library and on the Ofgem website unless respondents request that they should remain confidential. Respondents should mark any part of their response (or the whole response) which is to remain confidential. If this is the case, where possible, any confidential material should be confined to appendices.
- 6.2. We anticipate, as part of the review process, providing discussion papers on particular issues raised in this document. In addition, it may be appropriate to set up a series of workgroups.
- 6.3. Responses should be submitted in writing by Friday 18 June 2004. Following consideration of the responses, Ofgem intends to publish a 'Final Thoughts' document, containing an assessment of all the issues, in July 2004.

Appendix 1 Relevant modifications

- 1.1 This appendix summarises the most recent relevant modification proposals to Transco's network code since network code modification 297 was approved by Ofgem.
- 1.2 In January 2002 Ofgem rejected modification proposal 472 "Restoration of funding for national top up" which was raised by Transco to reintroduce the provisions of Transco's network code relating to recovering the costs of top up which were removed by network code modification proposal 297. As set out in its decision letter in respect of this proposal, Ofgem reiterated its view that Transco's network code arrangements at that time provided shippers with strong commercial interests to balance their inputs and offtakes over the gas day and particularly on days of tight demand and supply conditions. Ofgem acknowledged that as part of its consideration it had given regard to the nature of Transco's ongoing top up obligation and the basis on which any funding might be permitted. Ofgem was of the view that in allowing the recovery of any top up costs it would have regard to whether these costs had been incurred efficiently and in particular the extent to which any other actions that would have been likely to reduce the total costs of any top up requirement had been taken by Transco.
- 1.3 In August 2002 Ofgem accepted modification proposal 504 "top up process enhancements" which was raised by Transco to make a number of changes to the top up arrangements, primarily to allow Transco, acting as the top up manager, greater discretion in regard to taking top up related actions such as booking storage capacity and making injections. Ofgem was of the view that allowing Transco additional flexibility in taking top up actions would better facilitate the securing of effective competition between relevant shippers and between relevant suppliers.
- 1.4 In August 2003 Ofgem rejected modification proposal 583 "top up monitor cost recovery" which was raised by Transco. Under this modification proposal, where the top up manager identified a winter top up injection requirement due to the amount of gas in storage falling below the monitor level, it would notify this to all users. If, following such notification, a user were to make any subsequent storage withdrawal nomination, the net costs of any counter storage

injection made by the top up manager would be recovered from all system users based on their firm demand on the gas day. In rejecting this modification proposal, Ofgem repeated its view that Transco's network code arrangements provide shippers with strong commercial interests to balance their inputs and offtakes over the gas day. Further, Ofgem went on to state that, in its view, Transco's purchases of top up could have distortionary effect on the actions of market participants. Ofgem also made the point that Transco had not included an assessment of how the changes introduced by modification proposal 504 had impacted on Transco's actions in relation to making winter top up injections.

- 1.5 In December 2003 Ofgem rejected modification proposals 659 "Winter injection cost allocation based on user daily imbalances" and 660 "Winter injection cost allocation based on user daily offtakes" which were submitted by Transco. Transco's proposed that, in the event that on one or more days the top up manager determines a winter top up injection requirement and as a consequence injects gas into storage, the net costs incurred by the top up manager would be recovered from users either based on their negative daily imbalances (659) or their daily quantities offtaken (660). Transco was of the view that the proposed modifications would incentivise users to ensure that they have made adequate provision for 1 in 50 winter condition requirements and would thereby enable the top up mechanism to deliver the 1 in 50 standard.
- 1.6 In rejecting these modification proposals, Ofgem repeated its view that Transco's network code arrangements provide shippers with strong commercial interests to balance their inputs and offtakes over the gas day. Further, Ofgem again went on to state that, in its view, Transco's purchases of top up could have distortionary effect on the actions of market participants. In addition, Ofgem drew attention to the fact that, in its view, the timing of the modification proposals was unhelpful as market participants had already taken positions in the market for that winter based on the prevailing arrangements at that time and that Transco had recently decided to raise the top up monitor levels. Further, Ofgem also commented that in determining the top up monitor levels, Transco had failed to take into account the possible effects of the storage stock recycling which, in Ofgem's view, there was evidence of based on the previous winter's experience.

- 1.7 In November 2003 Transco submitted modification proposal 671 “Enhancements to winter injection process”. Transco propose that the calculation of top up market offer price be amended to ensure that it is based upon prices available prior to the day and that this price reflects the cost of firm storage capacity. This proposal is currently with Ofgem for decision.

Appendix 2 Schedule 1 of the GS(M)R

Statutory Instrument 1996 No. 551

Gas Safety (Management) Regulations 1996 - continued

SCHEDULE 1

Regulation 3(1)

PARTICULARS TO BE INCLUDED IN SAFETY CASE OF A PERSON CONVEYING GAS

General

1. Name and address of the person preparing the safety case (in this Schedule referred to as "the duty holder").

2. A description of the operation intended to be undertaken by the duty holder.

3. A general description of the plant and premises the duty holder intends to use in connection with the operation including, in particular, the geographical location where any pipes he uses joins pipes used by other persons for conveying gas.

4. Particulars of any—

(a) technical specifications;

(b) procedures or arrangements relating to operation and maintenance,

which the duty holder intends to follow in connection with the operation he intends to undertake insofar as they affect the health and safety of persons.

Safety management

5. A statement of the significant findings of the risk assessment he has made pursuant to regulation 3 of the Management of Health and Safety at Work Regulations 1992[12], and particulars of the arrangements he has made in accordance with regulation 4(1) thereof.

6. Particulars to demonstrate that the management system of the duty holder is adequate to ensure that the relevant statutory provisions will (in respect of matters within his control) be complied with in relation to the operation he intends to undertake.

7. Particulars to demonstrate that the duty holder has established adequate arrangements for ensuring the competence of his employees in health and safety matters.

8. Particulars to demonstrate that the duty holder has established adequate arrangements for managing work carried out by persons who are not his employees on or in relation to plant or premises which he owns or controls.

9. Particulars to demonstrate that the duty holder has established adequate arrangements for passing information relevant to health and safety to persons within his undertaking.

10. Particulars to demonstrate that the duty holder has established adequate arrangements for passing and receiving information relevant to health and safety to and from other persons who have duties under these Regulations.

11. Particulars to demonstrate that the duty holder has established adequate arrangements for audit and the making of any necessary reports.

Co-operation

12. Particulars of the arrangements the duty holder has established to enable him to comply with regulation 6 (co-operation) including (except where he is the network emergency co-ordinator) particulars of the arrangements he has established to ensure that any directions given to him by the network emergency co-ordinator are followed.

Gas escapes and investigations

13. Particulars of the arrangements—

(a) the duty holder and any emergency service provider appointed by him have established to enable him or the provider, as the case may be, to comply with regulation 7(4) to (6);

(b) the duty holder has established to appoint emergency service providers.

14. Particulars to demonstrate that the duty holder has established adequate arrangements to enable him to comply with paragraphs (12), (13), (15) and (16) of regulation 7, for co-ordinating the investigations he causes to be carried out pursuant to that regulation with other investigations carried out pursuant thereto, and for participating in such other investigations.

Content and other characteristics of gas

15. Particulars to demonstrate that the duty holder has established adequate arrangements to ensure that all gas he conveys complies with regulation 8.

Continuity of supply

16. Particulars to demonstrate that the duty holder has established adequate arrangements to minimise the risk of a supply emergency.

17. Particulars to demonstrate that the duty holder has established adequate arrangements to ensure that the gas he conveys will be at an adequate pressure when it leaves the part of the network used by him.

Supply emergencies

18. Particulars to demonstrate that the duty holder has established adequate arrangements for dealing with supply emergencies or other incidents which could endanger persons.

19. Where the duty holder is the only person conveying gas in a network, particulars to demonstrate that he has established adequate arrangements to decide when and for how long gas not conforming with the requirements of regulation 8(1) should be conveyed in the network pursuant to regulation 8(4).

20. Without prejudice to paragraph 18 above, particulars of the procedures that the duty holder has established to discontinue safely supply to consumers, when it is known there is insufficient gas to satisfy demand.

21. Particulars of the procedures that the duty holder has established to restore safely the gas supply to consumers, following an interruption in supply.

Interpretation

22. In this Schedule—

(a) "audit" means systematic assessment of the adequacy of the management system to achieve the purpose referred to in paragraph 6 carried out by persons who are sufficiently independent of the system (but who may be employed by the duty holder) to ensure that such assessment is objective;

(b) ;"management system" means the organisation and arrangements established by the duty holder for managing his undertaking;

(c) any reference to an operation intended to be undertaken by the duty holder is a reference to his intended operation of conveying gas in a network.