

## **TRANSCO REVIEW GROUP REPORT**

"Reform of Energy Balancing Regime"

Version 1.0

### **Review Group**

#### **Executive Summary**

Following the introduction of the New Gas Trading Arrangements (NGTA) in October 1999, Transco has expressed specific concerns about the operation of the gas balancing regime. These concerns focused on the extent and unpredictability of National Transmission System (NTS) linepack variations experienced on Transco's system within the gas day 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 Proposal 0513 was therefore raised to establish a Review Group with the remit of assessing the effectiveness of the regime and to consider, if appropriate, further reform of the gas balancing regime. The Review Group has attracted widespread gas industry participation and has met on 13 occasions over the period March - August 2002.

The Review Group has undertaken a comprehensive investigation into the historical development and the conceptual framework that has led to the current gas balancing arrangements. The Review Group noted both the operational and commercial rationale for the daily balancing regime. The Review Group also noted that the gas balancing regime was initially structured, post liberalisation, to ensure that the commercial arrangements were consistent with the prevailing contractual arrangements, thereby delivering an efficient transition to promote competition. Such arrangements were also designed to achieve a sufficiently close match between NTS input and offtake physical flows, consistent with the underlying system design fundamentals and intended operation.

The Review Group noted that over time the regime was progressively reformed and generated what most would regard as improved performance. However, by late 1998 concerns remained that costs might be higher than expected. There was also a desire for greater commercial freedom for Users within day and that Transco should face direct financial incentives in respect of its residual system balancing role. The Review Group noted that NGTA implemented changes to the regime that sought to address these issues.

Analysis of regime performance has demonstrated that the commercial freedom granted to Users under NGTA and the consequent evolution of Transco balancing policy has created a tension between the commercial and physical regimes. The Review Group considered that these changes have facilitated significant commercial efficiencies for most industry players, particularly in respect of gas trading. However such benefits have had consequences in respect of the level of within day linepack variations. The extent and uncertainty associated with these variations has been

observed to be greater than that anticipated when the basis of the design and operation of the system was originally established.

The Review Group noted that Transco has provided assurance that, with current levels of within day linepack variation, it is able to operate the system safely given the available system management tools. Transco remain concerned that any further increase from the current levels of within day linepack variation may further compromise the effectiveness and commercial efficiency of Transco's current balancing tools. The Review Group noted that the current commercial framework appears to offer no practical limit to the extent of within day linepack variation and therefore may not be compatible with key operational parameters.

A comprehensive assessment of the strengths and weaknesses of the current regime from many different stakeholder perspectives identified that, from most stakeholders' perspectives, the current regime is both effective and promotes market efficiency. From a commercial perspective there can be no doubt that the regime functions well. "Physical players", those owning and operating assets along the gas supply chain, report that the increased frequency of flow rate changes may conflict with the efficient management of assets designed for steady state operation. Such flow rate changes are considered, to an extent, to be as a result of Users' commercial freedom within the current regime. Such operational inefficiencies may, however, generate substantial benefits elsewhere in respect of commercial efficiencies.

The Review Group also noted that Ofgem has published two documents, "Further reform of the gas balancing regime. A Consultation Document", February 2001 and "Reform of the gas balancing regime. Revised proposals", February 2002, exploring weaknesses in the regime and highlighting possible reform. Ofgem's concerns focus on the risk of poor cost targeting within the regime as the result of within day flow rate variations.

Many Review Group participants accepted that there might be a concern associated with the potential escalation and allocation of costs if increased Transco balancing actions were necessary to address within day effects. However, most considered that present costs are not at levels that give concern and do not offer appreciable risks of unacceptable escalation.

The Review Group concluded that, as the priority for the 0513 Review, there should be focused attention on the weaknesses identified by Transco. The Review Group noted such concerns to be: -

- Transco's difficulties in being able to assess whether, and if so when, Users will come close to a nomination balance, which creates uncertainty as to whether, and if so when, flow rate changes will occur within the day;
- Given the extent and unpredictability of both nomination and physical flow changes within day, it has become increasingly difficult for Transco to assess the requirement for balancing actions and the effectiveness of market balancing actions; and
- The combination of the above, together with other interactions within the regime, generates unpredictable mismatches between input and offtake flow rates on the

NTS. This causes linepack variation, which is particularly evident during the early part of the day.

Whilst many in the Review Group did not consider that the problems identified were sufficiently great to warrant reform of the regime, the Review Group considered a wide range of proposals with a view to address Transco's concerns and meet identified regime objectives, where possible.

The Review Group agreed that the primary objectives of the gas balancing regime should be to: -

- Deliver an overall efficient level of regime cost;
- Promote the development of competitive gas markets; and
- Ensure a simple commercial regime that is compatible with key operational parameters.

The Review Group also noted that the gas balancing regime should: -

- Provide appropriate commercial incentives on Users to balance their daily balancing accounts and to promote aggregate flows onto the system in line with the uniform flow rate applied to the aggregate demand projection;
- Provide appropriate incentives on Transco to deliver efficient residual system balancing;
- Deliver an appropriate level of cost targeting; and
- Promote improved information flows to deliver efficient market and operational outcomes.

There was a desire within the Review Group that, if reform of the regime was required, it should preserve, if possible, the benefits of daily balancing and allocation and avoid extensive IT/administrative changes and significant changes in User risk management and costs. It was therefore considered by many in the Review Group that "incremental" reform should be thoroughly considered before more "fundamental" reform is contemplated. Most participants considered that fundamental reform should only be investigated if such incremental reforms were found to be ineffective in delivering a sustainable regime. In particular, the Review Group was of the view that it would not be appropriate to abandon the concept of a daily balancing regime unless the dysfunctional consequences are considered too great.

Many participants considered that the balancing regime operates satisfactorily at reasonable cost. Given Transco's assurances that it is able to operate the system safely with the current levels of linepack and available system management tools, many participants advocated that reform of the regime is not warranted at this stage. In addition, some participants considered that further reform should only be considered after the potential benefits of Modification Proposal 0479, "Incentivised Nomination Scheme", due for implementation in October 2002, have been fully assessed in the light of operational experience.

However the Review Group accepted that Transco remain concerned that any further increase in the levels of within day linepack variation may further compromise the effectiveness and commercial efficiency of its current balancing tools.

### Recommendations

The Review Group noted several proposals that could provide additional benefits to the regime, and therefore recommends that: -

- a topic be raised at the NT&T Workstream to further develop the proposal to release additional information after the gas day to improve the transparency of Transco balancing actions;
- a topic be raised at the NT&T Workstream to further develop the proposal to modify Transco's residual gas balancing incentive arrangements; and
- Transco further investigates the establishment of gas flexibility contracts as an additional tool to address national/locational balancing requirements.

The Review Group noted that, whilst these initiatives might assist regime operation, they are unlikely to comprehensively address Transco's identified regime weaknesses in respect of the issues of the extent and unpredictability of linepack variation and the effectiveness of balancing tools. In order to seek to specifically address these issues, the Review Group supports that: -

- a topic be raised at the NT&T Workstream to further develop the "Within day Scheduling Incentive Scheme" proposal with a view to raising a Network Code Modification Proposal; and
- a sub-group of the NT&T Workstream be established to discuss more extensive reforms, as a prudent step by the industry in the event that incremental reforms are ascertained to be unable to deliver an acceptable and sustainable regime.

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## **1. Background**

Following the introduction of the New Gas Trading Arrangements (NGTA) in October 1999, Transco has expressed specific concerns about the operation of the gas balancing regime. These concerns focused on the extent of NTS linepack variations experienced on Transco's system within the gas day 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, further reform of the gas balancing regime.

The Review Group met on 13 occasions over the period 13th March 2002 to 7th August 2002. Two sub-groups were also formed that met separately to the Review Group to develop specific proposals to consider possible evolutionary steps for the gas balancing regime.

This report provides a summary of the Review Group's work. It focuses on the analysis of historical regime performance, consideration of possible evolutionary steps for regime development and summarises the recommendations of the Review Group.

## **2. Terms of Reference for Review Group Discussions**

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 of proposals to contemplate change to the gas balancing regime. This included a requirement to provide a final report to the August Modification Panel meeting.

The following areas were considered to be within the scope of the Review: -

- Phase I- Historical development and conceptual framework for the current regime
- Phase II - Assessment of the historic and current regime performance against objectives
- Phase III - Identification of alternative proposals to enhance efficiency of regime operation

The following sections summarise the key developments in each of these phases.

### **3. Phase I - Historical Development and Conceptual Framework for the Current Regime**

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

The Review Group noted that the daily nature of the regime has evolved as a consequence of the inherent 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 based on the design assumption of close to steady state operation.

Provision of diurnal storage within the LDZs and the within day profile of customer demand leads to the highest daily NTS linepack and pressure requirements at approximately 6am. The commercial contracts between the monopoly purchaser, the former British Gas plc, 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 were based upon the 6am to 6am gas day. It was therefore considered appropriate for the Network Code and the associated commercial trading rules to be built upon these daily timescales.

The Review Group recognised that limited linepack flexibility might be available within the NTS. However the Review Group noted that the NTS design concept only defines sufficient flexibility to cover some forecasting inaccuracies, pipeline and plant non-availability and supply side uncertainties. This concept therefore assumes that aggregate flows onto the system approximate to the “uniform flow rate” applied to the aggregate end of day demand forecast. This rate is determined the dividing the proportion of the prevailing end of day demand forecast to be offtaken over the remaining part of the gas day, taking into consideration prior flow rates, by the time remaining to the end of the gas day.

#### **3.2 Early Evolution of the Network Code Gas Balancing Regime**

Post liberalisation, the regime was initially structured to provide Users with incentives and Transco with balancing tools to: -

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

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;
- minimal commercial consequences to Transco despite the potential impacts of its actions on other players;
- overall balancing costs that might be higher than necessary; and
- costs which might be misallocated between gas days and between Users.

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

However by late 1998 concerns remained that: -

- costs might be higher than expected;
- greater commercial freedom for Users within day was necessary; and
- Transco did not face direct financial incentives in respect of its residual system balancing role.

### **3.3 The New Gas Trading Arrangements**

In October 1999, NGTA was implemented including changes to: -

- strengthen User 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 User to User trading;
- introduce financial incentives in respect of the Transco residual system balancing role; and
- remove restrictions on User re-nominations.

However since the introduction of NGTA, Transco has stated that it: -

- is experiencing greater mismatches between 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.

### **3.4 Analysis of regime performance**

The Review Group noted the comprehensive analysis presented by Transco into the performance of the regime since the onset of Network Code, considering both commercial and physical perspectives, ref [49].

#### **3.4.1 NBP trading**

This was viewed by the Review Group as a major success in the evolution of the regime. The Review Group noted that this had facilitated significant commercial benefits to Users by enabling greater scope for options to procure gas right up to the end of the gas day. The Review Group noted that the rate at which the number and quantity of trades undertaken at the NBP, as recorded on AT-Link, has significantly increased since the introduction of NGTA.



### **3.4.2 Increased within day NTS linepack variations**

The Review Group noted data that indicates there has been greater nominated and actual input and offtake flow mismatches since the introduction of NGTA. It was recognised by the Group that this results in within day variations in linepack. The Review Group noted that such variations were first observed in Spring 2000 and similar effects have continued to date.

Additionally the Review Group recognised that this may be attributable to the complicated behavioural interactions in the regime, particularly, but not exclusively, between User nominations and responses to commercial signals within day and Transco balancing actions. The Review Group therefore decided to further investigate the interactions between User/Transco incentives in more detail as part of phase II of the review (see section 4.3)

### **3.4.3 User balancing performance**

Despite progressively strengthening of User incentives to balance, the Review Group was unable to determine whether, in absolute terms, Users are achieving a better end of day balancing position. However it is clear that Users are often providing information to Transco which indicates that they are choosing to be further away from a nominated balance position early in the day. Transco noted that this is entirely consistent with User Licence and Network Code obligations. This confirms the value many Users place upon the commercial freedom afforded them since NGTA, and the merit of the use of such commercial flexibility. The Review Group, however, noted the tension between within day commercial freedom for Users and the desire for Transco to run the NTS close to a steady state.

### **3.4.4 Transco balancing performance**

The Review Group noted the evolution of Transco balancing policy since the introduction of NGTA. Market pressures and the residual gas balancing incentives have encouraged greater commercial efficiency in Transco's balancing actions. This has led to a change of emphasis from volume towards price efficiency. Implicit in this is the view that Transco balancing actions should be only taken to achieve an end of day linepack level or to manage within day pressures and that gas trading should be achieved at prices close to prevailing market conditions. As trades on the OCM Physical /Locational market can be expected to include a price premium, this has led to a move from the OCM Physical/Locational to Title market as the main source of Transco balancing actions. Transco's inability to assess the timely flow rate change in response to OCM Title actions, combined with an increased uncertainty of User end of day imbalance positions, has naturally led to a reduction in the number of early actions. This policy is designed to achieve efficient prices and avoid unnecessary actions. On this basis, performance might therefore be considered to have improved.

The Review Group noted data demonstrating the relative levels of effectiveness of Transco balancing tools, and in particular analysis of the timeliness and certainty of a physical flow rate response. The Review Group considered this to be an important

area of the Review and therefore decided to further investigate as part of phase II (see section 4.4)

### **3.4.5 Regime costs**

The Review Group noted that Balancing Neutrality costs had reduced since the implementation of NGTA, and are currently at low levels and cash generative. It was, however, recognised by the Group that such reductions were partly attributable to the complex interactions between the volumes and cash flows associated with Balancing Neutrality.

Many participants considered that balancing costs are not solely represented by Balancing Neutrality costs, and that a focus on such costs may hide important effects elsewhere in the regime that should also be considered when assessing regime performance. The Review Group considered that without a clear understanding of the definition of “regime costs”, it would be difficult to assess the potential value, via cost/benefit analysis, and effectiveness of reforms, should such reforms be considered necessary.

The Review Group noted that: -

- Ofgem consider that, in general, balancing costs will be minimised and security of supply achieved as efficiently as possible by encouraging competition between Users, rather than through regulation;
- Balancing costs are not easy to identify and would involve significant uncertainty due to the many influences on gas prices and the complicated interactions between market players and spot/forwards markets; and
- Ofgem have concerns regarding the potential interaction of the operation of the within-day market with the forward price curve. Although it was noted that the forward curve may at times move in parallel with on-the-day changes, most Review Group participants considered these changes relate to market sentiment, movement in prices in other markets (eg the oil price), as well as market fundamentals, as opposed to the operation of the within-day market.

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

- Balancing Neutrality costs;
- Costs associated with systems, and business processes; and
- Risk mitigation costs of Users.

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.

### **3.4.6 Conclusions and Transco Position Statement**

The Review Group noted that the combined effects of the regime changes introduced by NGTA 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 the potential effects of more extensive and unpredictable linepack variation, 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 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 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.

However, many Review Group participants remained unconvinced that reform of the gas balancing regime is necessary at this stage and should only be undertaken in the event that significant deterioration occurs.

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

Transco emphasised, however, that it is confident that, with the currently experienced extent of variations in flow rate at input and offtake from the system, it can operate the gas transmission and distribution system safely given the available system management tools.

However, the Review Group considered that, to address the risk of potential significant deterioration in the within day effects, it may be timely and prudent for the industry to consider changes to the gas balancing regime.

#### **4. Phase II – Assessment of the Historic and Current Regime Performance against Objectives**

##### **4.1 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 that the gas balancing regime should deliver: -

- An overall efficient level of regime cost
- Appropriate targeting of costs in general

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. The Review Group considered that a degree of smeared costs might be acceptable within the gas balancing regime.

- Appropriate commercial incentives on Users 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 at the system level for an approximate match of NTS input and offtake flows. The commercial regime therefore needs to be structured to ensure an appropriate 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 Users and Transco.

- Improved information flows

The Review Group acknowledged a continuing requirement for appropriate information flows to support Transco's residual system balancing role and User understanding of Transco balancing activities.

- Development of competitive 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 competitive gas markets.

- 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.

The Review Group considered whether it would be possible to prioritise the regime objectives. The Review Group agreed that the primary objectives of the gas balancing regime should be to: -

- Deliver an overall efficient level of regime cost;
- Promote the development of competitive gas markets; and
- Ensure a simple commercial regime that is compatible with key operational parameters;

but should also

- Provide appropriate commercial incentives on Users to balance their daily balancing accounts and to promote aggregate flows onto the system in line with the uniform flow rate applied to the aggregate demand projection;
- Provide appropriate incentives on Transco to deliver efficient residual system balancing;
- Deliver an appropriate level of cost targeting; and
- Promote improved information flows to deliver efficient market and operational outcomes.

#### **4.2 Identification of the Strengths and Weaknesses of the Current Regime**

The Review Group considered the strengths and weaknesses of the current regime from many different stakeholder perspectives. Several stakeholders provided presentations to the Group to assist understanding this task, refs [50 - 60]. The Review Group noted the following key points from stakeholder interest groups: -

- Upstream (Offshore/Terminal Operators, Claims Validation Agent)

Offshore operations are most efficient under steady state conditions. Flow rate changes need to be carefully managed and infrastructure capabilities might restrict the extent of flow rate variations within the gas day. The rate at which gas is delivered into the system is influenced by User nominations and any subsequent re-nominations, ref [67].

The complex series of interlinking commercial agreements governing offshore processes, gas delivery into the NTS and determination of User entry allocations have been structured based on the time period of a gas day.

The determination of User Entry Allocation Statements is a complex process involving many industry parties, large amounts of information and challenging timescales. Efforts have progressively led to improved matching of claims and actual gas flows.

- Storage

Storage operations are often constrained by the physical capabilities of the site infrastructure. There is thus an operational preference for steady state flows. This can be frustrated by the frequency, and often lateness, of gas flow re-nominations. It was noted that this might be caused, to an extent, by storage facilities being increasingly used as a trading tool in addition to a seasonal

supply/demand matching tool, and that this might reflect greater commercial efficiencies with the overall regime. In order to strike a balance between commercial and physical requirements, flow requirements might often be “batched” before physical flow commences, in order to achieve efficiency, thereby potentially contributing to flow rate variation. The rate at which gas is delivered into, or offtaken from, the system was therefore recognised to be influenced by User nominations and any subsequent re-nominations.

- Traders

The establishment of the NBP has been a significant success, encouraging easy market entrance for new participants. The NBP is generally regarded as the best market in Europe, with other hubs often priced relative to it. A trader considered that the within day market presents significant risks and tended to focus its attention further down the curve. The trader stated that the causes of these risks were not well understood, but speculated that this may be contributed to by the information asymmetry that it felt exists within the regime. It was also noted that the potential value gained from within day trading is typically less compared to down the curve where modest margins on larger quantities might provide increased opportunities.

- Market Operators

There has been a growth in the number of participants and traded volumes in the OCM. EnMO believes that the OCM has the major market share of the within day trading market, although it was noted that precise quantities are difficult to identify. The maturing of the OCM was noted, particularly in respect of the closing of the buy/sell spread.

- CSEP Operators/Agents

The UK-Continent Interconnector model suggests that matching agent roles at system entry points could help ensure both high quality information provision to System Operators and facilitate accurate flows against nominations, but only on the basis of increased transaction costs.

- End Consumers

Consumer interest groups expressed concern that the costs of regime operation should be kept as low as possible, consistent with fostering a competitive market place. However, security of supply was considered to be paramount above all other customer requirements.

The Major Energy Users Council (MEUC) expressed a preference for increased investment to provide more system flexibility, and considered that this might be more cost effective than fundamental reform of the regime. Linepack was also considered to be best managed by Transco, ref [110].

- Ofgem

Ofgem expressed concern regarding the risk of poor cost targeting within the regime as the result of within day flow rate variations at entry/exit sites generating cost that would be incurred, under the current regime, by all Users as opposed to those generating such costs.

Such variations could arise, in addition to many other factors, as a result of interactions between gas and electricity systems at exit sites with Combined Cycle Gas Turbines (CCGTs), due to the commercial incentives that exist under NGTA and the New Electricity Trading Arrangements (NETA).

In addition, the Review Group noted that increased flow rate variations, particularly those at exit sites outside of contractual parameters, might produce localised linepack variations for Transco, which could result in Transco using interruption to manage system pressures. If such interruption included CCGTs, this might impact operation of the electricity system. It was noted that the JESS (Joint Energy and Security of Supply) group is considering such issues.

The Review Group noted Ofgem's view that the industry should endeavour to be able to develop a method of quantifying the costs created by gas flow variations, if such costs occurred, and an efficient method of allocating such costs. However there was an acceptance that this approach was not intended to restrict sites varying their flow rate, but rather that if costs were created, then such costs should be borne by those parties creating the costs.

The Review Group noted that most stakeholders are content with the operation of the current regime. However, "physical players", those owning and operating assets along the gas supply chain, report that the increased frequency of flow rate changes may conflict with the efficient management of assets designed for steady state operation. A full list of the identified strengths and weaknesses of the current regime is included in the Appendix, ref [104].

The Review Group participants decided that in order to assess whether any proposal to evolve the regime was worthy of development as part of the 0513 Review, the list of weaknesses should be prioritised to ensure a focused approach. The Review Group elected to focus on the regime weaknesses identified by Transco.

The Review Group accepted that, apart from cost targeting issues, Ofgem's identified weaknesses with the regime are likely to be addressed when considering Transco's highlighted concerns. The majority of participants considered that the misallocation of costs in the current regime was small and unlikely to increase to a level that would be considered to be unacceptable in the foreseeable future.

The Review Group noted a briefing paper circulated by Transco providing further explanation of its concerns with the regime, ref [92]. The Review Group accepted the paper as a clear statement of Transco's position.

It was concluded by the Group that any proposal that either encourages Users to flow closer to design and operational assumptions or results in the increased effectiveness of Transco balancing actions, or a combination of both, might address Transco's identified weaknesses. It was recognised by the Group that if Users are

encouraged to flow closer to a uniform flow rate, there could be effects on within day trading, amongst other concerns, that would have to be carefully considered.

#### **4.3 Transco and User Incentive Structures and Interactions**

The Review Group noted that regime performance depends critically on the incentive structures within the regime, particularly those associated with Users and Transco, and the complex behavioural interactions between industry players. Specifically the Review Group noted that the Network Code incentivises contract parties in respect of “end of day” performance, namely: -

- Each User to achieve a gas balance (based on the net of gas entered, offtaken and traded on the system) and accurate locational nominations (promoting nominations at the end of the day close to gas flow allocations); and
- Transco to achieve an efficient trade-off between day on day linepack change and the price efficiency of market balancing actions.

The Review Group noted that the changes introduced as part of NGTA had increased the within day commercial freedom of both Transco and Users and that this may have resulted in a change to within day activities. It was recognised that this may have better facilitated the within day gas market and that this has generated significant industry benefits.

However, the Review Group accepted that a natural consequence of the increased commercial freedom may have been the increased mismatch between nominated and actual NTS input and offtake rates, particularly early in the gas day. This was noted by the Review Group to increase the level of uncertainty as to the extent of within day linepack variations. This is critically dependant on the size of the aggregate nominated imbalance position early in the day and the time at which Users adjusted their nominated positions to be closer to their intended end of day positions. The Review Group recognised that these within day variations might exceed those envisaged as part of the underlying system design and operational assumptions.

The Review Group noted the difficulties that the change in User behaviours could present to Transco in managing the system, particularly when considering issues identified with its balancing tools (see section 4.4). However, it was recognised by the Review Group that appropriate changes in Transco balancing policy in response to evolving operation of the regime might have further exacerbated within day effects. Such changes, particularly in respect of the move to more frequent use of the Title market, were designed to improve the efficiency of Transco balancing actions.

The Review Group concluded that any proposal designed to enhance the operation of the regime should consider the impact of any incentive changes, and particularly User/Transco interactions.

#### **4.4 Transco Balancing Tools**



The Review Group noted that Transco's balancing policy had evolved since the introduction of NGTA in the light of experience and regime performance discussions with Users and Ofgem.

The drive for greater commercial efficiency of Transco balancing actions and the price premia associated with the OCM Physical/Locational markets has resulted in a focus of activity in the Title market, with Physical/Locational markets only used when operationally essential or where efficient prices are available. Given the tendency for Users, in aggregate, to get closer to balance later in the day (see sections 3.4.3 and 4.3), Transco balancing policy has also evolved to reduce the likelihood of actions early in the day.

Some participants expressed the need to clarify what was meant by 'efficient' balancing actions. It had been suggested that this might lead to Transco minimising the number of balancing actions it undertook. Many participants were of the view that the philosophy behind the NGTA reforms was that Transco should be incentivised to take actions at an efficient price, and that fewer actions might not necessarily be more 'efficient'.

The Review Group noted the difficulties associated with assessing the "physical performance" of the OCM balancing tool, particularly in respect of the use of the Title market. Analysis has indicated that the OCM Physical/Locational markets generally give rise to timely flow rate changes, but that the identification of physical responses to Title actions is unlikely to be possible. The Review Group noted that Transco is therefore required to choose between the greater operational certainty and cost of the Physical/Locational markets and the commercial efficiency of the Title market.

The Review Group noted that Transco's balancing tools were "fit for purpose" to secure the safe operation of the regime provided regime performance did not significantly deteriorate. However, Transco pointed out that if within day linepack variations increased, then Transco might need to increase utilisation of its balancing tools for within day linepack management purposes. Some participants questioned the appropriateness of the OCM as a balancing tool to address within day variations. It was noted that one objective of the OCM was to enable Transco to perform residual system balancing, based on end of day quantity products, with only occasional use for within day effects. In addition, such OCM usage might give rise to increased balancing costs that would be smeared to all Users inputting or offtaking from the system.

The Review Group agreed, as part of phase III of the review, to assess options regarding application of current balancing tools and the development of additional tools.

#### **4.5 Gas/electricity regime comparisons**

The Review Group noted that whilst there are elements of consistency between the gas and electricity regimes, there are fundamental differences: -

- Commercial incentives in electricity are aimed at establishing, before the balancing period, a high degree of certainty with regard to quantities expected to be produced/consumed over the half hour balancing period. It was noted that, in the gas regime, nomination incentives are based only on nominations prevailing at the end of day (see section 4.3). However, the Review Group accepted that operation of

the electricity system might necessitate such incentives due to the limited flexibility to manage production/consumption variances. It was noted that the gas system has linepack which provides flexibility to operate safely with limited differences between input and offtake flow rates (see section 3.1).

- NGC have a wider range of balancing tools than Transco, and are able to better monitor physical responses to balancing actions. This is a consequence of the nature and attributes of NGC's balancing tools.
- The rate at which electricity is generated or consumed is usually under the control of a single party, whereas in the gas regime, many parties typically influence the flow rate at a sub-terminal.

The Review Group noted the difficulties that had been encountered under NETA to identify the proportion of balancing costs attributable to actions taken to address any production/consumption variances within the half hour balancing period, and by the end of the balancing period.

The Review Group concluded that the application of commercial arrangements that exist under the electricity regime to the gas regime would need to take account of the physical infrastructures and capabilities of the networks.

## **5. Phase III- Identification of alternative proposals to enhance efficiency of regime operation**

The Review Group noted that the current regime had been developed around the concept of daily balancing and that this had generated major benefits for the industry, particularly in respect of NBP trading. There was a desire within the Group that, if reform of the regime was required, it should preserve the benefits of daily balancing and allocation and avoid extensive IT/administrative changes and significant changes in User risk management and costs. Many participants considered that fundamental reform should only be investigated if such incremental reforms were found to be ineffective in delivering a sustainable regime. In particular, the Review Group was of the view that it might not be appropriate to abandon the concept of a daily balancing regime unless the dysfunctional consequences are considered too great. However, some participants considered that reform of the regime was not necessary at this stage.

The Review Group identified potential areas for possible reform to the regime. Areas consistent with a daily balancing regime were then proposed by Transco to be categorised into one of the following groupings, that might represent progressive further evolution of the current regime, ref [105]: -

- Schemes based on end of day quantities;
- Within day information regarding end of day quantities;
- Within day information regarding within day flows; and
- Deemed within day flows.

The Review Group agreed that any potential reform would be assessed against a standard set of criteria: -

- whether the proposal offered the potential to address the regime weaknesses agreed by the Review Group as those to be taken forward for further evaluation;
- potential detrimental effect of a change on the agreed strengths of the regime;
- assessment against regime objectives.

Based on the outcome of the assessment of each proposal, the Review Group considered whether, or not, to further develop the proposal as part of the 0513 Review process.

The following proposals were developed for each type of regime evolution and then assessed by the Review Group against the agreed criteria: -

## **5.1 Schemes based on end of day quantities**

### **5.1.1 User end of day balancing and nomination incentives**

The Review Group noted that the proposals outlined in strawman refs [100, 101] advocate strengthening the current incentive arrangements on Users to balance their own portfolios by the end of the gas day and to provide accurate end of day input/output nominations. The Review Group also considered Modification Proposal 0511, "Removal of the NDM Forecast Deviation Tolerance".

The outcomes of the assessment of these proposals by the Review Group are detailed in refs [85, 86, 88]. The Review Group concluded that, although some of the proposals might have the potential to offer benefits to the regime, they are unlikely to have a material effect on Transco's identified weaknesses. In particular many considered that Modification Proposal 0511 might have detrimental impacts on the regime objectives. It was therefore agreed that such proposals should not be developed as part of the 0513 Review.

### **5.1.2 Transco balancing policy and residual gas balancing incentive arrangements**

Earlier in the Review (as recorded in sections 4.3 and 4.4), the Review Group had noted that appropriate changes in Transco balancing policy in response to evolving operation of the regime may have further exacerbated within day effects. A sub-group was therefore established to focus consideration on potential evolution of Transco's balancing policy and incentive arrangements.

#### **5.1.2.1 Transco balancing policy and tool development**

The sub-group considered a wide range of proposals and various options to evolve Transco's balancing policy, including the deployment of current balancing tools and development of new tools, as described in strawman ref [69]. Each potential change, and any proposed options, were assessed by the Group against the set criteria, as detailed in refs [70 - 78]. Key conclusions were:-

- The Review Group agreed that the majority of the proposed changes would not address Transco's identified regime weaknesses.

- However, the prospect of more effective and reliable balancing tools, perhaps via gas flexibility contracts, received some support from the Review Group and was recommended for further consideration. Such contracts would rely upon the effectiveness to which Transco could monitor the flow rate change that should be enacted via the contract. The Review Group acknowledged the limitations of the current regime to identify within day flows for specific Users at co-mingled streams. Therefore many participants recognised that this proposal might only afford opportunity to develop robust tools at a subset of input and/or offtake points.
- The Review Group noted that, although unlikely to address any of Transco's concerns regarding operation of the current regime, release of additional information after the gas day might provide benefits to the regime as a result of increasing the transparency of Transco's actions. It was therefore accepted that the release of additional balancing information should not be further developed as part of the 0513 process, but could be pursued independently as a topic within the NT&T Workstream.

#### **5.1.2.2 Transco balancing incentives arrangements**

The Review Group, informed by the sub-group's work, considered potential changes to Transco's residual gas balancing incentive arrangements, as detailed in strawman ref [94]. The main conclusions of the assessment of the proposed changes by the Review Group are detailed in ref [81] and summarized below:-

##### Price incentive

- The Review Group considered, as a preferred option, that the price incentive performance measure be reformulated based on the price of the balancing action against the prevailing SAP at the time of action.
- Several Review Group participants considered that the proposal might not necessarily encourage Transco to take earlier actions, but that it would perhaps remove perception of an element of conflict under the current price incentive arrangement to take actions at an appropriate time during the balancing period.

##### Linepack incentive

- The Review Group considered better aligning the linepack incentive with physical requirements by reformulating the linepack performance measure based on the target end of day linepack.

##### Interaction of price and linepack incentives

- The Review Group recognised that the current incentive structure typically results in a reward for price performance and a loss for linepack performance, but with an overall reward. It was suggested by the sub-group that this might indicate that the structure and/or parameters of the incentive might not be appropriately encouraging Transco to focus efforts on the achievement of both incentive scheme targets.

- The Review Group considered adopting the “worst-of” approach in combining the incentive outcomes. This would result in Transco receiving a reward only if both targets were achieved.

The Review Group noted that the suggested changes to Transco’s linepack performance measure and methodology to determine the overall incentive outcome had been considered during development of Modification Proposal 0414 “Revised Energy Balancing Incentive Arrangements”. However, the current incentive structure was concluded to better facilitate the relevant objectives. Some participants considered that the arguments articulated during development of Modification Proposal 0414 might need to be reconsidered in light of the subsequent changes to the regime.

Most participants considered that the ultimate effect of the above changes to Transco’s balancing incentives could be to discourage Transco from delaying actions earlier in the gas day. Although the Review Group considered that the proposal might offer benefits to the regime, it was generally accepted that even if Transco took earlier balancing actions, timely flow rate responses might not be delivered to resolve any within day effects, potentially due to User incentives being focused on end of day quantities. Several participants, however, considered that such changes might address some within day effects in tandem with other regime changes.

Ofgem indicated that whilst worthy of consideration, it did not consider that the proposal, at this point in time, would directly address the issues of within day flow rate variations. The Review Group also noted that the incentive structure was likely to be defined in Transco’s GT Licence and was therefore primarily a matter for Ofgem/Transco.

The Review Group agreed that the proposal might be worthy of further consideration as a topic of the NT&T Workstream. It was noted that the proposal could be considered in development of any change to the residual gas balancing incentive arrangements from April 2004, as envisaged under the (draft) GT Licence, unless changes are made to the proposed Licence to take effect from April 2002.

### **5.1.3 End of day linepack service**

The Review Group noted the proposed end of day linepack services, as described in strawman proposals ref [97, 98].

The outcome of the assessment of the proposals by the Review Group is detailed in ref [87]. The main conclusions were: -

- There were mixed views as to whether an end of day linepack service might afford Transco the opportunity to develop an alternative balancing tool to the OCM. Several participants considered that the cost of setting up and operating such a service for the industry would outweigh any efficiency gains that might be obtained.
- The Review Group unanimously agreed that the proposal would not reduce the extent of Transco’s identified weaknesses and therefore decided that it should not be further developed.

## 5.2 Within Day Information Regarding End of Day Quantities

### 5.2.1 Incentivised Nomination Scheme

The Review Group considered that, although Modification Proposal 0479, “Incentivised Nomination Scheme”, had yet to become effective, it has the potential to offer significant benefits to the regime, ref [89]. Many participants considered that the proposal might alleviate some of Transco’s concerns and therefore the effect of the implementation of the proposal should be fully assessed before further regime evolution is considered, and, if necessary, implemented.

### 5.2.2 Within day scheduling incentives

The Review Group, informed by the work of a sub-group, considered the effects of extending the current end of day scheduling arrangements to apply to nominations prevailing at predefined points during the balancing period. The Review Group noted the following key principles of the proposal, as detailed in strawman ref [66]: -

- End of day nomination versus end of day allocation variances, based on an individual and/or aggregate entry/exit points, at several predefined times before and during the gas day would form a User’s performance measure.
- Users with a performance measure beating a reference level would receive a reward, and conversely, those Users exceeding the reference level would incur a charge.
- The reference levels would influence cash flows reflecting the historical nomination accuracy and perhaps operational uncertainties at different types of site. The intent would be to provide incentives by the direct reward of good quality information, whilst at the same time avoid significant aggregate cash flows to Balancing Neutrality.
- The applicable charge rate would need to be carefully considered such that the interaction of the within day scheduling incentives and the end of day balancing incentives promoted the desired behaviours.

The outcome of the assessment of the proposals by the Review Group is detailed in ref [68]. The main conclusions were: -

- Some participants considered that the proposal might encourage Users to nominate in line with their expected end of day gas flows to avoid the financial consequences of re-nominating later in the gas day. Combined with the end of day cash-out incentive, the Review Group noted that the proposal might therefore encourage aggregate gas deliveries onto the system at a rate closer to the uniform flow rate applied to aggregate end of day demand.
- Several Review Group participants considered that the proposal might reduce the frequency of re-nominations during the gas day. It was recognised that this could increase the reliability and effectiveness of Transco’s balancing tools.

- The Review Group recognised that the proposal might deter re-nominations that might lead to beneficial flow rate changes, but noted that the concept of a tradable re-nomination right, or “token” scheme, as described in ref [66], could be developed to encourage desired responses. The Review Group considered that, although the token scheme required further development, it could reduce the identified weaknesses with the proposal with regards to its potential impact on the NBP market. In addition, the Review Group noted that without the token scheme, the proposal might increase Transco’s balancing role. However, the Review Group recognised that there was a trade-off in the complexity of the scheme between the requirement to support trading and encourage flows in line with physical requirements.

The Review Group concluded that the proposal might address the within day issues, but that further development was required before its potential effects could be fully evaluated. This would include consideration of the interaction of the proposal with the Incentivised Nomination Scheme, and whether this scheme would still be required. The majority of Review Group participants therefore agreed that the proposal should be the subject of further development as a topic within the NT&T Workstream, with a view to raising a Network Code Modification Proposal. However, the Review Group noted that there was a significant chance that the proposal could be complex and/or might impact within day trading.

### **5.3 Within day Information Regarding Within Day Flows - Information Discrepancy Incentives**

The Review Group noted that this proposal, as outlined in strawman ref [99], had been developed based on the Workstream discussions regarding Modification Proposal 0527, “Introduction of a Within day Exit Profiling Charge and an Exit Failure to Notify Charge”, and represented the most up-to-date position with respect to its development.

It was noted that the proposal seeks to incentivise flow notifications for large system exit points previously provided to, and agreed with, Transco via the Offtake Profile Notice (OPN) to correspond to actual flows. Variances between hourly flow notifications and actual hourly flows would incur a charge if they exceed a tolerance that reflects operational flexibility that can be reasonably made available to support offtake flow rate variations.

The outcome of the assessment of the proposal by the Review Group is detailed in ref [84]. Key conclusions were:-

- The Review Group recognised that the proposal was not intended to seek to address the extent of within day linepack variations. However the Group agreed that it would improve the quality of within day information relating to system exit points.
- Some participants accepted that, as the proposal might reduce the inherent noise on the system associated with both nomination and flow rate changes, it might therefore improve the certainty of a physical response and Transco’s ability to monitor the response for OCM actions at exit points.

- The Review Group agreed that this proposal has the potential to offer regime performance improvements. It was accepted that better information might be helpful in managing within day variations, particularly in respect of the management of local linepack, but would not be a panacea for Transco's identified concerns.

The Review Group noted Transco will consider whether to resume development of Modification Proposal 0527 and the concept of the "Information Discrepancy Incentive" after the planned meeting between Transco and a wide range of NExA parties during September 2002.

#### **5.4 Deemed within day flows - Gas Delivery Variation Incentives**

The Review Group noted that Modification Proposal 0512, "Introduction of an entry profiling charge" had been raised to seek to develop an incentive arrangement that might discourage excessive input flow rate variations. The proposal had been developed in the RGTA Workstream to increase the likelihood of within day gas deliveries onto the NTS being in line with end of day forecast demand. Workstream development of the Modification Proposal had resulted in many different options as to how such an objective might be achieved. Several such options, as summarized in strawmen ref [95, 96], were considered by the Review Group.

The outcomes of the assessment of the proposals by the Review Group are detailed in ref [83]. The main conclusions were: -

- The Review Group considered that the extent to which the proposal, in any of its forms, would better target costs at Users generating flow rate variations in excess of those implied by demand changes, and thereby achieve its objectives, depends on the basis and accuracy of the apportionment of within day actual flows across Users.
- Several participants considered that Users have limited influence to control input gas flow rate as contracts between Users and producers typically included delivery on a "reasonable endeavours" basis. Transco considered that generally Users are endeavouring to secure gas flows onto the system in line with input nominations, but that it is input/offtake nomination inconsistencies that are generating within day linepack variations.
- Many participants considered that any approach to identify the proportion of balancing costs associated with management of within day linepack variations would introduce unwarranted complexity into the regime considering the current level of costs. There was a view that identification of within day costs should only be contemplated if such costs increased to a material level and if the granularity of available information enabled sufficiently accurate cost allocation.
- The Review Group had concerns regarding the potential impact of the proposal on beach/NBP trading.

The Review Group therefore concluded that this proposal was not the preferred way forward, at this stage, and would only warrant further development in the event that other incremental approaches were found not to be able to deliver a sustainable regime.



## 5.5 Conclusions of the Strawman Proposals and Assessments

Many participants considered that the balancing regime operates satisfactorily at reasonable cost, and given Transco's assurances that it is able to operate the system safely with the current levels of linepack and available system management tools, that reform of the regime is not warranted at this stage. In addition, some participants considered that further reform should only be considered after the potential benefits of Modification Proposal 0479, "Incentivised Nomination Scheme", due for implementation in October 2002, have been fully assessed in the light of operational experience. This might also prevent simultaneous regime changes diluting the industry's ability to monitor the effects and potential benefits of individual changes.

However the Review Group accepted that Transco remain concerned that any further increase in the levels of within day linepack variation may further compromise the effectiveness and commercial efficiency of its current balancing tools.

The Review Group noted many proposals that, although they might provide benefits to the regime, were not considered to be likely to address Transco's identified regime weaknesses in a timely manner.

The Review Group noted that two of the proposals had been raised by Transco as Network Code Modification Proposals prior to the commencement of the Review: -

- Modification Proposal 0512

Transco considers that Modification Proposal 0512, and the concept of the "Gas Delivery Variation Incentive" developed through Workstream discussions, might improve regime operation. However, Transco notes the concerns of the majority of the Review Group that the Proposal could result in inappropriate cost targeting and would need to afford Users the opportunity to manage likely risk exposure if it was to be effective in improving the regime.

- Modification Proposal 0527

This proposal and the concept of the "Information Discrepancy Incentive" will be discussed with a wide range of NExA parties during September 2002.

Transco will therefore reconsider its position in respect of these proposals in due course.

The Review Group concluded that the "Within Day Scheduling Incentive" is likely to be the only option, considered as part of the Review, that has the potential to address, in a timely manner, Transco's identified regime weaknesses. It was therefore agreed by the majority of participants that the proposal should be further developed, with a view to raising a Network Code Modification Proposal.

The Review Group noted that, whilst such a proposal might address some of Transco's identified weaknesses, it might have a significant impact on other favourable aspects of regime operation. Therefore it might be appropriate to

consider alternative options that might have the capability of being less disruptive to some of the currently perceived regime strengths. Such options might include further development of the “Gas Delivery Variation Incentive”, or more fundamental reform such as “within day allocations”, “split cash-out regime” or “gate closure”, as identified by the Review Group as proposed areas for regime development, ref [105].

## **6. Recommendations**

The Review Group noted several proposals that could provide additional benefits to the regime, and therefore recommends that: -

- a topic be raised at the NT&T Workstream to further develop the proposal to release additional information after the gas day to improve the transparency of Transco balancing actions;
- a topic be raised at the NT&T Workstream to further develop the proposal to modify Transco’s residual gas balancing incentive arrangements; and
- Transco further investigates the establishment of gas flexibility contracts as an additional tool to address national/locational balancing requirements.

The Review Group noted that, whilst these initiatives might assist regime operation, they are unlikely to comprehensively address Transco’s identified regime weaknesses in respect of the issues of the extent and unpredictability of linepack variation and the effectiveness of balancing tools. In order to seek to specifically address these issues, the Review Group supports that: -

- a topic be raised at the NT&T Workstream to further develop the “Within day Scheduling Incentive Scheme” proposal with a view to raising a Network Code Modification Proposal; and
- a sub-group of the NT&T Workstream be established to discuss more extensive reforms, as a prudent step by the industry in the event that incremental reforms are ascertained to be unable to deliver an acceptable and sustainable regime.

## **REFERENCES - List of documentation available on 0513 Information Website**

The following references can be obtained from the website [www.rgta.co.uk](http://www.rgta.co.uk) under "0513 Review Info".

### **Agendas**

- 1) 0513\_Meetings\_Agenda\_020807\_v1.0
- 2) 0513\_Meetings\_Agenda\_020724\_v1.0
- 3) 0513\_Meetings\_Agenda\_020710\_v1.0
- 4) 0513\_Meetings\_Agenda\_020626\_v1.0
- 5) 0513\_Meetings\_Agenda\_020612\_v1.0
- 6) 0513\_Meetings\_Agenda\_020522\_v1.0
- 7) 0513\_Meetings\_Agenda\_020508\_v1.0
- 8) 0513\_Meetings\_Agenda\_020425\_v1.0
- 9) 0513\_Meetings\_Agenda\_020424\_v1.0
- 10) 0513\_Meetings\_Agenda\_020410\_v1.0
- 11) 0513\_Meetings\_Agenda\_020327\_v1.0
- 12) 0513\_Meetings\_Agenda\_020313\_v1.0

### **Minutes**

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- 16) 0513\_Meetings\_Minutes\_020626\_v1.0
- 17) 0513\_Meetings\_Minutes\_020612\_v2.0
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- 23) 0513\_Meetings\_Minutes\_020327\_v2.0
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### **Timetables**

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- 26) 0513\_Meetings\_Timetable\_020327\_v1.0
- 27) 0513\_Meetings\_Timetable\_020313\_v1.0

### **Actions**

- 28) 0513\_Meetings\_Actions\_020807\_v1.0
- 29) 0513\_Meetings\_Actions\_020724\_v1.0
- 30) 0513\_Meetings\_Actions\_020703\_v1.0
- 31) 0513\_Meetings\_Actions\_020612\_v1.0
- 32) 0513\_Meetings\_Actions\_020522\_v1.0
- 33) 0513\_Meetings\_Actions\_020508\_v1.0
- 34) 0513\_Meetings\_Actions\_020425\_v1.0

- 35) 0513\_Meetings\_Actions\_020410\_v1.0
- 36) 0513\_Meetings\_Actions\_020313\_v1.0
- 37) 0513\_Meetings\_Actions\_020327\_v1.0

### Presentations

- 38) 0513\_Presentation\_020724\_Transco\_Transferable Renom Tokens\_v1.0
- 39) 0513\_Presentation\_020724\_Transco\_Within Day Scheduling Strawman\_v1.0
- 40) 0513\_Presentation\_020710\_Transco\_Transco Balancing Policy\_v1.0
- 41) 0513\_Presentation\_020703\_Transco\_Modification Proposal 0512 Strawman\_v1.0
- 42) 0513\_Presentation\_020703\_Transco\_Information Discrepancy Charge Strawman\_v1.0
- 43) 0513\_Presentation\_020703\_Transco\_Gas Delivery Variation Charge Strawman\_v1.0
- 44) 0513\_Presentation\_020703\_Transco\_EOD Linepack Service Strawman\_v1.0
- 45) 0513\_Presentation\_020612\_Transco\_NETA and NGTA Comparison\_v1.0
- 46) 0513\_Presentation\_020612\_Transco\_Overview of INS\_v1.0.
- 47) 0513\_Presentation\_020522\_Transco\_Balancing Tool Effectiveness\_v2.0
- 48) 0513\_Presentation\_020522\_Transco\_User and Transco Roles and Incentives\_v2.0
- 49) 0513\_Presentation\_020508\_Transco\_Regime Performance Presentation\_v3.0
- 50) 0513\_Presentation\_020425\_Dynegy\_Storage stakeholder perspective\_v1
- 51) 0513\_Presentation\_020425\_Aquila\_Perspective of a new entrant\_v1
- 52) 0513\_Presentation\_020425\_Williams\_Trader Perspective\_v1.0
- 53) 0513\_Presentation\_020425\_Ilex\_Bacton Interconnector Allocation Arrangements\_v1.0
- 54) 0513\_Presentation\_020425\_CIA\_End consumer perspective\_v1.0
- 55) 0513\_Presentation\_020425\_Enmo\_Market Operator Perspective\_v1.0
- 56) 0513\_Presentation\_020424\_CVSL\_Upstream stakeholder perspective\_v1.0
- 57) 0513\_Presentation\_020424\_Transco\_NTS Operations\_v1.0
- 58) 0513\_Presentation\_020424\_Transco\_Development of the NTS\_v1.0
- 59) 0513\_Presentation\_020424\_Transco\_NTS Metering Arrangements\_v1.0
- 60) 0513\_Presentation\_020424\_UKOOA\_Upstream stakeholder perspective\_v1.0
- 61) 0513\_Presentation\_020410\_NGC\_NETA Overview\_v1.0
- 62) 0513\_Presentation\_020410\_Transco\_Ofgem Feb 2002 Proposals\_v1.0
- 63) 0513\_Presentation\_020410\_Transco\_Historic Perspective\_v1.0
- 64) 0513\_Presentation\_020410\_Transco\_Historic Perspective\_Supporting Material\_v1.0
- 65) 0513\_Presentation\_020327\_Ofgem Development Of Gas Balancing Regime\_v1.0

### Papers

- 66) 0513\_Papers\_020724\_Strawman\_Within Day Scheduling\_v2.0
- 67) 0513\_Papers\_020710\_UKOOA Letter\_v1.0
- 68) 0513\_Papers\_020710\_Strawman Assessment\_Prevailing Nom Based Scheduling v1.0
- 69) 0513\_Papers\_020710\_Strawman\_Transco Balancing Policy\_v2.0
- 70) 0513\_Papers\_020710\_Strawman Assessment\_Utilisation of OM Gas v1.0

- 71) 0513\_Papers\_020710\_Strawman Assessment\_Utilisation of OCM sub-markets v1.0
- 72) 0513\_Papers\_020710\_Strawman Assessment\_Linepack Targets v1.0
- 73) 0513\_Papers\_020710\_Strawman Assessment\_Interruption contracts v1.0
- 74) 0513\_Papers\_020710\_Strawman Assessment\_Gas flex contracts v1.0
- 75) 0513\_Papers\_020710\_Strawman Assessment\_During the day info v1.0
- 76) 0513\_Papers\_020710\_Strawman Assessment\_After the day info v1.0
- 77) 0513\_Papers\_020710\_Strawman Assessment\_Changes to Assessment Methodology v1.0
- 78) 0513\_Papers\_020710\_Strawman Assessment\_Build System flex v1.0
- 79) 0513\_Papers\_020710\_Strawman Assessment Summary Sheet (Users) v2.0
- 80) 0513\_Papers\_020710\_Strawman Assessment Summary Sheet (Transco) v2.0
- 81) 0513\_Papers\_020703\_Strawman Assessment\_Transco Incentives v1.0
- 82) 0513\_Papers\_020703\_Strawman Assessment\_Prevailing Nom Based Scheduling v1.0
- 83) 0513\_Papers\_020703\_Strawman Assessment\_Mod Proposal 0512\_v1.0
- 84) 0513\_Papers\_020703\_Strawman Assessment\_Info Discrepancy Incentive v1.0
- 85) 0513\_Papers\_020703\_Strawman Assessment\_EOD Scheduling\_v1.0
- 86) 0513\_Papers\_020703\_Strawman Assessment\_EOD cashout\_v1.0
- 87) 0513\_Papers\_020703\_Strawman Assessment\_End of Day Linepack (EC)\_v1.0
- 88) 0513\_Papers\_020703\_Strawman Assessment\_0511\_v1.0
- 89) 0513\_Papers\_020703\_Strawman Assessment\_0479\_v1.0
- 90) 0513\_Papers\_020703\_Strawman Assessment\_Summary Sheet (Users)\_v1.0
- 91) 0513\_Papers\_020703\_Strawman Assessment\_Summary Sheet (Transco)\_v1.0
- 92) 0513\_Papers\_020626\_Transco\_Position Statement v1.0
- 93) 0513\_Papers\_020625\_Workstream Report for June Mod Panel\_v1.0
- 94) 0513\_Papers\_020626\_Strawman\_Transco Incentives\_v1.0
- 95) 0513\_Papers\_020626\_Strawman\_Gas Delivery Variation Charge\_v1.1
- 96) 0513\_Papers\_020626\_Strawman\_Modification Proposal 0512\_v1.0
- 97) 0513\_Papers\_020626\_Strawman\_EoD Linepack (Capacity) Service\_v1.0
- 98) 0513\_Papers\_020626\_Strawman\_EoD Linepack (Energy) Service\_v1.0
- 99) 0513\_Papers\_020626\_Strawman\_Information discrepancy charge\_v1.0
- 100) 0513\_Papers\_020626\_Strawman\_Eod Cashout\_v1.0
- 101) 0513\_Papers\_020626\_Strawman\_End of Day Scheduling\_v1.0
- 102) 0513\_Papers\_020626\_Strawman Outline\_v1.0
- 103) 0513\_Papers\_020522\_Regime Objectives\_v3.0
- 104) 0513\_Papers\_020522\_Strengths and Weaknesses Current Regime\_v4.0
- 105) 0513\_Papers\_020522\_Potential Areas for Regime Development\_v1.0
- 106) 0513\_Papers\_020508\_Assessing the Performance of Flexibility Bids\_v1.0
- 107) 0513\_Papers\_020508\_Physical Response to OCM Physical Trades\_v2.0
- 108) 0513\_Papers\_020508\_Physical Response to OCM Physical Trades Appendix 2\_v2.0
- 109) 0513\_Papers\_020514\_Workstream\_Report For May Mod Panel\_v2.0
- 110) 0513\_Papers\_020425\_MEUC Views\_v1.0
- 111) 0513\_Papers\_Action 26\_Ofgem BC99 Phase I Conclusions Doc
- 112) 0513\_Papers\_Action 19\_Ofgem Sept 1999 decision doc appendices
- 113) 0513\_Papers\_Actions 11\_Transco Energy incentives\_v1.0
- 114) 0513\_Papers\_020313\_Terms of Reference\_FINAL