# Gas transmission – new NTS entry points, reserve prices in auctions and unit cost allowances (UCAs)

## Consultation document

May 2005

## Summary

Gas transmission is a monopoly activity and the charges that Transco levies for use of the National Transmission System (NTS) are regulated. Following the 2001 review of Transco's price control and incentive arrangements significant changes were made to the regulatory and commercial arrangements for entry capacity. Entry charges are determined via auctions – for capacity in the short, medium and long-term. The long-term auctions have provided important new information on the likely pattern of gas flows across the NTS.

At present, Transco bases the reserve prices in the medium and long-term auctions on Unit Cost Allowances Gross (UCAGs). These are estimates of the unit costs of providing long-run incremental entry capacity at an entry point on the NTS. UCAGs are also used as part of the regulatory incentive arrangements designed to encourage Transco to invest in a timely way and are key to determining the commitments a shipper would need to make in order that Transco would be prepared to invest in the NTS to provide capacity to a new entry point.

A number of developers interested in establishing new gas storage sites that would require connections to the NTS have requested that Ofgem set a number of new UCAGs for these proposed new entry points to the NTS (and one proposed new entry point to a DN).

Ofgem last consulted on setting a UCAG in November 2003 in relation to the Garton NTS entry point, which will serve the Aldbrough storage facility. Since this time it has become clear that there are substantial issues relating to the setting of further new UCAGs. In particular, changes in the pattern of flows across the gas network imply very significant changes in long-run incremental costs and large variances between new UCAGs compared to existing UCAGs. In the light of these changes, this consultation covers not only issues relating to the new UCAGs but also the possible resetting of all existing UCAGs before the next round of long-term auctions, presently scheduled for September 2005.

Ofgem has also started work on the reviews of transmission price controls that will culminate in proposals for new controls and incentive arrangements at the end of 2006 with an implementation date of 1 April 2007. It is timely to consider how the present approach might evolve over the medium-term and how the process for deciding on any changes should be integrated into the price control review. This consultation also identifies possible principles that might be used to guide the evolution of UCAGs in the future and identifies key issues on which the views of respondents are sought.

In making a decision in relation to the issues presented in this consultation paper Ofgem will act consistently with its principal objective and its statutory duties. Ofgem's principal

objective is to protect the interests of consumers, wherever appropriate, by promoting competition.

# Table of contents

# 1. Introduction

## *Purpose of this document*

1.1. Gas transmission is a monopoly activity and the revenue that Transco earns from the use of the NTS is price controlled. Following the 2001 review of Transco's price control and incentive arrangements significant changes were introduced to the regulation of NTS entry capacity. These included the introduction of long-term auction arrangements, the setting of entry capacity baselines and UCAGs.

1.2. In broad terms, Transco recovers 50 per cent of its NTS price control revenue from entry charges and 50 per cent from exit charges. Entry charges are determined via auctions – for capacity in the short, medium and long-term. Reserve prices in the medium and long-term auctions are set by Transco and are currently based on Unit Cost Allowances (Gross) (UCAGs).

1.3. The UCAGs are estimates of the unit costs of providing long run incremental entry capacity at an entry point on the NTS. UCAGs are also used as part of the regulatory incentive arrangements designed to encourage Transco to invest in a timely way and are key to determining the commitments a shipper would need to make in order that Transco would be prepared to invest in the NTS to provide a new entry point. UCAGs underpin Transco's entry capacity investment incentives and determine the range of Transco's allowed revenue for the provision of incremental entry capacity.

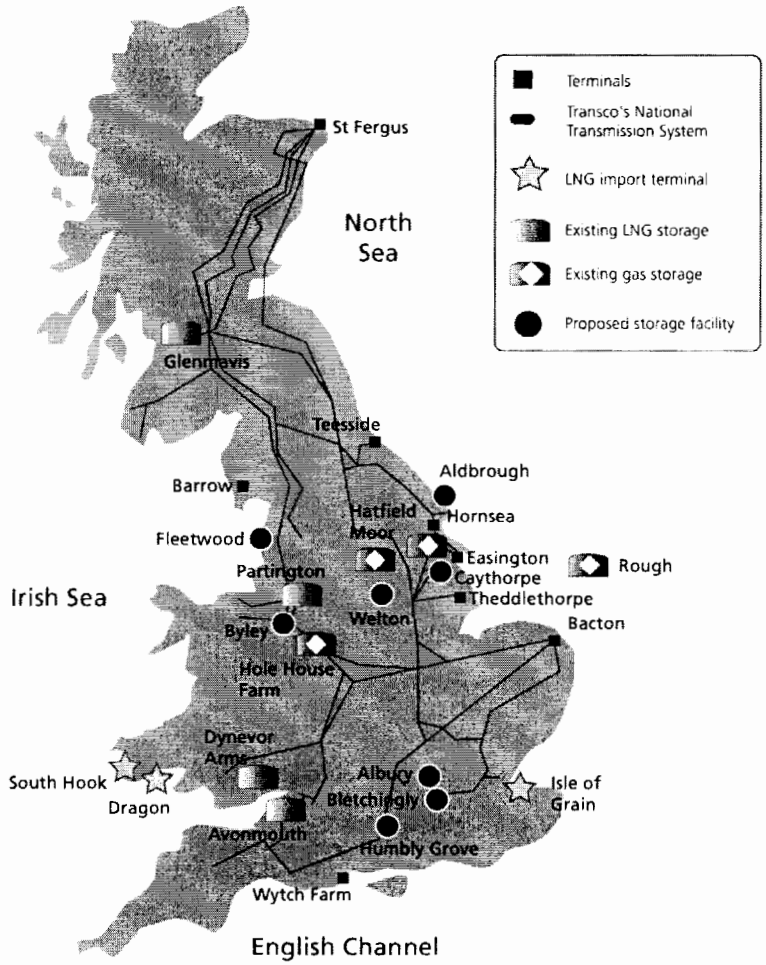
1.4. A number of developers are interested in establishing new gas storage sites that would require connections to the NTS. As part of the process for establishing these new connections they have requested that Ofgem set UCAGs for these proposed new entry points to the NTS (and one proposed new entry point to a DN).

1.5. Ofgem last consulted on setting a UCAG in November 2003 in relation to the Garton NTS entry point, which will serve the Aldbrough storage facility. Since this time it has become clear that there are substantial issues relating to the setting of further UCAGs. In particular, changes in the pattern of flows across the gas network imply very significant changes in long-run incremental costs

(LRICs) resulting in very different new UCAGs compared to existing UCAGs. In the light of these changes this consultation covers not only issues relating to the new UCAGs but also the possible resetting of all existing UCAGs for the next round of long-term auctions, presently scheduled for September 2005.

1.6. Figure 1.1 illustrates the position of existing entry points on the NTS and the proposals for new entry points.

Figure 1.1 – the NTS




## *Statutory background*

1.7. Section 4AA of the Gas Act provides that the principal objective of the Authority in carrying out its functions under the Gas Act is to protect the interests of consumers in relation to gas conveyed through pipes, wherever appropriate, by promoting effective competition between those engaged in, or in commercial

activities connected with, the shipping, transportation or supply of gas. For these purposes consumers include both existing and future consumers.

1.8. 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 out of the activities which they are authorised or required to do.

1.9. The Authority must also carry out its functions in the manner it considers is best calculated to:

- promote efficiency and economy on the part of authorised persons and the efficient use of gas conveyed through pipes;
- protect the public from dangers arising from the conveyance of gas through pipes or the use of such gas;
- to contribute to the achievement of sustainable development; and
- secure a diverse and viable long-term energy supply.

1.10. In carrying out its functions in accordance with the above objectives and duties, the Authority must have regard to:

- the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed; and
- any other principles appearing to the Authority to represent the best regulatory practice.

1.11. Ofgem will have regard to all of its duties when carrying out its functions.

## *Structure of this document*

1.12. This document is structured as follows.

- **Chapter 2 – the NTS entry capacity regime** – this chapter describes the main features of the present regulatory and commercial arrangements for NTS entry capacity. In particular it deals with the charging arrangements and auctions and the incentives on Transco for the provision of NTS entry capacity.
- **Chapter 3 – a method for setting LRICs and UCAGs** – this chapter describes a method for setting LRICs and UCAGs and includes a description of the main assumptions used in the modelling.
- **Chapter 4 – estimates of UCAGs** – this chapter discusses some of the background to setting UCAGs and describes the key characteristics of the projects that have requested estimates of UCAGs for new entry points.
- **Chapter 5 – comparing UCAGs** – this chapter compares the new UCAGs with existing UCAGs and discusses the reasons for the differences. It also discusses the key policy issues raised by changing estimates for UCAGs and whether the September 2005 long-term auctions should be delayed while all the UCAGs are revised to reflect the latest information available on costs.
- **Chapter 6 – entry points connecting to distribution networks** – this chapter considers the issues surrounding the possible connection of a storage (or other) facility to a distribution network rather than the NTS.
- **Chapter 7 – further issues for consideration** – this chapter discusses key issues for setting UCAGs in the future and interactions with the 2007 transmission price control reviews.
- **Appendix 1 – UCA tables –** this appendix contains tables with annuitised UCAGs and explains how UCAs are derived from UCAGs.
- **Appendix 2 – Glossary** – this appendix describes some of the abbreviations and terminology used in this document.
- **Appendix 3 – Draft Impact Assessment** – this appendix presents potential costs and benefits of the key options presented in this document and invites the views of respondents on how to quantify these costs and benefits.

## Timeline

1.13. Responses to this document should be received by 30 June 2005. It is intended to publish final proposals on these matters in the first half of August 2005. If it is appropriate these final proposals will be accompanied by the section 23 notice that would be necessary to consult on any changes to Transco's NTS GT licence. This would involve a 28 day statutory consultation process. Once UCAGs have been included in Transco's NGS GT licence, Transco can consult on price schedules and proceed with long-term auctions. It may be that the long-term auctions scheduled for September 2005 will need to be delayed until later in the year in order to allow for the orderly introduction of any revised UCAGs. If further changes are required to UCAGs or gas transmission incentive arrangements that cannot be dealt with to this timetable then these matters can be dealt with as part of the 2007 transmission price control reviews.

## Responding to this document

1.14. Views are invited from interested parties (including consumers and their representatives, shippers, infrastructure developers, investors, Transco, and other network operators) on any of the issues raised in this document. Responses to this document should arrive at Ofgem by 30 June 2005. They should be sent to:

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1.15. All responses will be published by placing them in Ofgem's library or on Ofgem's website and so any confidential material should be included as a separate annex. It would be helpful if responses could be provided electronically.

1.16. Any questions on this document should be directed to Amrik Bal who can be contacted on 020 7901 7074 or by e-mail at Amrik.Bal@ofgem.gov.uk

# 2. The NTS entry capacity regime

2.1. This chapter describes the main features of the present regulatory and commercial arrangements for the sale of NTS entry capacity. In particular it deals with the:

- charging arrangements and the long-term auctions;
- provision of baseline entry capacity at existing terminals;
- incentives on Transco for the provision of NTS entry capacity;
- circumstances where Transco buys back entry capacity from shippers;
- UCAGs and their importance to the auction and incentive arrangements, and
- role of the TO commodity charge.

2.2. These arrangements were put in place following the 2001 Transco price control review. They were designed to provide incentives on Transco to invest in the NTS in a timely and efficient manner. The auctions were designed to ration scarce capacity efficiently and to allow shippers to signal their long-term needs with respect to future entry capacity. The signals obtained from the long-term auctions are likely to assist Transco in responding to changing patterns of supply and demand and should be more robust than the information obtained through Transco's existing planning process where information is provided on a voluntary basis.

## *Charging arrangements and the long-term auctions*

2.3. Transco's NTS transmission asset owner (TO) price control revenue recovers approximately 50 per cent from entry charges and approximately 50 per cent from exit charges. These entry charges are determined in long-term and short-term auctions.

2.4. The Long-Term System Entry Capacity (LTSEC) auctions were introduced following Ofgem's approval of Transco's Network Code modification proposal 0500, 'Long-term capacity allocation' in September 2002. In these auctions, Transco offers for sale entry capacity at all NTS entry points, in 3 month blocks

for the capacity year starting 2 to 17 years from the date of the auction. Transco provides a price schedule for each entry point that sets reserve prices for capacity sold up to the baseline levels which were set at the last price control review. For existing entry points capacity above baseline would probably trigger network reinforcement and so the auctions are based on upward sloping price schedules, with additional capacity costing more than capacity up to the baseline level.

2.5. For new entry terminals (i.e. entry terminals which did not exist in 2002) there is no baseline level of entry capacity. At these new entry points price schedules could be downward sloping to reflect the economies of scale in the provision of new capacity (this tends to be more likely where the price curve includes the cost of Transco building a connecting pipeline). The September 2004 and December 2004 LTSEC auctions of capacity at Milford Haven had downward sloping price schedules.

2.6. In the current arrangements reserve prices for both existing and new entry points are derived from UCAGs. These UCAGs are proxies for LRICs and were calculated at the last Transco price control review for each of the existing entry terminal. Since the last price control review, Ofgem has determined UCAGs for several new entry points including Milford Haven, Barton Stacey and Garton.

## *Baselines for entry capacity at existing terminals*

2.7. At the last price control review Ofgem based Transco's NTS TO price control revenue on a range of entry and exit capacity output measures for each of the five years of the control period. In the case of entry points, the maximum physical capacity available at each entry point was used to set baseline entry capacity and this was estimated by looking at the maximum capacity of an entry point assuming no gas would flow at any other entry point i.e. interactions between entry points and potential constraints this might cause were not taken into account.

2.8. This level of maximum physical capacity at each existing NTS entry point defined the NTS TO baseline entry capacity. Ofgem also defined an initial NTS

SO baseline entry capacity figure for each entry point, calculated as 90 per cent of the NTS TO baseline.

2.9. Transco's licence requires it to offer 80 per cent of the SO (system operator) baseline for sale in the LTSEC auctions and the remaining 20 per cent has to be offered for sale in the shorter term entry capacity auctions (monthly, day-ahead and on-the-day auctions) – together with any capacity offered for sale in the LTSEC auctions which is unsold.

2.10. All capacity up to SO baseline level is classified as baseline entry capacity and capacity above baseline is classified as incremental entry capacity. Transco has a licence obligation to offer all obligated entry capacity (both baseline and obligated incremental entry capacity) for sale.

## *Transco's investment incentives*

2.11. As part of the TO price control Transco receives funding to cover a projection of the level of operating and capital expenditure necessary to provide these baseline output levels. Funding for capital investment comprises depreciation and financing allowances (with the latter based on Ofgem's estimate of the cost of capital applied to net regulatory asset values). The price control arrangements also include a range of TO and SO incentives designed to ensure that Transco undertakes investment in the transmission network in a timely manner. Two key SO incentives in this context are the entry capacity investment incentive and the entry capacity buy-back incentive.

2.12. The entry capacity investment incentive is a rolling five year incentive scheme that aims to ensure that Transco responds to auction signals for capacity.

2.13. The UCAG for each entry point is also used to determine the reserve prices in the auctions and provides an implicit TO revenue allowance for each entry point. If Transco sells incremental obligated capacity above the baseline, then it is allowed to keep this revenue subject to a maximum cap on its real returns of 12.25 per cent on the UCAG determined investment. This return is calculated as a return on the notional capital expenditure required to provide this incremental capacity (as proxied by the UCAG) rather than actual investment costs. Transco is also guaranteed a minimum real return of 5.25 per cent on

the notional capital expenditure. Any incremental revenue above the maximum rate of return is refunded to shippers through the SO commodity charge. Under these arrangements Transco is able to choose to release more capacity in response to signals of customers' demands emerging from the auctions. If Transco only releases the baseline level of capacity, it does not receive any additional incentive revenue.

2.14. As part of the price control arrangements Ofgem also implemented a buy-back incentive which is described in more detail in the following section.

## *Buy–back incentive*

2.15. As noted above, Transco's TO price control funds baseline capacity at each entry point. Transco is obliged to offer 90 per cent of these output measures for sale in the entry capacity auctions (i.e. the SO baseline). The auction arrangements established in Transco's Network Code (which has now become the Uniform Network Code) allow shippers to acquire certain financial rights to flow gas through entry points onto the NTS. If Transco cannot provide this capacity it has the option to buy back such capacity (possibly after interrupting any interruptible entry capacity) either in the daily buy-back market or in advance through capacity management agreements. This buy back of entry capacity is on the basis of bids made by the shippers that have purchased the entry capacity. Transco has incentives to minimise the costs of buy-backs.

2.16. There is an entry capacity buy-back scheme with a sliding scale incentive, with a target level of costs, sharing factors and a cap and collar. Table 2.1 summarises the current parameters of the buy-back incentive.

Table 2.1 Current SO buy-back cost incentive parameters

| Targets, Cap and Collar (£m) | | | | | Sharing factors | |
|---|---|---|---|---|---|---|
| Target 2002/3 | Target 2003/4 | Target 2004/5 - 2006/7 | Cap | Collar | Upside | Downside |
| 35 | 10-20 | 18 | 30 | -12.5 | 50% | 35% |

2.17. The performance measure under the buy-back scheme is calculated from the costs Transco incurs in buying back entry capacity on a daily basis less the revenue it earns from the sale of some types of entry capacity products (on-the-

day sales of firm entry capacity, from the sale of interruptible NTS entry capacity and from the sales of non-obligated incremental firm NTS entry capacity) and also revenue from overrun charges (overrun charges are charges levied on a shipper when its total gas flowed at a terminal on a given gas day exceeds its holdings of entry capacity at that terminal on that day).

2.18. The purpose of buy-back incentives is to allow Transco to make efficient trade-offs between investment in new entry capacity and buying back capacity from shippers. Transco could choose not to undertake investment associated with the obligated level of entry capacity but in doing so, it would potentially be exposed to entry capacity buy-back costs if it had sold capacity it could not physically deliver. Transco would need to be able to demonstrate that these judgements had been made on a reasonable and efficient basis and were in the interests of consumers.

2.19. Transco's incentive for deferring investment would be either equal to its allowed revenue (depreciation plus financing allowances) under the TO price control in the case of baseline entry capacity or equal to the revenue earned through its entry capacity investment incentive in the case of obligated incremental entry capacity. It could use a proportion of this revenue to buy-back the capacity it has sold but has not physically delivered – including using capacity management agreements - allowing it to optimise investment and buy-back costs.

## *UCAGs and auctions*

2.20. The UCAGs are also important for shippers bidding in the entry capacity auctions as Transco has based reserve prices in the LTSEC auctions on the UCAGs. The reserve prices also apply in the annual monthly system entry capacity (AMSEC) auctions and the rolling MSEC (RMSEC) auctions. Reserve prices for day-ahead entry capacity are set at two-thirds of the UCA (UCAs are annuitised UCAGs) and there is a zero reserve price for within-day capacity. Table 2.2 summarises the present auction arrangements.

**Table 2.2 Auctions and reserve prices**

| Product name | Product type | Capacity period | Auction timing | Reserve price |
|---|---|---|---|---|
| **Long-term system entry capacity (LTSEC)** | Quarterly | Y+2 to Y+16 | Annually (September) | UCA |
| **Monthly system entry capacity (MSEC)** | Monthly | Y+1 & Y+2 | Annually (February) | UCA |
| **Rolling monthly system entry capacity (RMSEC)** | Monthly | Next calendar month | 1 of the last 5 business days preceding the next calendar month | UCA |
| **Daily system entry capacity (DSEC)** | Daily | Day ahead | 7 days before gas flow day up to 02:00 on the day | 2/3 of UCA |
| | Daily | On the day | Allocated after 06:00 on the Day | 0 |
| **Daily interruptible system entry capacity (DISEC)** | Daily interruptible | Day ahead | 7 days before gas flow day up to 13:00 on the preceding day | 0 |

2.21. In the case of existing and proposed new entry terminals the UCAGs influence the minimum value of LTSEC bids that would justify Transco releasing permanent obligated incremental entry capacity. Therefore the UCAGs play an important role in the long-term auctions that determine whether Transco will release incremental capacity within the NTS and/or construct new entry points.

2.22. Transco's IECR (incremental entry capacity release) methodology statement specifies a net present value (NPV) test, which requires the NPV of the aggregate value of bids over 8 years to equal at least 50 per cent of the assumed project value. The assumed project value is an estimate of the costs of providing incremental entry capacity and is calculated by multiplying the volume of incremental entry capacity being considered for release by the entry point's UCAG. If the NPV of bids for incremental entry capacity over 32 quarters equals at least 50 per cent of the assumed project value for the incremental entry capacity, then Transco will seek approval to release permanent obligated incremental entry capacity. To date Ofgem has approved all such requests. It is then for Transco to provide the additional network capacity, probably by investing in network reinforcement.

## *NTS TO commodity charge*

2.23. In March 2004, Transco raised pricing consultation (PC) 78, which proposed the introduction of a NTS TO commodity charge as a mechanism for dealing with under recovery of NTS price control revenue. In its July 2004 decision letter, Ofgem decided not to veto this proposal. This resulted in a TO commodity charge to entry flows being introduced from October 2004, which is currently been set at zero. However, Transco's initial view is that it may have a shortfall of £40m in auction revenue compared to its price control allowance in 2005/06.

2.24. This might be due to situations where capacity is unconstrained and shippers bid in the short-term entry capacity auctions rather than the long-term entry capacity auctions, which results in lower or zero reserve prices being applicable.

2.25. The TO commodity charge is spread across all shippers. If there were to be a consistent under recovery of price control revenue this might indicate that the reserve prices (or their limited application to the short term auctions) did not reflect underlying costs.

# 3. A method for setting LRICs and UCAGs

3.1. Chapter 2 explained the importance of UCAGs in determining reserve prices in auctions and in providing incentives on Transco and industry participants with respect to the provision of incremental entry capacity. This chapter describes and seeks views on an approach to modelling the LRICs that are used in setting UCAGs. Chapter 5 discusses whether this method should be used to reset all UCAGs now (including existing entry points) or whether the adoption of this new method should be postponed until the start of the next price control period (i.e. from 1 April 2007).

3.2. As noted above UCAGs are intended to reflect the LRICs of providing additional network capacity. Cost reflective charging is important as it ensures that market participants take into account the costs of transmission in deciding where to locate and operate plant. Given that gas transmission assets can have relatively long economic lives it is important for charging to reflect longer term costs – particularly as the long-term auctions may fix the price for capacity for a relatively long period of time.

## *Transcost*

3.3. In order to estimate LRICs for any given entry point it is necessary to make a range of assumptions and model the flows of gas across the NTS. Ofgem has specified the assumptions to be used for network modelling purposes. These assumptions are discussed in greater detail in the section dealing with each step in the modelling process. The modelling was carried out using Transco's hydraulic model of the NTS (Transcost) together with the solver facility (a linear programming optimisation tool) in Excel.

3.4. Transcost estimates the capital cost of reinforcing the system for a given increment of demand. Transcost simulates the NTS network, including approximately 7,000 km of pipes to transport gas from Terminals to Distribution Networks (DNs) and directly connected loads. The model also includes terminals, offtakes, valves, regulators, and compressors.

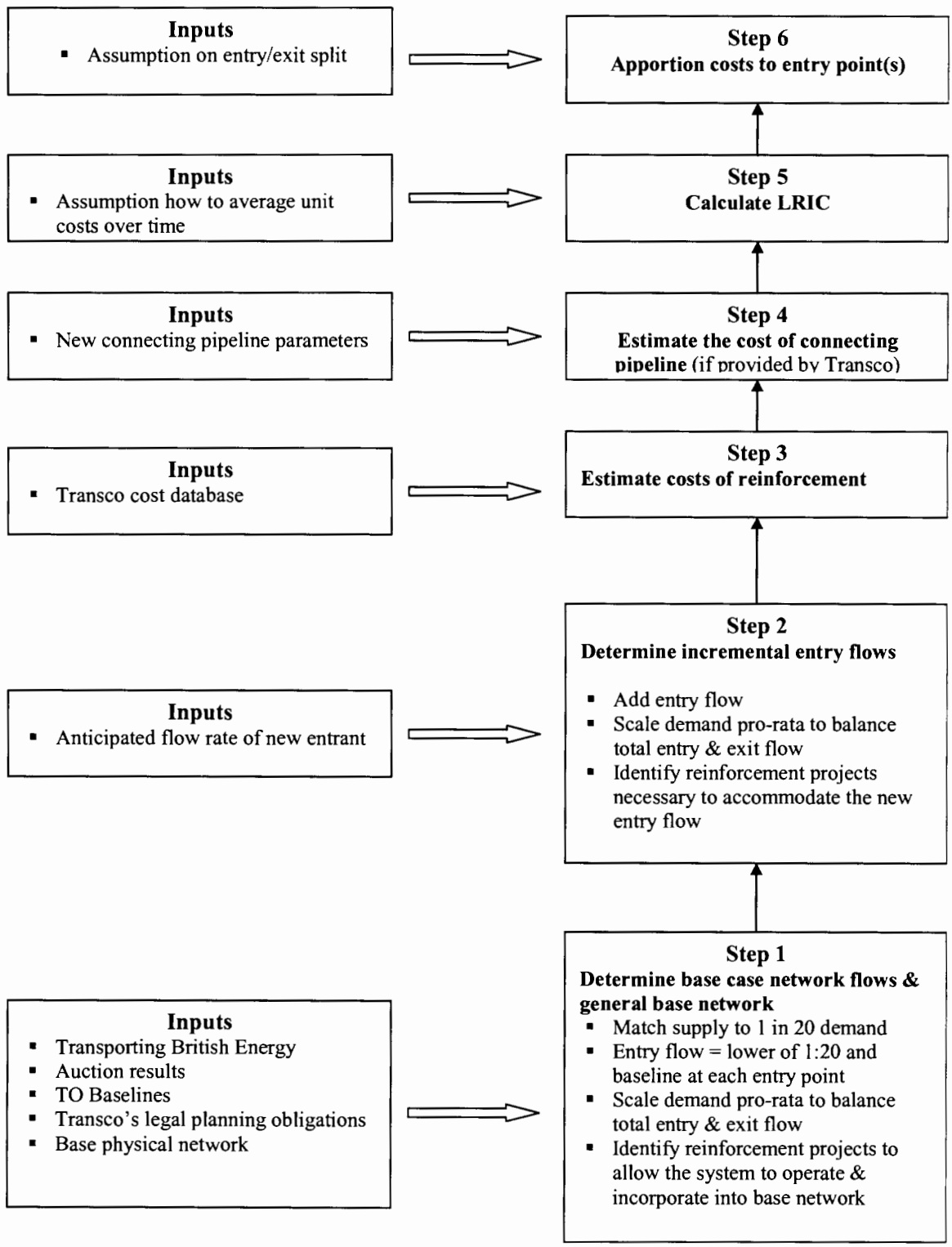
## *Key steps in setting UCAGs*

3.5. The process of setting UCAGs can be separated into six steps:

- determine the base case network flows and general base network;
- determine expected incremental flows associated with the entry point;
- estimate the costs of reinforcement;
- estimate the costs of a connecting pipeline (if required);
- calculate long run incremental costs (LRICs); and
- apportion these costs to the entry point(s).

These steps are shown in figure 3.1 on the next page.

**Figure 3.1 The UCA determination process**



## *Step 1 Determine base case network flows and general base network*

3.6. The objective of step 1 is to determine the base case for gas flows and physical network from which to consider incremental flows and investment.

**Modelling timeframe**

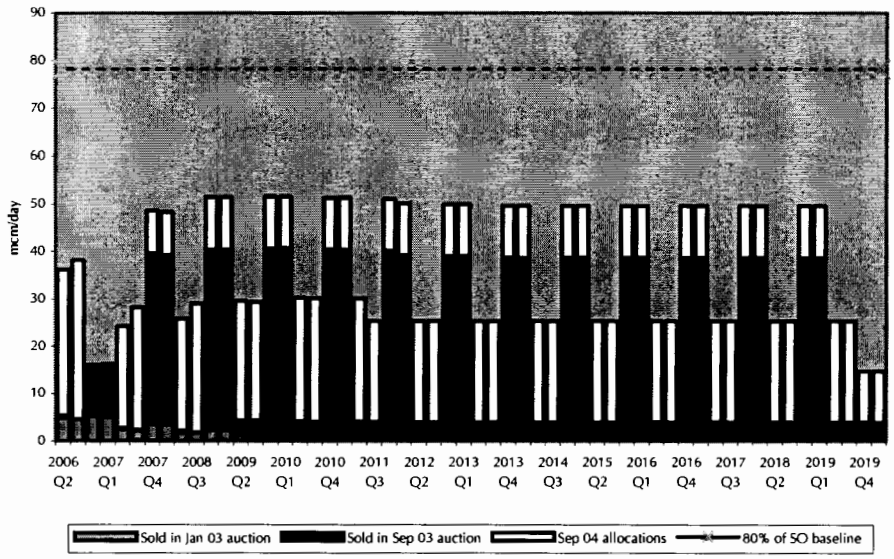
3.7. Given that the objective is to determine long-run incremental costs, an appropriate timeframe will have to be selected. Previous UCA modelling was based on a 10 year timeframe and this timeframe has also been adopted for the purpose of setting the UCAs for the new entry points.

**Base Case Gas flows and the use of auction signals**

3.8. Base case flows could be determined in a number of ways. Given that one of the objectives of the auction regime is to provide long-run investment signals, one approach would be to base the base case flows on long-term auction signals.

3.9. At a number of entry points Transco's initial NTS SO baseline entry capacity is substantially higher than the gas flows indicated by the LTSEC auction signals. Figure 3.2 shows the position at Easington where the bids in the long-term auction for capacity are significantly below the baseline set at the last price control.

**Figure 3.2 LTSEC results for Easington**




3.10. At Isle of Grain no bids have been placed in the LTSEC auctions whereas bids have been placed in the short-term auctions. Similarly, there is significant spare capacity compared with the baseline in relation to Theddlethorpe and Bacton. If only long-term auction signals are taken into account then it appears that only about 50 per cent of GB demand would be satisfied.

3.11. Therefore, given the lack of sufficient long-term auction signals it would not seem appropriate to rely solely on auction signals to determine investment requirements. However, Ofgem does recognise the shortcomings of using planning data, especially over medium to long-term horizons.

**Base case flows and Transco's licence obligations**

3.12. Under the current regulatory regime, Transco is obliged to offer for sale entry capacity up to baseline at existing entry terminals through the various types of entry capacity auctions, including day-ahead and on the day. If Transco were to sell this capacity without being able to physically deliver it, the Uniform Network Code provisions would apply. As set out in Transco's System Management Principles Statement, Transco has various options to address NTS constraints, including buying back capacity it has sold but cannot provide.

3.13. It would seem counterintuitive that in a situation where there is significant (physical) capacity on the network, a new entrant would trigger (major) network reinforcement. At several existing entry points, Transco's forecasted 1 in 20 peak day gas flows, derived from Transco's Transporting Britain's Energy (TBE) consultation, are significantly below the baseline level.

3.14. Given the above, it seems reasonable to model gas flows on the basis of long-term auction signals where these are above baseline and, where this is not the case, on the lower of the 1 in 20 forecast and the SO baseline. This should make use of long-term auction signals where they are available, deal in a pragmatic way with the existing baselines and Transco's licence obligation to provide the capacity in its network to meet 1 in 20 peak demand.

**Base case flows and peak/off-peak flows**

3.15. Ofgem has used peak day flows in order to model the base case. In many circumstances peak day flows will drive NTS investment requirements, especially in the case of storage facilities. However, there are some instances in which this might not be the case. It is possible that in the case of beach terminals non-peak day flows might trigger additional investment.

## *Step 2 Determine incremental entry flows*

3.16. It seems appropriate to use the anticipated flow rate for each new entry point in question. The flow rates under consideration are of a similar magnitude and so a pragmatic approach was adopted of using a single incremental flow rate of 9 mscm/day (equivalent to 97 GWh/day). Transcost operates by adding 9 mscm/day to an entry node and then increasing gas flows from every exit node, in turn, by 9 mscm/day.

3.17. It could be argued that a flow increment of 9 mscm/day is inappropriately high for most exit nodes. However, any artificially high exit costs generated do not influence entry costs as the exit costs are allocated to exit by the regression analysis in step 6.

3.18. In order to carry out hydraulic modelling it is necessary to balance entry and exit flows. Ofgem has adopted a load absorption approach to balance the network.

The advantages and disadvantages of the load absorption approach are discussed later in this chapter.

**Transcost**

3.19. Transcost begins with a base network designed to transport the predicted supply and demand pattern for year 1. Transcost simulates the amount of gas flowing on a 1 in 20 peak day and the pressure at which that gas is being transported.

3.20. Transcost then uses the following process to estimate the LRICs by:

- configuring the year 1 base network;
- adding an increment of gas to each route in turn to calculate the incremental costs for year 1;
- reinforcing the year 1 base network to cope with the supply and demand pattern for year 2. This becomes the year 2 base network;
- adding the increment to the year 2 base network to calculate incremental costs for year 2;
- reinforcing the year 2 base network it generated to deal with year 3 supply and demand pattern; and
- repeating this process until 10 sets of incremental costs have been calculated.

3.21. Transcost calculates the cost of providing the capacity to transport an incremental flow of gas for every combination of entry and exit points in the system. After completing this analysis for year 1, Transcost repeats the process for the next nine years. This results in a series of incremental cost matrices, which are then used to generate a single matrix of costs (LRIC prices) for all combinations of entry and exit points.

## *Step 3 Estimate costs of network reinforcement*

3.22. Once flows throughout the network have been defined, any necessary network reinforcement (e.g. compressors and new pipelines) required to accommodate the new (i.e. incremental) flows have to be identified.

3.23. The reinforcement projects and/or new pipelines identified in the previous step have been costed using Transco's Transcost program. Transco's cost database is based on year 2004/5 cost data, but some further refinements might be appropriate.

3.24. After having identified the costs associated with each entry point, these costs are divided by the entry flow rate to produce a UCAG for the reinforcement element.

## *Step 4 Estimate costs of the connecting pipeline*

3.25. In situations where Transco is requested to build the connecting pipeline for a new entry node, the estimated cost of constructing the connecting pipeline is added to the estimated cost of reinforcement and allocated to entry costs.

## *Step 5 Calculate LRICs*

3.26. From the base network (step 1), Transcost estimates the incremental costs of adding additional gas flows at a specific entry point (step 2). It does this by estimating the cost of reinforcing the system to deal with an additional increment of gas traveling from each entry point to each offtake in the system (step 3). Transcost repeats these calculations for all possible pairs of nodes in a subnet and repeats the procedure for the remaining subnets in the network. Having completed the analysis of all subnets in a network, Transcost calculates the least cost route across subnets for all entry point and offtake pairings in the system.

3.27. The current approach to calculating the LRIC for a new entry point involves a straightforward average of the reinforcement costs over the modelling period. The UCAG is calculated by dividing the costs by the flow rate.

3.28. The UCAG is annuitised to obtain the UCA, which forms the basis for the reserve prices in the entry capacity auctions. The UCAG is in £/kWh. In order to annuitise, an annuitisation factor of 0.10772 has been used as per Transco's GT licence, reflecting a 6.25 per cent real cost of capital. Also, the UCA is in pence per kWh per day, and hence the gross number is divided by 365 and multiplied by 100.

## *Step 6 Apportion costs to entry point(s)*

3.29. The final step in setting UCAs involves apportioning long-run incremental costs between entry and exit.

3.30. The solver functionality in Excel has been used to identify which costs are associated with entry points and which costs are related to exit points. For each combination of entry points and exit points, the solver uses the cost figure as the dependent variable in an equation that represents the sum of one entry cost and one exit cost. The solver obtains the best fit by minimising the sum of the squared error terms for all entry and exit combinations.

3.31. To achieve a unique solution to the procedure, it is necessary to fix at least one parameter. This is achieved by constraining the optimisations so that costs allocated to either an entry or exit point cannot be negative.

3.32. Given that regression fitting techniques are used to enable solver to determine the allocation between entry and exit, by achieving the best fit for each route cost, this may not result in a constant allocation of costs between entry and exit.

### Transcost assumptions

3.33. Transcost uses the following simplifying assumptions:

- the adoption of a single constant in the panhandle equation, which is used to model all pipes. This constant represents the effects of temperature, specific gravity and the roughness of the pipe, all of which have an impact upon the pressure drop that occurs as the gas travels along the pipe. The adoption of a single panhandle equation results in differences between the Transcost and Graphical Falcon models (the Graphical Falcon model is discussed later in this chapter), with the key simplification being that temperature is not modelled in Transcost;

- a simplified compressor model, which assumes fixed efficiency and gas parameters such that the pressure lift is only constrained by the flow and the machine power;

- in relation to reinforcement it assumes that pipeline can be added to the network in parallel to existing pipelines, however in practice, the parallel pipelines would need

to be added at least ½ km away to comply with planning regulations - which tends to increase costs;

- in relation to compressors it does not evaluate the impact of adding a new compressor, as it has no way of determining where to position the new compressor site. Transcost does not have the option of adding greenfield compressors when making base case reinforcements;

- it relies on a simplified regulator model. In a model such as Graphical Falcon, regulators are valves that control the flow and can also control the pressure on the outlet side. The Transcost network configuration includes only those regulators that are absolutely essential to control flows in the network. A further simplification is that the pressure at these regulators is set by conditions in the adjoining subnets, rather than by the pressure controlling devices at the regulators; and

- it treats the capacity increment as indivisible, i.e. the incremental flow is held whole throughout its journey from inlet to offtake. In practice it may be cheaper to separate flows from the increment across different routes.

### *Other models*

3.34. Rather than using Transcost, it would be possible to use Graphical Falcon or any other proprietary hydraulic modelling programme (or to engage external consultants to do so) to generate cost data for determining the UCAGs.

3.35. The advantage of Graphical Falcon is that it is a more bespoke approach that can be used to model larger entry flow rates, whereas Transcost does not necessarily provide satisfactory results for very large entry flow increments.

3.36. Graphical Falcon is time consuming and complex to run and relies heavily on manual engineering input. There is a risk that the results may not be consistent as it very much depends on the skill of the analyst operating the program.

3.37. When using Graphical Falcon, it is usually only possible (because of time/workload constraints) to model the actual entry flow at the given entry point. The incremental flow is added at the terminal in question and demand increased pro rata to rebalance the model. Projects required to accommodate

the increased flow for each of the ten years are identified and costed by the analyst. Costs are then apportioned between entry and exit using engineering judgement with the guidance that the entry/exit costs should in general be split 50:50.

### *Carrying out the modelling*

3.38. At present, UCA modelling is usually carried out by Transco. However, in principle it would be possible for Ofgem (and/or consultants) to carry out the modelling.

3.39. If Ofgem were to carry out the modelling it would be necessary to obtain large amounts of data from Transco. Such base data would include pipeline sizes and lengths, compressor characteristics, LNG network support data, individual exit node demands and individual entry point supply availability data, details of interruption contracts, auction signals, etc.

3.40. Ofgem currently checks various aspects of Transco's modelling work and has specified the underlying assumptions. This process should be sufficiently robust to result in cost reflective cost estimates. It may be appropriate to develop further supporting checks on the results of Transcost, perhaps by checking certain results against output from Graphical Falcon.

3.41. It is proposed that Transco should continue to carry out the UCA modelling, subject to appropriate supporting checks and audit arrangements.

## *Balancing the network*

3.42. For any steady state hydraulic model to operate, it is necessary to achieve an overall balance between entry and exit flows. There are various approaches that could be adopted to balance the network. In addition to load absorption there is substitution of supply, or hybrid schemes involving elements of both approaches.

**Load absorption**

3.43. In order to ensure that flows in the model remain balanced, 1 in 20 peak day exit flows for the 2005/2006 gas year were derived from Transco's TBE consultation process and these were scaled pro rata such that the total demand equalled the total supply for each year's assumed entry flow. The advantage of this approach is that it is relatively straightforward to implement and the results should provide a reasonable proxy for actual costs likely to be incurred.

**Substitution of supply**

3.44. It would be possible to set up a base model as described above and, instead of increasing demand to absorb the incremental supply, to use supply substitution to rebalance the network; by reducing supply at one or all network entry nodes. Judgments would have to be made about the appropriate location to reduce supply. For example, whether supply should only be reduced at declining terminals or at the nearest existing entry point.

3.45. Underlying the substitution of supply approach is the implicit assumption that all future load growth is accommodated within the base network. Supply substitution may provide a good indication of the cost difference between entry at different locations but it might not reveal the incremental cost of adding new capacity and Ofgem therefore considers that it could only be effectively used in conjunction with other methods to determine an average network entry cost.

**Hybrid approaches**

3.46. Using bespoke forecasts of the pattern of exit flows can create a hybrid between load absorption and supply substitution. However, given the uncertainties associated with these forecasts it is not clear that there are sufficient advantages over load absorption to justify the increase in complexity.

3.47. A variation on the load absorption model is to increase demand in the geographic area near the new gas entry flow. This approach is likely to lead to lower LRIC estimates but appears relatively arbitrary.

3.48. It may be in future that reforms to exit arrangements provide better information on likely exit flows.

**Summary**

3.49. The view summarised in TBE suggests that gas demand in Great Britain is likely to increase over the next 10 years and this seems broadly consistent with a load absorption approach. Supply substitution would tend to result in lower estimates of costs but it is not clear that these lower costs would reflect the LRICs of accommodating additional gas flows associated with new entry points. Any approach based on entry substitution is likely to result in an underestimation of costs in a network where total demand is generally rising.

3.50. It might be argued that storage sites would not necessarily flow on days when peak supplies are available from beach terminals. However, it would seem more realistic to assume that all entry points may want to flow on days of peak demand.

3.51. Given the above a load absorption approach appears the most appropriate mechanism to balance entry and exit flows.

## *Views invited*

3.52. Views are invited on any aspect of the issues raised in this chapter and in particular on the:

- overall approach to modelling LRICs and UCAGs identified in this chapter;
- steps 1 to 6 identified at the start of this chapter;
- approach to use the lower of 1:20 or the baseline where there is no appropriate auction signal;
- appropriateness of using load absorption to balance the network and if not considered appropriate, which approach(es) might be better and what are the advantages and disadvantages of using these approaches;

- 10 year modelling timeframe in order to determine LRICs
- advantages and disadvantages of using Transcost and whether there are more appropriate models which might be used and the advantages and disadvantages of such models;
- appropriate audit processes for the setting of UCAs. For example, rather than relying solely on a single model, it might be appropriate to cross-check the outputs of the main model with another model.

# 4. Estimates of UCAGs

4.1. The first part of this chapter discusses UCAGs for existing terminals. The second part discusses the applications for UCAGs for proposed new NTS entry points and presents indicative UCAGs for these proposed new entry points, calculated using the modelling described in chapter 3.

## *UCAGs set at the last price control review*

4.2. At the time of the last price control review Ofgem determined UCAGs for all existing entry points. These UCAGs were based on modelling using Transcost that had been carried out by Transco.

4.3. The modelling was based on the 1 in 20 forecasts applicable at that time. Transco provided modelling outputs for 3 mscm/day, 6 mscm/day, 9 mscm/day and 12 mscm/day capacity increments. Ofgem adopted the UCAG figures which were based on a 6 mscm/day increment for all existing terminals.

4.4. The resulting UCAGs reflected the fact that there was spare capacity at certain terminals in comparison to the flow assumptions, and the substantial levels of investment allowed under the TO price control for expansion at St Fergus. In addition to determining these UCAGs, Ofgem also established baselines for all existing NTS entry points.

## *UCAGs since the last price control review*

4.5. Since the last price control, Ofgem has determined UCAGs for several further entry points. In June 2003[1], Ofgem consulted on UCAGs for Milford Haven and Barton Stacey. In November 2003[2], Ofgem consulted on a UCAG for Garton.

4.6. In its June 2003 consultation document on new entry terminals Ofgem stated that in setting UCAGs for new entry terminals, it considered that wherever

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[1] June 2003, New entry terminals to Transco's National Transmission System – Ofgem's views on Transco's proposals and Explanatory notes to accompany the section 23 notice of proposed modifications to Transco's gas transporter licence 62/03

[2] November 2003, Section 23 notice to modify Transco's Gas Transporter Licence - Explanatory note to accompany proposals for new entry terminal to Transco's National Transmission System 148/03

possible the UCAG should be based on the best estimate of unit costs of providing capacity at an entry terminal. This requires a judgement to be made about the likely level of demand for capacity at that entry terminal. Ofgem considered that the mechanistic application of setting the UCAGs for the proposed entry terminals on the basis of a 6 mscm/day increment could be inappropriate and not in the best interests of the efficient and economic development of Transco's pipeline system or the securing of effective competition between relevant shippers and suppliers.

4.7. Given the uncertainty about the level of demand for capacity at Milford Haven and whether one or two LNG terminals would be constructed Ofgem proposed a UCAG1 if aggregate demand signalled in the long-term auctions would be less or equal than 500 GWh/day (e.g 46 mscm/day) and UCAG2 if aggregate demand would be greater than 500 GWh/day. The Milford Haven UCAG estimates included the costs of the connecting pipeline from Milford Haven to the NTS. The Milford Haven UCAGs were based on outputs from Graphical Falcon, given that Transcost is not able to accurately model large capacity increments.

4.8. The Barton Stacey entry point is where the pipeline connecting the Humbly Grove storage facility would connect to the NTS. Transco agreed that the LRIC at Barton Stacey for 90 GWh/day (8.3 mscm/day) was 0.00 £/kWh. The UCAG was set at zero reflecting that there were no identified reinforcement costs associated with providing this capacity.

4.9. Ofgem based the UCAG for Garton on the UCAG previously determined for near-by Aldbrough. Given that the Garton entry point would involve an 8 km pipeline extension, the costs of building this pipeline were added to the original UCAG. However, given that Transco had already been given funding under the TO price control for network investment in the Aldbrough area, a downward adjustment was made to avoid Transco receiving revenue through both the SO incentive and TO price control for the same investment.

## *Applications for UCAGs for new entry points*

4.10. Last year Ofgem received requests for UCAGs for several new entry points to the NTS and for one new entry point to a DN. The applicants in question are Star Energy and Warwick Energy and the indicative UCAGs for these entry points are described in the remainder of this chapter.

4.11. Since then Ofgem has received several other requests for new entry points to the NTS. Two of the other new requests involve very large flow rates which cannot be modelled using Transcost. These will be dealt with in a future consultation document.

## *Star Energy*

4.12. Star Energy approached Ofgem last year regarding three potential storage projects it is developing. These projects are at Welton, Albury and Bletchingley. Star Energy has advised Ofgem that it is likely that the location for above ground production equipment for the Bletchingley storage development would be located at Star Energy's existing site at Palmers Wood and that the NTS entry point associated with the Bletchingley facility should therefore be located at Palmers Wood.

4.13. Star Energy's formal application to Ofgem for the calculation of the UCAs was made in early November 2004. At that time, Star Energy confirmed the following details of the projects:

**Table 4.1 Star Energy UCA requests**

| Site Name | Peak flow rate (mcm/day) | Earliest Start Date |
|---|---|---|
| Welton (NTS connection at Beckering or Blyborough) | 8.5 | May 07 |
| Albury (NTS connection at Tatsfield, Winkfield or Albury) | 9 | May 07 |
| Bletchingley (NTS connection at Palmers Wood, Winkfield or Tatsfield) | 9 | May 07 |

4.14. In setting the UCAG for Welton, Ofgem has assumed that Star Energy will build the pipeline connecting Welton to the NTS at Beckering or Blyborough.

4.15. The Albury and Bletchingley projects may involve either Star Energy or Transco laying the connecting pipes to the NTS. Each of the proposed pipelines consists of two 40 km long sections that run through potentially difficult routing areas. If Star Energy builds a pipeline it may connect to either Winkfield or Tatsfield.

4.16. In December 2004, Star Energy requested a further UCAG for the proposed Albury storage facility connecting to an existing above ground installation at Ripley. The Ripley facility would be connected to the distribution network's LTS pipeline between the NTS off-takes at Winkfield and Tatsfield. This storage facility is forecast to have a maximum flow rate of 4.25 mscm/day with an operational date between autumn 2007 or spring 2008.

4.17. In January 2005, Star Energy confirmed all the above flow rates. However, Star Energy also suggested that the earliest start date for the Albury and Bletchingly projects is more likely to be September 2007, and for the Welton project, May 2008.

## *Warwick Energy*

4.18. Warwick Energy approached Ofgem in March 2004 to discuss its plans to convert a nearly depleted on-shore gas field at Caythorpe, East Yorkshire into a gas storage facility. Warwick Energy intends to connect the facility to the NTS near to the existing Rudston site near Bridlington, North Yorkshire. It is Warwick Energy's intention to lay the connecting pipe to the NTS.

4.19. The facility is scheduled to have a flow rate of between 90 GWh/day and 120 GWh/day. Warwick Energy has requested that two flow rates be modelled: 90 GWh/day and 120 GWh/day. Warwick Energy has requested that NTS entry capacity would be required from the start of Q3 2007.

4.20. Ofgem considers that the costs underlying the UCA for the given flow rates would not be substantially different and hence has adopted an increment of 9 mscm/day (about 97 GWh/day) for the modelling.

## *Indicative UCAGs for the new entry points*

4.21. Table 4.2 below shows indicative UCAGs for the new entry points.

**Table 4.2 Indicative UCAGs for new entry points**

| Entry point (facility) | Developer | Indicative UCAG (£/kWh 2004/05 prices) |
|---|---|---|
| Ganstead (Caythorpe) | Warwick Energy | 0.1275 |
| Winkfield (Albury) | Star Energy | 0.0535 |
| Beckering/Blyborough (Welton) | Star Energy | 0.0616 |
| Tatsfield (Palmers Wood) | Star Energy | 0.1512 |
| Albury (incl. connecting pipeline) | Star Energy | 0.4126 |
| Palmers Wood (incl. Connecting pipeline) | Star Energy | 0.2039 |

4.22. The UCAG for Ganstead (Caythorpe) reflects the cost of network reinforcement to accommodate an incremental 9 mscm of gas per day at this entry point, but does not include Transco laying the connecting pipelines from Caythorpe to the NTS.

4.23. The UCAGs for Palmers Wood and Albury include the cost of a connecting pipeline to be built by Transco. Whereas the UCAGs for Beckering/Blyborough, Tatsfield and Winkfield only reflect network reinforcement with Star Energy building the connecting pipelines from its sites to the NTS.

## *Pipeline costs*

4.24. Transco provided estimates for the connecting pipeline from the Star Energy sites to the NTS. Ofgem also commissioned consultants to estimate the costs of these connecting pipelines.

**Table 4.3 Connecting pipeline cost estimates**

| Million £ | Albury - Winkfield | Albury - Tatsfield | Palmers Wood - Tatsfield |
|---|---|---|---|
| Transco | 33.3 | 37.8 | 7.6 |
| Ofgem consultants | 30 | 31 | 4.4 |

4.25. If Transco were to build the pipeline from the Albury site to the NTS, it would be expected to take the most efficient route. Both Transco and Ofgem's consultants estimate that a pipeline from Albury to Winkfield will probably cost less than a pipeline from Albury to Tatsfield. In calculating the pipeline element for the Albury UCAG Ofgem has assumed £ 30 million for pipeline costs. For the Palmers Wood to Tatsfield pipeline Ofgem has assumed pipeline costs of £4.4 million.

4.26. These pipeline cost estimates are multiplied by the annuitisation factor (as included in Transco's licence) to obtain the additional UCAG if Transco were to build the pipeline. Thus in the case of Albury, the additional UCAG would be £30m divided by the anticipated flow increment (i.e. 9 mscm) and multiplied by 10.772 per cent, which gives 0.3591 (£/kWh). The UCAG for Winkfield (if Star Energy was to build the connecting pipeline from Albury to Winkfield) is 0.0535 (£/kWh). Therefore, the UCAG for Albury, with Transco building the connecting pipeline to the NTS would be 0.4126 (£/kWh).

4.27. Ofgem has assumed a pipeline cost estimate for Palmers Wood of £4.4 million as advised by its consultants. This would result in an additional UCAG of 0.0527 (£/kWh) to the Tatsfield UCAG if Transco were to build the connecting pipeline from Palmers Wood to the NTS. The UCAG for Palmers Wood would therefore be 0.2039 (£/kWh).

4.28. Ofgem's consultants have indicated that it may be difficult to obtain consents to construct the pipelines to the Winkfield NTS entry point given the topography of the pipeline route passing through the South East London area. They also suggested that a three year timescale to carry out all necessary surveys, obtain all necessary consents, deal with potential CPOs and construct the pipeline might be challenging.

## *Reinforcement projects*

4.29. The level of these new UCAGs indicate that in several instances significant network reinforcement is needed to accommodate the additional gas flows. Table 4.4 gives an indication of the projects that might have to be undertaken to accommodate the additional gas from the new entry points during 2006/07 and 2007/08.

4.30. It is important to note that these are indicative projects only, i.e. they would be expected to be undertaken if the specific entry point were to be brought onto the network in isolation from other developments. However, the actual projects that Transco will undertake will depend on a number of factors including the future pattern of demand growth, forecasts of future gas supplies and future auction signals.

4.31. In practice, investment in the network will also take into account interactions with other projects. For example, most of the proposed sites are located close to existing NTS entry points and actual investment projects will therefore be influenced by Transco's plans for reinforcement to support existing entry points.

4.32. For example, in the case of Caythorpe, the incremental impact is likely to be linked to the investments being considered for the predicted Ormen Lange imports at Easington, and the inclusion of the Aldborough/Garton storage facility. For Palmers Wood, the incremental impact is likely to be linked to the investments being considered for the expansion of the Isle of Grain LNG importation facility.

## Table 4.4 Indicative reinforcement projects for year 2006/7 and year 2008/9

| Ganstead (Caythorpe) | Winkfield (Albury) | Beckering/Blyborough (Welton) | Tatsfield (Palmers Wood) |
|---|---|---|---|
| (2006/7) 1 new compressor added in parallel at Nether_Kellett | (2006/7) Peterborough to Caldecott 29.10km x 889mm | (2006/7) 1 new compressor(s) added in parallel at Nether_Kellett | (2006/7) Isle_of_Grain to Shorne 10.82km x 586mm |
| Warburton to Brunner_Mond 1.68km x 883mm | (2008/9) Peterborough to Caldecott 6.69km x 889mm | Warburton to Brunner_Mond 1.68km x 883mm | Peterborough to Caldecott 29.10km x 889mm |
| (2008/9) Garton to Paull_North 7.32km * 730mm | (2008/9) Caldecott to Market_Harborough 13.71km x 889mm | (2008/9) Garton to Paull_North 1.83km x 730mm | (2008/9) Isle_of_Grain to Shorne 10.82km x 586mm |
| Paull_North to Goxhill 1.24km x 1038mm | | Peterborough to Caldecott 6.69km x 889mm | Stapleford to Luxborough_Lane 3.61km x 586mm |
| Goxhill to Curtis 7.73km x 1038mm | | Caldecott to Market_Harborough 13.71km x 889mm | Peterborough to Caldecott 6.69km x 889mm |
| | | | Caldecott to Market_Harborough 13.71km x 889mm |

# 5. Comparing UCAGs

5.1. This chapter compares the UCAGs for proposed new entry points - presented in the previous chapter - with the UCAGs that have been set for existing NTS entry points. It also compares the indicative UCAGs for existing entry points calculated on the basis of the method described in chapter 3 with the UCAGs for existing entry points (as set out in Transco's NTS GT licence).

5.2. This chapter concludes with a discussion of policy options. The main options appear to be to reset all UCAGs on the basis of the method set in chapter 3 or retain the existing UCAGs (and use these to cap the UCAGs for new entry points) until the next price period starts in April 2007.

## *UCAGs for new entry points*

5.3. Table 5.1 compares the indicative UCAGs for the new entry points with UCAGs that have been set for existing entry points and which are in reasonably close geographic proximity to the new entry points.

**Table 5.1 Comparison of UCAGs for new entry points and nearby existing entry points (2004/05 prices)**

| Entry Point | Developer | Indicative UCAG (£/kWh) | Nearest existing entry point | Existing UCAGs (£/kWh) |
|---|---|---|---|---|
| Ganstead (Caythorpe) | Warwick Energy | 0.1275 | Easington | 0.0375 |
| Winkfield (Albury) | Star Energy | 0.0535 | Isle of Grain | 0.2049 |
| Beckering/Blyborough (Welton) | Star Energy | 0.0616 | Theddlethorpe/ Easington | 0.0342 / 0.0375 |
| Tatsfield (Palmers Wood) | Star Energy | 0.1512 | Isle of Grain | 0.2049 |
| Albury | Star Energy* | 0.4126 | | |
| Palmers Wood | Star Energy* | 0.2039 | | |

*includes Transco building the connecting pipeline from the storage facility to the NTS

5.4. As Table 5.1 shows, compared with UCAGs at nearby existing entry points some of the new UCAGs are significantly higher, especially in the case of Ganstead (Caythorpe) and Beckering/Blyborough. To put table 5.1 in context, the current UCAG at Milford Haven is 0.2831 (£/kWh) and the current UCAG at St Fergus is 0.7040 (£/kWh) in 2004/5 prices.

5.5. Table 5.2 shows UCAGs for existing entry points and compares these with equivalent indicative UCAGs calculated on the same basis used to calculate the UCAGs for new entry points (based on a 9 mscm/day flow increment).

**Table 5.2 Comparison of existing UCAGs with revised existing UCAGs**

| | UCAG comparison | | | |
|---|---|---|---|---|
| Existing Entry Points | £/kWh 2000 prices | £/kWh 2004/5 prices | £/kWh 2004/5 prices | |
| ASEP | Existing UCAs (Transco licence) | Existing UCAs | Revised existing UCAs | % increase over existing |
| Bacton | 0.1820 | 0.2005 | 0.1956 | -2% |
| Barrow | 0.0140 | 0.0154 | 0.0000 | -100% |
| Easington | 0.0340 | 0.0375 | 0.1571 | 319% |
| St. Fergus | 0.6390 | 0.7040 | 0.0000 | -100% |
| Teesside | 0.0590 | 0.0650 | 0.0000 | -100% |
| Theddlethorpe | 0.0310 | 0.0342 | 0.0804 | 135% |
| Glenmavis | 0.5320 | 0.5861 | 0.0000 | -100% |
| Partington | 0.0090 | 0.0099 | 0.0000 | -100% |
| Avonmouth | 0.0640 | 0.0705 | 0.2961 | 320% |
| Isle of Grain | 0.1860 | 0.2049 | 0.2529 | 23% |
| Dynevor Arms | 0.0000 | 0.0000 | 0.5311 | n/a |
| Hornsea | 0.1530 | 0.1686 | 0.2031 | 20% |
| Hatfield Moor | 0.0420 | 0.0463 | 0.0381 | -18% |
| Cheshire | 0.0030 | 0.0033 | 0.0000 | -99% |
| Hole House Farm | 0.0020 | 0.0022 | 0.0000 | -98% |
| Wytch Farm | 0.0000 | 0.0000 | 0.0000 | n/a |
| Burton Point | 0.0020 | 0.0022 | 0.0000 | -98% |
| Barton Stacey | 0.0000 | 0.0000 | 0.0440 | n/a |
| Garton | 0.0390 | 0.0430 | 0.1269 | 195% |

5.6. There are a number of reasons why the new UCAGs are different to existing UCAGs. These are discussed below.

## *Changing gas flow patterns*

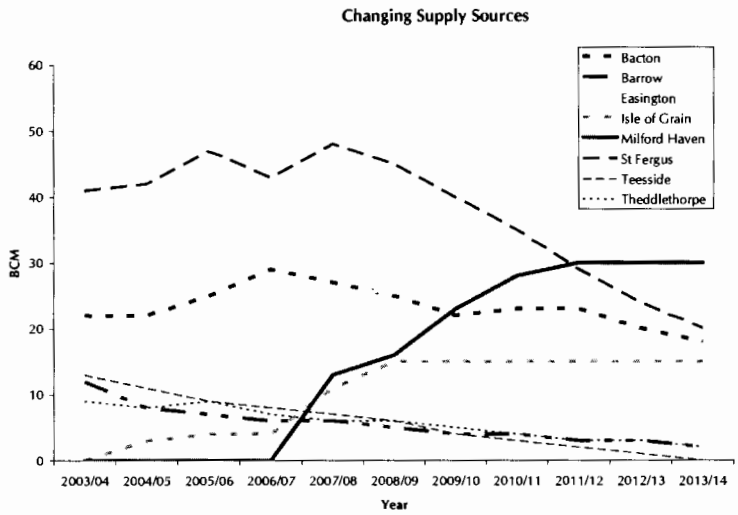
5.7. The main reason why LRICs are changing is that there are significant changes in the patterns of gas flows across the network. Entry points that used to be subject to transmission constraints may not be constrained in the future as a consequence an incremental increase in gas flows would not trigger additional investment (unless the increment is very large). On the other hand entry points where there were no constraints in the past may be subject to congestion as

flows increase. In these circumstances significant investment may be required to accommodate new (incremental) flows.

5.8. At the time of the last Transco price control review most gas was forecast to enter the network in the North of GB. Reinforcement was therefore assumed to take place to accommodate gas flows from North to South.

5.9. The nature of gas flows are now changing. A lot more gas will or is expected to enter the network from the East and West of GB, for example as indicated by auction signals from Milford Haven. This requires network reinforcement to accommodate these increased flows and this network reinforcement is reflected in the level of the UCAGs. Figure 5.1 is taken from TBE and illustrates possible changes in supply sources.

**Figure 5.1 Changing supply sources**[3]




5.10. Changing gas flow patterns not only affect the costs imposed by gas flows from new entry points but would also affect estimates of LRICs associated with gas flows from existing entry points. As table 5.2 illustrates, in the North of GB, UCAGs would now be lower if all existing UCAGs were to be re-estimated using the network model and assumptions which were used for calculating the UCAGs for the new entry points. Most notably, the UCAGs for St Fergus and

[3] Source: Transco's Ten Year Statement (table A2.2B) 2004

Barrow would now be zero. However, UCAGs in the West and East of the country would be significantly higher.

## *Capacity increment and anticipated flow rate*

5.11. At the time of the last price control review a fixed capacity increment of 6 mscm/day (i.e. 65 GWh/day) was used for the modelling of all entry points.

5.12. When the UCAGs for Milford Haven and Barton Stacey were set, Ofgem stated that the increment should reflect the anticipated flow rate, given that this would result in more cost-reflective UCAGs.

5.13. The modelling for the new UCAGs has been based on anticipated flow rates as provided by the applicants. This has resulted in a capacity increment of 9 mscm/day (i.e. 97 GWh/day) for the new entry points. The revised existing UCAGs have also been based on a 9 mscm/day flow increment.

## *Costs*

5.14. Since the last price control, there has been an increase in the cost of having to reinforce the network. For instance, over the past few years, the price of steel has increased significantly. Previous UCAGs were based on year 2001 cost data. All current UCAG estimates are based on year 2004/05 cost data.

5.15. Given the increase in the price of steel and the tightening of the contracting market, UCAG estimates based on 2001 cost data (adjusted for general inflation) are likely to underestimate the current underlying costs. Steel prices have increased significantly since 2001, with some estimates putting the increases in excess of 40 per cent. For an average project the costs of steel might form 20 per cent of the total project costs.

5.16. These higher costs would increase the level of all existing as well as new UCAGs. UCAGs which include long and large diameter pipelines, e.g. Milford Haven, would be particularly affected.

## *Policy options*

5.17. UCAGs are meant to be proxies for LRICs and will change as new information emerges. Due to the significant changes in the pattern of gas flows and other factors there are significant differences between UCAGs for new entry points and those at near-by existing entry points. This suggests that the UCAGs for existing points may no longer be cost-reflective.

5.18. These matters are particularly important given that shippers can bid for capacity for up to 15 years in the long-term entry capacity auctions with the UCAGs being used to set reserve prices in these auctions. Non-cost reflective charges might distort investment decisions and this could lead to higher overall prices to consumers.

5.19. Ofgem has previously indicated its intention to reassess all the UCAGs as part of the 2006 transmission price control review and to determine whether these UCAG figures would continue to represent appropriate estimates of LRICs. The changes in LRICs summarised in this chapter suggest that it may be appropriate to bring this reassessment forward and reset all UCAGs on the basis set out in this chapter before any further long-term auctions of NTS entry capacity.

5.20. The next LTSEC auctions are scheduled to take place in September 2005. Given that resetting UCAGs would require a licence modification and further consultation by Transco on price schedules it would then be necessary to postpone these auctions until later in 2005.

5.21. Setting all the UCAGs using the method described in chapter 3 would ensure that all UCAGs are as cost-reflective as reasonably practicable and provide the appropriate locational signals. Cost reflective charges ensure that market participants take into account the costs of transmission in their decisions and so lead to efficient investment and as a consequence minimises overall costs to consumers. Resetting all the UCAGs would also ensure that all shippers were treated on a non-discriminatory basis in the auctions and so be consistent with the development of competition between gas shippers and suppliers.

5.22. Nevertheless it will be necessary to consider whether bringing forward the review of all UCAGs would create unnecessary uncertainty and whether the

costs of this uncertainty would outweigh the benefits of cost reflective charges. It is important to note that it is not Ofgem's intention to use the resetting of UCAGs to reopen the results of the long-term auctions that have already taken place. Therefore, the prices already paid and volumes already purchased in the LTSEC, MSEC and RMSEC auctions would not be affected by the review of UCAGs.

5.23. Rather than changing UCAGs the existing UCAGs could be retained and used to cap UCAGs at new entry points. This could be achieved by taking the existing UCAG closest to the new entry point and using it as a proxy for the new entry point. This would not result in cost-reflective charges but it would allow for more time for further consultation on the best approach to setting UCAGs and perhaps the further refinement of the cost estimates underlying the UCAGs for existing terminals. The September 2005 auctions for existing entry points could then proceed to schedule.

5.24. Further work on the method for setting LRICs could include a detailed review of Transcost and the assumptions underlying how it models incremental investment. This might increase confidence in the process for setting UCAGs and lead to better long-term signals.

5.25. It could be argued that leaving UCAGs broadly unchanged would be more consistent with the intention set out in the June 2003 document (New entry terminals to Transco's National Transmission System 62/03) and the November 2003 document (Section 23 notice to modify Transco's Gas Transporter licence 148/03) and be less disruptive to the business plans of shippers – that may be predicated on bidding in the September 2005 auctions on the basis of existing UCAGs.

5.26. It might also be possible to consider a hybrid approach. For instance UCAGs could be moved half way to the new levels as an interim step while the modelling of costs is further refined.

## *Views invited*

5.27. Views are invited on any aspect of the issues raised in this chapter and in particular on the:

- levels of proposed UCAGs for new entry points;
- levels of the indicative UCAGs for existing entry points calculated using the method described in chapter 3;
- advantages and disadvantages of resetting UCAGs for all entry points and delaying the LTSEC auctions presently scheduled for September 2005;
- advantages and disadvantages of not setting UCAGs on a cost reflective basis and setting UCAGs for new entry points on the basis of benchmark comparisons with existing UCAGs; and
- any other approaches to setting UCAGs that respondents might favour.

# 6. Entry points connecting to DNs

6.1. In addition to the requests for UCAGs by new entrants wanting to connect to the NTS, Ofgem has also received a request for a UCAG for the connection of a storage facility to a distribution network (DN). It might be possible to replicate the existing NTS UCAG methodology for calculating a DN UCAG. However, it is not clear that this would be proportional or appropriate given the particular issues raised by this possible connection. These matters are discussed in more detail below.

## *Existing embedded storage facilities*

6.2. At present there are two main DN embedded entry points - Hatfield Moor[4] and Wytch Farm. The Hatfield Moor depleted gas field is connected to the East Midlands DN (this DN is not subject to the DN sales process) and Wytch Farm is connected to the South of England DN (this DN is subject to the DN sales process).

### Hatfield Moor

6.3. Hatfield Moor's two facilities have different commercial arrangements. The maximum flow from the DN connected on-shore gas field is very small, i.e. 2.5 GWh/day.

6.4. At the last price control review, one UCAG was set covering both Hatfield Moor facilities. This UCAG was based on the potential costs of NTS reinforcement. The UCAG did not include any possible DN reinforcement. This was however considered to be appropriate given the very low flow rates.

6.5. The UCAG for Hatfield Moor was set at 0.042 (£/kWh) in 2000 prices. The initial NTS SO baseline entry capacity was set within Transco's NTS GT licence at 54 GWh/day (approximately 5 mscm/day) for Hatfield Moor (storage) and of 1

[4] Hatfield Moor consists of a depleted gas field which solely connects to the distribution network and a physically and commercially separate storage site which connects to the NTS.

GWh/day for Hatfield Moor (onshore). Annual capacity revenue in relation to Hatfield Moor (onshore) is less than £500.

### Wytch Farm

6.6. The Wytch Farm on-shore gas field also has a very low flow rate. This resulted in the UCAG for Wytch Farm being set at 0.000 (£/kWh).

6.7. Initial NTS SO baseline entry capacity was set at 3.2 (GWh/day). Since the price control, capacity of 3.1 (GWh/day) has been bought in the MSEC Auctions with any additional capacity bought within day as required.

## *Proposed Treatment of new DN entry points*

6.8. Star Energy is considering connecting the Albury storage site to a new DN entry point at Ripley and has requested a UCA based on a flow rate of 46 GWh/day (i.e. approximately 4.2 mscm/day).

6.9. This anticipated flow rate is substantially higher than the flow rates of the existing DN entry points at Hatfield Moor and Wytch Farm. Gas flows from Albury would represent a substantial proportion of total demand in the DN.

6.10. During periods of low demand the DN might not be able to accommodate large volumes of gas without incurring very high reinforcement costs. It is not possible for gas to flow from the DN back to the NTS.

6.11. If the regulatory regime were to require a DN embedded entry point to be treated in the same way as a NTS entry point, the physical characteristic of the DN is likely to result in significant network reinforcement to accommodate the additional gas during periods of low demand. However, in practice, a storage facility is unlikely to attach much commercial value to the option of being able to export gas under low demand conditions.

6.12. A similar approach to the NTS could thus result in a very high UCAG, a high hurdle to pass the NPV test, and is likely to render the storage project uneconomic. For example, if a firm entry rights approach were adopted for the new DN entry point at Ripley, substantial network reinforcement, potentially in the order of £20 million, might be needed. However, if a contractual approach

were to be adopted with more flexible entry rights there might not be any reinforcement costs.

6.13. Given that in practice a storage facility is unlikely to attach much commercial value to the option of being able to export gas under low demand conditions, it might be argued that an approach based on firm year round rights could potentially result in an economically inefficient outcome. This has been pointed out by several stakeholders in the UCA setting process.

6.14. A contractual approach could be more flexible as it can be tailored to the needs of the new entrant. Given the specific physical characteristics of DNs this approach might be more likely to result in efficient outcomes. Alongside such a contractual approach it may be appropriate to consider imposing new licence requirements obliging Transco or a DN owner to treat applications for embedded entry points in a non-discriminatory manner.

6.15. It would be for the DN, the storage operator and where appropriate Transco, to agree appropriate flow rates and associated entry rights in a bilateral agreement with a dispute resolution process perhaps involving Ofgem. An efficient level of reinforcement costs could be recovered through the connection agreement.

## *Views invited*

6.16. Views are invited on any aspect of the issues raised in this chapter and in particular on the advantages and disadvantages of dealing with DN entry connections through a contractual route.

# 7. Further issues for consideration

7.1. Ofgem has started work on the reviews of transmission price controls that will culminate in proposals for new controls and incentive arrangements at the end of 2006 with an implementation date of 1 April 2007.

7.2. Transmission is a capital intensive activity and so establishing appropriate arrangements to incentivise efficient capital expenditure will be an important part of the price control review. A key feature of the regulatory regime that has developed since privatisation has been the focus on cost reflective transmission charges. These ensure that participants in wholesale markets take the costs they impose on the transmission network into account and promote efficient investment. As noted in chapter 2 at present UCAGs are important both to Transco's price control incentive and to establishing cost reflective charges in auctions.

7.3. It is timely to consider how the present approach to the setting of UCAGs might evolve over the medium term and how the process for deciding on any changes should be integrated in the price control review. This chapter identifies possible principles that might be used to guide the evolution of UCAGs in the future and identifies key issues on which the views of respondents are sought. These views will be taken into account in shaping policy during the coming months and in the price control review.

## *Principles for UCAGs*

7.4. Draft principles for setting UCAGs could potentially encompass the following:

- UCAGs should be set in a timely way so not to frustrate the legitimate expectations of project developers;
- UCAGs should reflect long-term costs, be non-discriminatory and facilitate competition between shippers and suppliers;
- UCAGs should not create perverse incentives, including for the uneconomic bypass of Transco's network;
- UCAGs should be set via a transparent process and informed by consultation and expert advice; and

- for the next price control period Transco should be responsible for setting UCAGs (consistent with the approach used with other network operators where the licensee sets prices and Ofgem approves any changes to the underlying methodology).

7.5. These principles would be consistent with Ofgem's statutory objectives of protecting consumers and promoting competition. They would also embody key aspects of good regulatory practice including transparency and consultation. Finally they would be broadly consistent with the approach used to set electricity transmission charges. NGC have obligations to set charges that relate to costs and to facilitate competition. It also consults on any changes to its charging methods.

## *Views invited*

7.6. Views are invited on any aspect of setting UCAs and the associated incentives and in particular on:

- the draft principles identified in paragraph 7.4;
- whether there are improvements or useful changes that could be made to the auctions for gas entry capacity;
- whether UCAs should be used to set reserve prices in some or all of the entry capacity auctions;
- the present value test that is used as a trigger for the release of new or additional entry capacity and summarised in paragraph 2.22;
- the best process for setting UCAGs including:
    - at present, Ofgem determines the UCAGs but relies on Transco to carry out the modelling which underlies the UCAG setting process. It might be more appropriate if in future Transco would have the obligation to set UCAGs in accordance with an agreed process. Consideration would need to be given to whether a dispute resolution process would be appropriate

- whether UCAGs should be based on standard demand increments or whether these should be bespoke to the circumstances of the entry point;

- if shipper requests a revised UCAG and if the higher flow rate requires network reinforcement then there might be a time lag before the additional capacity becomes available;

- at present UCAGs can be requested at any time for combinations of potential new entry points, resulting in considerable resource implications both for Ofgem and Transco. It might be appropriate to formalise this process such that UCAG requests for new entry points could be made twice yearly in dedicated time slots. Also, it might be appropriate to determine the UCAGs in a certain fixed time period unless there are exceptional circumstances;

- it might be appropriate for Transco to levy a reasonable charge for setting UCAGs;

- to improve transparency, it might be appropriate to investigate whether an annually updated version of Transcost could be made available to interested parties, and

- given that gas flows on the network change over time, it might be appropriate to review all existing UCAGs on an annual basis rather than on a five yearly basis, given that the former is much more likely to ensure cost reflectiveness.

# Appendix 1 UCAs

UCAGs are converted to UCAs by multiplying the UCAG figure by 100 (to convert £ to pence) and dividing by 365 (to obtain per day) and multiplying this figure by the annuitisation factor. The annuitisation factor currently adopted is 0.10772 as included in Transco's licence. This figure is based on a 6.25 per cent pre-tax real cost of capital and a 45 year asset life.

| | Annuitised costs | | |
|---|---|---|---|
| | p/kWh/d 2000 prices | p/kWh/d 2004/5 prices | p/kWh/d 2004/5 prices |
| ASEP | Existing UCAs | Existing UCAs | Revised existing UCAs |
| Bacton | 0.0054 | 0.0059 | 0.0058 |
| Barrow | 0.0004 | 0.0005 | 0.0000 |
| Easington | 0.0010 | 0.0011 | 0.0046 |
| St. Fergus | 0.0189 | 0.0208 | 0.0000 |
| Teesside | 0.0017 | 0.0019 | 0.0000 |
| Theddlethorpe | 0.0009 | 0.0010 | 0.0024 |
| Glenmavis | 0.0157 | 0.0173 | 0.0000 |
| Partington | 0.0003 | 0.0003 | 0.0000 |
| Avonmouth | 0.0019 | 0.0021 | 0.0087 |
| Isle of Grain | 0.0055 | 0.0060 | 0.0075 |
| Dynevor Arms | 0.0000 | 0.0000 | 0.0157 |
| Hornsea | 0.0045 | 0.0050 | 0.0060 |
| Hatfield Moor | 0.0012 | 0.0014 | 0.0011 |
| Cheshire | 0.0001 | 0.0001 | 0.0000 |
| Hole House Farm | 0.0001 | 0.0001 | 0.0000 |
| Wytch Farm | 0.0000 | 0.0000 | 0.0000 |
| Burton Point | 0.0001 | 0.0001 | 0.0000 |
| Barton Stacey | 0.0000 | 0.0000 | 0.0013 |
| Garton | 0.0012 | 0.0013 | 0.0037 |

| New Entry Points | Annuitised |
|---|---|
| ASEP | p/kWh/d |
| Ganstead (Caythorpe) | 0.0038 |
| Beckering/Blyborough (Welton) | 0.0018 |
| Winkfield | 0.0016 |
| Tatsfield | 0.0045 |
| Albury (with pipeline) | 0.0122 |
| Palmers Wood (with pipeline) | 0.0060 |

# Appendix 2 Glossary

**1-in-20 forecast demand**: Standard Condition 16 of Transco's GT licence requires Transco to plan and develop a pipeline system to meet demand conditions that would be expected once every twenty yeas (based on weather data from the last 50 years)

**Above Ground Installation (AGI):** Any equipment or installation relating to the operation of a pipeline

**Baseline Entry Capacity:** The amount of NTS system entry capacity which Transco is obliged to make available to shippers pursuant to its GT licence

**Distribution Network (DN):** There are eight DNs which group together the twelve LDZs

**Incremental Entry Capacity Release (IECR):** NTS system entry capacity in excess of baseline capacity made available by Transco

**Local Distribution Zone (LDZ):** There are twelve LDZs which take gas from the high pressure NTS for onward transportation at lower pressures

**Long Term System Entry Capacity (LTSEC):** NTS entry capacity purchased in 3 month blocks and for periods of up to 15 years in annual auctions conducted by Transco

**National Transmission System (NTS):** Transco's high pressure transmission system consists of more than 6,400 km of pipe carrying gas at pressures of up to 85 bar (85 times normal atmospheric pressure)

**SO Baseline Capacity:** This is calculated as 90 per cent of the TO Baseline Capacity. Transco is obliged to offer 80 per cent of its SO Baseline Capacity in the LTSEC auctions, with the remaining 20 per cent in shorter-term entry capacity auctions (monthly, day-ahead and on-the-day)

**TO Baseline Capacity:** This is the level of maximum physical capacity at each entry point without taking into account interactions with other entry points

**Uniform Network Code (UNC):** As of 1 May 2005 the UNC replaced Transco's Network Code as the contractual framework for the NTS, DNs and system Users

# Appendix 3 Draft Impact Assessment

## *Introduction*

3.1 Ofgem is required to carry out impact assessments (IAs) under section 5A of the Utilities Act 2000, as amended by the Sustainable Energy Act 2003. Section 5A requires that the Ofgem carries out IAs:

- whenever it proposes to do anything for the purposes of, or in connection with, the carrying out of any function exercisable by it under or by virtue of Part 1 of either the Electricity Act or the Gas Act, and
- it appears to Ofgem that the proposal is important.

3.2 Section 5A defines a proposal as important where its implementation would be likely to lead to one or more of the following:

- involve a major change in the activities carried out by the Authority;
- have a significant impact on persons engaging in the generation, transmission, distribution or supply of electricity or gas;
- have a significant impact on persons engaged in commercial activities connected with the generation, transmission, distribution or supply of electricity;
- have a significant impact on the general public of Great Britain or part of Great Britain; or
- have significant effects on the environment.

3.3 It is Ofgem's intention to publish a final IA in its decision document on UCAGs in Summer 2005.

### *Policy objectives*

3.4 Ofgem's principal objective is to protect and advance the interests of consumers by promoting competition where practicable, and through regulation where necessary.

3.5 In order to protect the interests of consumers, it is important that transmission charges are set in an objective, transparent and non-discriminatory manner. Cost reflective charges ensure that market participants take into account the costs of transmission in their decisions and so lead to efficient investment and as a consequence minimise overall costs to consumers. Cost-reflective charging minimises costs to consumers, not only in the short-term but also in the long-term.

3.6 It is also important that market participants have confidence in the operation of the regulatory regime and that perceptions of regulatory risk are not unduly increased. Otherwise investment by market participants in new importation and storage facilities may be discouraged. This would not be in the interests of consumers or the development of competition in wholesale markets.

## *Overview of key issues*

3.7 At present, Transco bases the reserve prices in the long-term entry capacity auctions on UCAGs. For existing and proposed new entry terminals the UCAGs are also used to establish the minimum value of bids in the long-term auctions that would justify Transco releasing permanent obligated incremental entry capacity. Therefore UCAGs play an important role in the long-term auctions that determine whether Transco will provide incremental capacity within the NTS and/or constructing new entry points. UCAGs should be proxies for LRICs. These will change as new information emerges.

3.8 Ofgem last consulted on setting a UCAG in November 2003 in relation to the Garton NTS entry point, which will serve the Aldbrough storage facility. Since this time it has become clear that there are substantial issues relating to the setting of further new UCAGs. In particular changes in the pattern of flows across the gas network imply very significant changes in LRICs and large

variances between new UCAGs compared to existing UCAGs. This suggests that the UCAGs for existing points may no longer be cost-reflective. This is particularly important given that shippers can bid for capacity for up to 15 years in the long-term entry capacity auctions with the UCAGs being used to set reserve prices in these auctions.

3.9 Nevertheless it could be argued that leaving UCAGs broadly unchanged would be more consistent with the intention set out in the June 2003 document (New entry terminals to Transco's National Transmission System 62/03) and the November 2003 document (Section 23 notice to modify Transco's Gas Transporter licence 148/03). This would also allow further work on the method for setting LRICs and this might increase confidence in the process for setting UCAGs and lead to better long-term signals.

## *Options Going Forward*

3.10 This consultation paper puts forward two main options going forward in relation to UCAGs:

- Option 1 – calculate UCAGs for the new applicants on the basis of the methodology detailed in Chapter 3 and recalculate existing UCAGs on the same basis. Given that shippers can purchase entry capacity rights for up to 15 years, it is proposed to review all existing UCAGs before the next long-term entry capacity auction (i.e. September 2005).

- Option 2 – cap the UCAGs for new entry points to the level of the UCAGs a near-by existing entry points. Leave existing UCAGs unchanged. Review all these UCAGs as part of the next price control review.

- Taking no action is not practicable as there are developers interested in bringing forward new storage and importation projects that would not be able to connect to the NTS without a UCAG. This would be inefficient, distort competition in the wholesale market and possibly have adverse implications for security of supply.

## *Impacts, costs and benefits*

### Option1: Review all existing UCAGs before the next long-term entry capacity auction

#### Costs

3.11 Ofgem has previously indicated its intention to review all existing UCAGs at the next price control. Bringing the review of existing UCAGs forward might create regulatory uncertainty and it is therefore in Ofgem's view appropriate to have this wider consultation now rather than later.

3.12 Option 1 would result in higher UCAG figures for some entry points compared with option 2. Potentially this could reduce the financial viability of some new projects, which as a result might not come on-stream.

3.13 The process of recalculating the UCAGs, issuing a section 23 notice and in order to give Transco sufficient time to publish auction invitations and revised price schedules, would imply delaying the long-term entry capacity auction scheduled for September 2005. A network code modification would be required to allow Transco to delay these auctions, possibly until December 2005.

#### Benefits

3.14 To protect the interest of consumers, both in the short-term and long-term, cost reflective UCAGs are important as they provide the appropriate locational signals to shippers. This is especially important in a situation where shippers can purchase entry capacity rights for up to 15 years.

3.15 If UCAGs are not cost-reflective this will tend to distort competition between shippers. Cost reflective charges promote efficient operation and investment and are consistent with the effective functioning (including with respect to security of supply) of competitive wholesale energy markets.

3.16 There would be significant reductions in UCAGs at some entry points. This may encourage developers to bring forward new or revised storage or importation

projects forward, leading to a more efficient system and lower prices for consumers.

### Option 2: Cap UCAGs at new entry points and revise all UCAGs as part of the next price control

#### Costs

3.17 The main risk with capping UCAGs for new entry points to the level of the UCAGs at nearby existing entry points is that these new UCAGs would not provide appropriate locational signals to new entrants as they might not be cost-reflective. The risk of not revising the existing UCAGs is that shippers at existing entry points will purchase entry capacity rights for up to 15 years at a price which might not reflect the underlying costs. This could lead to higher prices for consumers and undermine confidence in the efficient functioning of wholesale markets.

3.18 In addition whereas at several existing entry points UCAGs might be too low, and in some instances, significantly too low, at other entry points UCAGs might be too high. This situation could therefore result in shippers at certain entry points cross-subsidising shippers at other entry points and lead to inefficient outcomes.

#### Benefits

3.19 Capping new UCAGs to the level of existing UCAGs could potentially influence the financial viability of some new projects if the UCAG at a nearby entry-point is significantly lower than the estimated UCAG. This would clearly benefit project developers, it is less clear that there would be wider benefits for competition and consumers.

3.20 Another advantage of option 2 is that it would allow more time for further consultation on the best future approach to setting UCAGs and it would not involve delaying the September 2005 long-term auctions.

## *Views invited*

3.21 Views are invited on any aspect of this draft IA and in particular on the following:

- How should Ofgem quantify the costs and benefits of the various options? Wherever possible, it would be particularly helpful if respondents could provide quantitative information on the costs and benefits of these options, especially on how consumers might be affected.
- Would there be any potential costs and benefits to specific groups of consumers which could potentially result in new distributional effects between consumer groups?
- Would any of the options have implications for security of supply? If so, it would be helpful if respondents could provide data on how security of supply might be affected.
- Would any of the options have a specific environmental impact? If so, how should this impact be quantified?
- Would any of the options give rise to health and safety issues? And if so, how might these be addressed?
- Ofgem has outlined some of the potential risks with the various options. Would there be any other risks and/or unintended consequences and how might they be quantified?
- Would there be specific impacts on small businesses associated with any of the options? If so, how should these impacts be quantified?