

## **TRANSCO WORKSTREAM REPORT**

"Reform of Energy Balancing Regime"

Version 1.0

### **Review Group 0513 –Reform of the Energy Balancing Regime**

#### **1st Workstream Report – For May Modification Panel**

##### **Background to the Review**

Transco has expressed specific concerns about the operation of the gas balancing regime since the New Gas Trading Arrangements (NGTA) were introduced. These have focussed on the extent of NTS linepack variations experienced on Transco's system and the difficulties Transco faces in defining efficient balancing actions in the light of informational uncertainties and the complex behavioural interactions inherent within the current regime.

Network Code Review Group 0513 was therefore established to assess the effectiveness of the regime and to consider, if appropriate, the appropriateness of further evolution or more significant reform of the gas balancing regime.

The Modification Panel agreed Terms of Reference for the Review at the 21st February 2002 meeting. The Terms of Reference set a very ambitious programme of work, debate, analysis and, if considered necessary, development. This included a requirement to report on progress to the May Modification Panel Meeting as an intermediate step towards a final report for the August Modification Panel Meeting.

The Review Group experienced some minor delays at the start of the process associated, in particular, with delays associated with delivering comprehensive background to the Group in respect of the historical development of the regime and the effectiveness or otherwise against regulatory objectives. The likelihood of such delays were recognised by the Review Group as early as the first meeting on the 13th March. The Review Group, however, remained of the view that a report should be supplied to the May Modification Panel to report on progress. It was recognised however that, in order to report fully on both Phase I and Phase II of the Review an additional report would need to be made to the June Modification Panel Meeting.

This report therefore focuses on the work and key findings of the following Review Group 0513 Meetings which occurred on:

13th March  
27th March  
10th April  
24th & 25th April  
8th May.

##### **The underlying physical system**

The Review Group have noted that the inherent daily nature of the regime has evolved as a consequence of the within-day profile of customer demand which is generally most efficiently and economically satisfied by the provision of diurnal storage close to demand. This together with the capital and operational efficiencies associated with steady state operation of offshore and seasonal storage assets generated a National Transmission System designed to deliver a high utilisation bulk transmission system designed on the assumption of close to steady state operation.

The commercial contracts between the monopoly purchaser, British Gas, and the upstream gas producers were therefore negotiated on the basis of a 6am to 6am Gas Day.

Taking account of this, and the underlying nature of the physical system, both offshore and onshore arrangements developed in the early days of liberalisation based upon the 6am to 6am Gas. It was therefore both natural and appropriate for the Network Code and the associated commercial trading rules to be built upon daily timescales.

The Review Group recognised that linepack flexibility might be available within the system. However such flexibility is limited in so far as the NTS design concept features a margin intended to cover forecasting inaccuracies, pipeline and plant non-availability and supply side uncertainties. This concept therefore embodies a principle that gas flows onto the system will occur at flow rates that approximate to the uniform flow rate principle applied to forecast demands.

### **Early evolution of the Network Code Energy Balancing Regime**

Initially post liberalisation the regime was structured to provide shipper incentives and Transco balancing tools to

- achieve close to a daily balance, and
- deliver gas flows onto the system broadly in line with the uniform flow rate assumption.

Such a commercial framework was intended to achieve a close match between input and offtake physical flows consistent with the underlying system design fundamentals and intended operation.

Whilst initially the regime delivered acceptable daily balancing and flow rate performance there were concerns that the regime generated

- occasional and unwarranted price spikes,
- inappropriate commercial consequences to Transco despite the potential impacts of its actions on other players,
- overall balancing costs might be higher than necessary, and
- costs which might be misallocated between days and shippers.

Over time the regime was progressively, but incrementally, reformed and generated what most would regard as improved performance.

However by late 1998 concerns remained that overall costs might be higher than expected, that greater commercial freedom for shippers within day was necessary and that Transco should face direct financial incentives in respect of the residual Transco system balancing role.

## The New Gas Trading Arrangements

In October 1999 changes were effected to

- strengthen shipper incentives to balance by the end of the day,
- introduce the On the Day Commodity Market (OCM) to provide the primary Transco balancing tool and to facilitate shipper to shipper trading
- introduce financial incentives in respect of the Transco residual system balancing role.

However since the introduction of NGTA Transco has stated that it

- is experiencing much greater mismatches in nominated and actual NTS input and offtake flow rates than occurred on the system prior to the implementation of the NGTA; and
- needs more accurate information about intended gas flows if it is to efficiently manage the system.

The Review Group have noted data supplied by Transco that supports the Transco claim that there have been much greater nominated and actual input and offtake flow mismatches since the introduction of NGTA. Additionally the Review Group recognise that this phenomenon may be attributable to the complicated behavioural interactions in the regime, particularly but not exclusively between Shipper nominations and responses to commercial signals within day and Transco balancing actions.

The Review Group noted that both shipper nomination behaviour and Transco balancing policy and actions might be contributing to the increased within day variations in linepack that is the focus of the Transco concerns. However the Review Group was of the view that the greater commercial freedom afforded shippers under NGTA, and in particular the further development of within day trading, may have generated significant industry benefits that might outweigh the Transco concerns. However Review Group participants noted that occasionally there has been an inexplicably strong linkage between prompt price and forward curve movements.

Despite the strengthening of shipper incentives to balance it is not clear whether, in absolute terms, shippers are achieving a better end of day balancing position. However it is clear that shippers are often choosing to be further away from a nominated balance position early in the day. This may indicate that shippers value the greater commercial opportunities afforded them since NGTA and want to use such commercial flexibility.

The Review Group noted the evolution of Transco balancing policy since the introduction of NGTA. Market pressures and the incentives have encouraged greater efficiency in Transco's actions. Implicit in this is the view that Transco volumes should be as small as possible and that gas trading should be achieved at prices close to "market". Performance therefore might be considered to have improved.

However the combined effects of the above, together with the additional interactions with other elements of the regime have generated the concerns raised by Transco, namely that Transco has observed, since the introduction of NGTA, greater and more frequent mismatches between nominated and actual input and offtake flow rates on the NTS. This has generated concerns about more extensive linepack depletion or filling particularly in the early part of the day.

This effect, in conjunction with the difficulties Transco faces in defining efficient balancing actions in the light of informational uncertainties, generates a significant concern for Transco. The combination of significant mismatches in nominated and actual NTS input and offtake flow rates and the unpredictability of both end of day aggregated flows and within day flow rate variations may generate the requirement for Transco balancing actions above those that might be considered from both a volume and price efficiency perspective to be efficient. Such actions may contribute not only to unnecessary and inappropriate balancing neutrality costs but may contribute to unwarranted increases in gas prices. Ultimately Transco believe that should the performance of regime from a physical perspective further decline that potential inefficiencies could ultimately lead to risks to the security of supply.

The Review Group acknowledged Transco concerns but, if remedies are considered necessary, then the costs associated with delivering changes must be assessed against the benefits.

Transco would emphasise, however, that it is confident that with the currently experienced extent of variations in flow rate at input and offtake from the system that it can operate the gas transmission and distribution system safely given the available system management tools. Transco's immediate concerns focus on the commercial efficiency of the existing gas trading arrangements. However, any further deterioration in within day flow rate variations might exacerbate the present commercial concerns, and may threaten Transco's ability to maintain safe operation without impacting security of supply.

However Transco believes that the operation of the regime might further deteriorate and therefore that some timely change is appropriate. The Review Group noted that the present regime structure has been built around the concept of daily balancing and this has generated major benefits for the industry particularly in respect of trading at the NBP. The Review Group were therefore of the view that it may therefore not be appropriate to abandon this concept unless the dysfunctional consequences of the daily balancing regime are considered too great.

### **Objectives of the regime**

The Review Group have considered and refined the objectives defined by Ofgem in their February 2001 Gas Balancing Consultation document .

The Review Group has agreed the objectives following.

The gas balancing regime should deliver:

- An overall efficient level of regime cost
- Appropriate targeting of system balancing and operational costs

The Review Group noted that it would not consider it appropriate to introduce changes that would incur inappropriately high levels of administrative and/or systems and/or investment costs unless there were considered to be other savings or avoided costs elsewhere. Similarly the Review Group noted that it would not be sensible to make significant changes or investments to better attribute costs unless the level of such otherwise untargeted costs was very much greater than the costs of achieving the targeting.

It was recognised that the electricity regime had accepted that there might be significant untargeted costs generated within each allocation period. Even if significant untargeted costs

were to arise then some participants suggested that a similar approach to that applied in the electricity regime could be adopted within the gas balancing regime.

- Appropriate commercial incentives on shippers to balance
- Incentives on Transco to deliver efficient residual system balancing

The Review Group noted the complex interactions between these two elements. The Review Group also noted that the nature of the balancing requirement is critical. The Network Code was developed on the premise of daily balancing. Implicit within this was the underlying requirement for an approximate match of input and offtake flows. The commercial regime therefore needs to be structured to ensure a sufficiently close match between input and offtake flows from the NTS and this may depend critically on the interaction between the roles and incentives associated with both shippers and Transco.

- Improved information flows

The Review acknowledged the requirement for appropriate information flows to support Transco's residual system balancing role.

- Development of gas markets

The success of the NBP was noted and that any evolution of the regime should stimulate, as far as is practical, further development of the gas market.

- A simple commercial regime compatible with key operational parameters

The Review Group noted that the gas balancing regime should be kept as simple as was practical. Too much sophistication would only increase costs and the potential for commercial exploitation.

The Review Group noted that regime design needed to consider the extent to which the commercial regime mirrors, or needs to mirror, the physical. There are important tradeoffs to be considered in the context of regime design. Simplicity has many virtues; but the commercial representation of the physical needs to be sufficiently close that unanticipated or unacceptable outcomes are not generated. Specifically it is important to establish what level of matching is required to deliver an effective commercial regime whilst enabling safe and secure operation of the physical network.

## **Costs**

The Review Group have considered the issue of costs, although without a clear understanding of the definition of costs it will be difficult to assess the potential value and effectiveness of reforms should they be considered necessary.

The Review noted that in the absence of a clear methodology it might be helpful to consider regime costs in three components:

- Neutrality costs
- Costs associated with systems, and business processes
- Risk mitigation costs of shippers.

The Review Group noted that, whilst not entirely satisfactory or complete, the potential changes in levels of cost in the three areas above might provide a practical basis for assessing the costs and redistributions that might arise from any potential regime reform. These might then be assessed against the benefits or assessed values of avoided costs that might arise if the regime was to be left unchanged.

## Conclusions

The Modification Panel are asked to note that the Review Group has

- made good progress in respect of understanding the historical development and the conceptual framework that has lead to the current gas balancing arrangements
- noted the reasons why the gas balancing regime has developed to reflect system requirements and the commercial contract framework in place pre-liberalisation thereby defining a daily allocation and balancing period
- confirmed that the “daily regime” has delivered significant commercial efficiencies, most particularly in respect of gas trading
- noted that the limited within day linepack flexibility available within the NTS addresses forecast demand changes, supply uncertainties and pipeline and plant non-availability
- agreed that Transco has observed greater within day linepack variations since the introduction of the NGTA and that a contribution to this effect may have arisen because of the complex interaction between shipper and Transco behavioural changes
- evolved Ofgem’s February 2001 statement of objectives for the regime, most noticeably by the inclusion of reference to the total costs of balancing as indicated in Ofgem’s December BC99 Position Statement document.

The Review Group will further assess the inherent strengths and weaknesses of the regime. Furthermore the Review Group will refine and prioritise the objectives for the regime and continue the process of establishing whether, and if so which, changes to the regime might be appropriate to reduce the risk and/or improve performance of the regime.

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