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30th October 2008

Mr John Bradley
Secretary, Modification Panel
Joint Office of Gas Transporters
51 Homer Road
Solihull
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Dear John

RE: UNC Modification Proposal 0194 – Framework for the correct apportionment of NDM error

British Gas fully supports the implementation of this modification proposal.

We have set out in detail below the background to this proposal, its advantages and disadvantages and we have also shown how this proposal better facilitates the relevant objectives.

Please note that we have submitted a separate representation with regards to the alternate proposal 0194a raised by Corona Energy.

If you have any queries relating to this representation, please do not hesitate to contact me.

Yours sincerely,

Mitch Donnelly

Regulatory Manager

1. Executive Summary

Our modification seeks to create a framework that shall in turn result in more accurate allocation of costs to shippers. This will extend incentives to all shippers and as a result unreconciled energy and therefore costs to consumers shall reduce.

The current RbD allocation places all of the costs arising from energy allocation error solely into the SSP sector. Therefore it does not provide any incentive on Shippers in the LSP market to correct errors that are impacting the SSP market. . The existing arrangements do not target costs correctly, resulting in Shippers with poor performance in the LSP market being protected from any liability.

The present methodology includes no scope for analysis and no detail of the individual causes of RbD. Therefore there is no mechanism for determining or apportioning levels of contribution to RbD that different customer groups should make. It is unacceptable to continue to use such an inefficient approach that fails to provide appropriate incentives around Shippers performance and fails to accurately allocate such significant costs.

RbD is driven principally by measurement errors that are prevalent in the LSP as well as SSP sector including. Many of the measurement errors which currently impact RbD can be reduced if Shippers are taking appropriate actions to address them. The current methodology is deficient as it does not utilise the allocation of costs generated by these errors to incentivise their resolution.

Where there are measurement errors which cannot be attributed solely to Shippers actions in a market sector, but are caused as a result of Transporter error such as with IGTs or more general market issues such as Shrinkage allocation, it is inappropriate that these costs are allocated to one market sector.

This ultimately results in the misallocation of costs arising from the current RbD cost allocation methodology placing disincentives upon the LSP sector that restrict its willingness to resolve the issues, such as for example theft, where LSP suppliers do little, resulting in higher costs to domestic consumers and risks to the public in general and so reduce the level of RbD.

In addition the unfair allocation of RbD costs to the SSP sector penalises Shippers active within this market sector. This misallocation of costs adversely affects competition and results in increased prices for customers within the SSP sector.

Modification Proposal 194 creates a mechanism, the ‘RbD Allocation Table’ for allocating RbD to those parties which cause it. The proposal does not initially seek to amend the level of allocation of RbD between parties, but would provide a foundation for further Modification Proposals to populate the RbD Allocation Table with the portion of energy that should be allocated to each sector. British Gas has initiated modification proposal 228 with this intent, whilst acknowledging the dependency upon an approval of modification 194

The “RbD allocation table” sets out the causes of RbD and allows for the impact that each of these areas have on the overall volume of RbD to be considered. The

allocation table then identifies those market sectors, or classifications that we have identified as having potentially differing impacts on the levels of RbD, allowing for differentiation and more accurate cost allocation.

The proposed framework set out in modification 194 seeks to apply a percentage of RbD to each market classification. We believe that the number of static causes of RbD are few, and that any fixed components are no more prevalent in one sector than the other. Therefore the variable nature of RbD and the risks and costs associated with it should be borne by both sectors.

We are pleased to note that Corona energy have raised an alternate modification to this proposal (194A) which shares many of the key features of this proposal. Both proposal 194 and the alternate 194A agree that the current situation whereby the Small Supply Point Market is exposed to 100% of the costs associated with Theft, late registration, IGT issues, Shrinkage is inequitable and cannot be allowed to continue. Both modifications also propose the redistribution of these costs via an 'Allocation Table' being introduced as an appendix to Section E of the UNC. Modifications 0194 and 194A also agree on the market classifications and many of the contributory factors to RbD

The key difference between Corona's modification 194A and 194 is that 194A seeks to leave any risk associated with the variability of RbD with the domestic sector. There is no justification for the protection of the LSP sector from any variability in RbD. Not only is such protection unfair, but it dilutes the incentives upon the LSP sector to take action to understand, control and reduce the level of unreconciled energy.

The introduction of the "RbD allocation table" as a mechanism for apportioning RbD error provides for a more analytical and fairer approach to the allocation of RbD costs. This mechanism provides for a step change improvement upon the present day arbitrary placement of all costs to the SSP sector

Our modification will reduce in a more analytical rather than arbitrary allocation of costs. This will increase incentives on shippers and so reduce costs to consumers. In addition the accuracy and fairness within which costs and risks are targeted will be improved with the associated beneficial impacts upon competition.

We have set out in further detail under the following headings why we believe our modification proposal better meets the relevant objectives of the Uniform Network Code

1. Background
2. The Modification Proposal
3. How this proposal better facilitates the relevant objectives
4. Implementation

We have attached the following documents as appendices;

Appendix (i) a report prepared by Cambridge Economic Policy Associates (CEPA) which provides an independent overview of our proposal.

Appendix (ii) a copy of our response to UNC Modification proposal 115 for reference, as a significant amount of detail relating to the background of both this proposal and the background to the introduction of RbD.

2. Background

This section sets out the history of the Reconciliation by Difference (RbD) mechanism, describing the original rationale for its introduction and explaining why the rationale that underpins the present regime is no longer valid.

RbD is defined as:

"Reconciliation by Difference (RbD) is the method of reconciling the difference between actual (metered) and deemed (estimated) measurements of gas."

The methodology, for allocating unreconciled energy costs, Reconciliation by Difference (RbD), was implemented in 1998 as a prerequisite to the continued roll out of the competitive supply market. At the time it was expected that RbD would be small in value and would decline. The scale and persistence of RbD has demonstrated that this has not been the case.

The table below shows the level of RbD charge to the domestic (SSP) sector. This represents over 2% of LDZ throughput. The independent demand verification exercise undertaken by xoserve also highlights a persistent year on year overcharge to the domestic sector of over 2%.

Year	TWH
1999 -	**19.610**
2000 -	**14.506**
2001 -	**18.429**
2002 -	**11.322**
2003 -	**10.657**
2004 -	**12.407**
2005 -	**9.370**
2006 -	**13.054**
2007 -	**11.835**
2008 -	**11.880**

This evidence demonstrates that RbD has been both persistent and significant.

An underlying principle of the allocation of RbD costs to the SSP sector, was that there is an equal and opposite energy impact for Larger and Smaller Supply Points,

such that an over allocation to Daily Metered (DM) and large Non-Daily Metered (NDM) supply points represents an under allocation to SSPs. This assumes that the reason for all misalignment between actual (metered) and estimated (deemed) measurement of gas, is solely a result of issues attributable wholly to the SSP sector.

RbD was also originally believed to be essentially 'self correcting'. It was thought that any deeming inaccuracies would ultimately be corrected as additional readings were provided by Shippers, with the Must Inspect obligations acting as a final backstop.

Extending this rationale, any temporary deeming inaccuracies within the SSP sector and associated RbD charges would be corrected at least over a two-year cycle. The scale, consistency and duration of the RbD charge to the SSP sector demonstrate further that this charge is not principally a result of temporary deeming inaccuracies within the SSP sector.

The assumptions made when the methodology for smearing RbD to the SSP sector was developed can no longer be relied upon. In sections 4 and 5 we set out empirical evidence, which supports a view that the RbD charge should be applied equally across all NDM supply points.

3. **The Modification Proposal**

The Modification Proposal seeks to introduce a facilitatory framework that will enable future changes to the actual allocation of RbD across market sectors.
This modification itself does not seek to correct the present levels of contribution made by the RbD sector. It seeks to introduce a framework that can subsequently be used to achieve this.

The framework will ultimately be used to determine the level of allocation to each sector by considering each measurement error that causes RbD, the scale of that measurement error and the contribution that each market sector makes to that measurement error. Each of these components will then be assimilated to determine the overall % contribution to RbD that each sector makes.

This proposal provides a framework that sets out those factors identified as contributing to RbD and the market sectors or "classifications" that can contribute to such factors to differing extents. The of impact that each contributory factor has upon RbD and the extent to which each market sector has contributed to such factors can then be subsequently assessed. .

This provides for a more detailed, analytical and equitable approach in the allocation of RbD than the current regime, which erroneously places all of the costs of Theft and other errors wholly into the Small Supply Point Market.

Over the last two years there has been significant debate around the level of contribution to RbD error generated by differing users. There are strong commercial

drivers on all parties to defend their differing market's exposure to RbD error and the costs associated with a reallocation of this error, this has resulted in entrenched commercial positions by Shippers and has hampered progress in holding reasonable debate and discussion around the level of error and it's correct apportionment.

However, we have reached a position where there is consensus amongst Shippers operating in both the LSP and SSP sectors that RbD error does exist and that there should be a reallocation of costs.

In raising this modification proposal we have sought to detach the contentious issue of levels of cost allocation from the mechanism, in order that the merits of the mechanism can be clearly defined from disagreement over the levels of allocation.

This proposal provides for a flexible and enduring solution which can be amended without any difficulty in future to reflect changes in market sectors which should receive an allocation or new issues contributing to error.

3.1 The RbD Allocation Table

If implemented this modification proposal would introduce a new annex to Section E of the Uniform Network Code, titles 'RbD Allocation Table'.

This allocation table sets out a number of errors which have been identified as contributing to RbD. For each of these errors the table then allows for an assessment of the level of impact in percentage terms that each of these contributing factors has on the total RbD volume.

The table then goes on to allow for an 'apportionment' of this error between differing market classifications, based on the degree to which each market classification can be shown to have contributed to the error.

3.2 Market Classifications

The RbD Allocation Table contains five differing Market Sector Classifications, which can be evidenced to have differing impacts on the level of error within RbD;

- Small Supply Point (without Advanced Metering)
- Small Supply Point (with Advanced Metering)
- Large Supply Points (without Advanced Metering)
- Large Supply Points (with Advanced Metering)
- Daily Metered Sites (both elective and mandatory)

A key benefit of this modification proposal is that it provides an adaptable framework. Should data become available that supports the development of new Classifications the RbD Allocation Table could be simply updated to reflect this.

We accept that within these individual "classifications" read performance itself may vary from Shipper to Shipper; however improved read performance generally

reduces shipper's exposure to inappropriate energy allocations, with an equal and opposite effect of increasing RbD. This is as opposed to poor read performance which generally results in greater exposure to inappropriate energy allocations and an equal and opposite effect of reducing RbD.

3.3 Advanced Metering Technology or *Smart* Metering

This proposal recognises Smart meters as a distinct and different classification within both the Small and large Non Daily metered sectors, however it does not allocate different levels of RbD to Smart versus Non smart metering in any sector.

Presently there is no evidence of differing propensity to theft or other measurement errors. Smart meters can still be bypassed, and can still be Shipper-less. Smart meters do not presently receive different treatment from an RbD allocation perspective, and this proposal does not change that.

However this proposal builds a foundation upon which new allocation arrangements for smart metering may be introduced should evidence become available which supports a differing allocation.

3.4 Issues Contributing to RbD Error

The RbD Allocation Table sets out a number of factors that may contribute to RbD error. Those factors detailed in the Allocation table can be viewed in two parts, those known to cause error and those with potential to cause error.

Issues known to contribute to RbD error

3.4.1 Theft of Gas

Independent evidence provided by xoserve during the development of this modification proposal has clearly demonstrated that Theft takes place in the LSP as well as SSP sector. The effect of theft of gas upon the settlements process is an under allocation of energy on a site by site basis which in turn results in an artificial inflation of RbD volume.

Under the current arrangements the cost of theft is borne wholly by the Small Supply Point Market. This results in a lack of incentive upon Shippers operating in the LSP market to investigate allegations of theft and to report stolen energy.

Data provided to the 194 development workgroup by xoserve[1] has demonstrated that the levels of detection of theft in the LSP market are lower than those in the SSP market when the number of allegations are looked at in relation to the number of Supply Points in each market. xoserve data shows that LSP Shippers often fail to provide xoserve with any response around what activity, if any, has taken place to investigate allegations of theft, this is a consequence of lack of incentives upon LSP Shippers to detect theft and reduce RbD

[1] Theft of Gas presentation by xoserve at Modification Development Workgroup 194 on 9th June 2008

3.4.2 IGT Issues

Both UNC Review Group 157 and UNC Development Workgroup 194 established that there are significant differences between the number of sites and volume of consumption recorded on the IGT network's systems and xoserve's systems[2]. The effect of this is that there is an under allocation of energy to the CSEPS market which in turn creates an equal and opposite over-allocation of energy to the whole SSP market as a result of RbD.

It is widely acknowledged that these errors are not solely created by or specific to the SSP sector. Rather these are principally created by processing and system issues between the IGTs and the Distribution Network Operators.

This modification proposal would allow for a more equitable distribution of costs associated with this error and will in turn increase the incentives upon the I&C sector to resolve data issues associated with IGT networks

3.4.3 Shrinkage

Under present arrangements losses that occur up stream of the ECV (Shrinkage) are recovered based on throughput outside of the LSP and SSP allocations. In the present regime, Shrinkage is calculated based on a set of assumptions at the beginning of the period.

The intent of today's arrangements is that shrinkage costs should be allocated to the LSP and SSP sector. However, an anomaly within this process exists. When these assumptions are validated at the end of the period any differences resulting in costs, or indeed credits, are then wholly allocated to the SSP market via RbD.

This is clearly inequitable and so this proposal would create a mechanism to allow for the reallocation of these costs, such that the net effect is in line with the intent of DN Shrinkage arrangements.

3.4.4 Unregistered Sites

There are two types of unregistered sites, those that can be readily identified on industry systems (sites and meters) and those for which no industry record exists. In both instances the costs of the gas consumed at the unregistered site are wholly allocated to the Small Supply Point Market.

Independent evidence presented by xoserve demonstrates that unregistered sites exist in the LSP market[3].

[2] Data Collated by Gas Forum for Review Group 157 held on 14th September 2007.
[3] xoserve presentation to Modification Development Workgroup 194 on 7th July 2008.

Further our fraud investigation teams repeatedly detect sites with consumption in excess of 73,200kwh that have no Shipper and are not recorded on industry systems.

3.4.5 Read Submission Issues – Genuine Reconciliation

Differences in read submission and subsequent reconciliation processes for different market classifications could manifest in different contributions to RbD by them.

For example; reads submitted by the LSP sector are used to drive a reconciliation of allocated energy whilst reads submitted by the SSP sector are not. This is however only relevant if the gap between initial energy allocations (based on AQs) and actual consumption is greater in one sector than another.

Industry analysis to date has not identified any correlation between a failure by shippers to submit readings and an increase in RBD.

Issues with potential to contribute to RbD error

3.4.6 Errors in the measurement of aggregate energy within an LDZ.

Under measurement of gas entering the system would suppress the true level of RbD, whereas over measurement of gas entering the system would exaggerate the true level of RbD.

At this time there is no evidence to suggest that LDZ meters are either under or over registering. However in our proposal we recognise the potential for LDZ measurement issues to influence RbD and its apportionment.

3.4.7 Accuracy of end supply metering.

At this time there is no evidence of either under or over registration of gas consumption by gas meters. However in our proposal we recognise there is potential for metering measurement issues to influence RbD and its apportionment.

3.4.8 Differences in the measurement of Temperature and Pressure corrections between markets and geographic differences where a national factor is applied.

At this time there is no evidence to suggest that temperature and pressure corrections are contributing to the level of RbD. However in our proposal we

recognise the potential for temperature and pressure corrections influence RbD and its apportionment.

3.5 Allocation process

In our proposal the out turn from our RbD allocation table is applied such that each market classification contributes to a specified percentage of RbD. This is a critical element of our proposal. The modification 194 Development Group has not identified any significant “fixed” contributory factors to RbD that are prevalent in either sector.

It has been argued that the level of theft is not necessarily linked to through put. This argument is invalid as RbD is the balancing factor between reconciled energy and throughput. When considered over longer timescales, such as a year, the volume of reconciled energy and therefore unreconciled energy changes and is therefore not connected with throughput.

We do accept that from month to month the level of RbD will vary dependent upon the extent to which LSP energy is reconciled, however over time such reconciliations balance out.

There is no justification for the protection of the LSP sector from any variability in RbD. Not only is such protection unfair, but it dilutes the incentives upon the LSP sector to take action to understand, control and reduce the level of unreconciled energy.

4. **How this proposal meets the relevant objectives**

A11.1 (a) the efficient and economic operation of the pipe-line system to which this licence relates.

This modification proposal provides a framework that shall act as a more precise and efficient mechanism to determine the apportionment of RbD costs to Shippers. This will also enable a broader range of Shipper incentives for identifying and resolving measurement failures that manifest as unreconciled energy and resultant charges to RbD. As a result unreconciled energy and therefore costs to consumers shall reduce.

Such issues have been described earlier but include for example theft, where the engagement of the SSP Shippers has been extensive, but other Shippers minimal.

This modification will therefore enable the more efficient operation of the pipeline system as follows;

i) Any reduction in theft will reduce the volume of gas unnecessarily transported and the associated safety risks and costs that come with it. These could extend to pressure management issues.

ii) Improved data management including operation of registration processes, management of IGT data etc shall in turn give greater confidence in system planning, demand forecasts and so on.

A11.1 (d) – the securing of effective competition (i) between relevant shippers and (ii) between relevant suppliers

As set our earlier SSP shippers face all the cost and the Risk associated with RbD it is now widely accepted that this is an unfair cross subsidy of the LSP sector. This modification proposal reduces the extent to which the SSP market sector, and Shippers / Suppliers operating predominately within it, cross subsidise the LSP NDM market sector, and the Shippers / Suppliers operating predominately in it. The reduction of a cross subsidy between market sectors and individual Shippers / Suppliers operating in them, in our view, better secures effective competition between Shippers and Suppliers. It ensures better targeting of costs and broadens incentives upon all shippers to tackle the underlying causes of RbD.

A11.1 (f) So far as is consistent with sub-paragraphs (a) to (e), the promotion of efficiency in the implementation and administration of the network code and/or the uniform network code.

By creating an appendix, the RbD allocation table, to the code this proposal introduces an enabling framework which can be simply amended in future to reflect new or changed contributions to error without the requirement for altering the text of the Transportation Principle Document itself.

This proposal creates a simple and dynamic solution without creating unnecessary complexity.

Other benefits

Carbon impacts

This proposal will create a framework which supports the incentivisation of theft detection in all market sectors.

Under the current arrangements, end users able to receive gas without a realistic prospect of paying for it have no incentive to use gas efficiently, extending incentives for the detection of theft to the LSP suppliers will result in a reduction in theft and so a reduction in inefficient energy usage.

RECONCILIATION BY DIFFERENCE MOD 194, THE USE OF DATA MONITOR PANEL DATA AND ASSOCIATED ISSUES

30th October 2008

Submitted by:

Cambridge Economic Policy Associates Ltd.

CEPA

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1. RECONCILIATION BY DIFFERENCE: MOD 194, THE USE OF DATA MONITOR PANEL DATA AND ASSOCIATED ISSUES[1]

1.1. Summary

Fundamentally, RbD is based on the assumption that consumption by non-daily metered (NDM) supply points is equal to the volume of gas consumed on each local gas distribution network, less that consumed at Daily Metered (DM) Supply Points[2]. This avoids the need to reconcile estimated gas consumption at all supply points with actual meter readings. Under RbD, whenever a meter point reconciliation is made for DM or Large Supply Points (LSPs), then an equal and opposite amount is allocated to customers at Small Supply Points (SSPs), so as to maintain the gas balance. This amount is allocated to SSP shippers based on their market share (set on the basis of the individual SSP AQs and End User Category (EUC))[3].

In January 2008, Centrica raised Modification Proposal 194 (Framework for correct apportionment of NDM error). Currently out for consultation, this proposal seeks to implement a **framework** by which RbD may be apportioned between SSP and LSP non-daily metered supply points[4]. Subsequently, Centrica raised Modification Proposal 228 (Correct apportionment of NDM error – energy), which **quantifies** how this error should be allocated across market segments.

At the Development Working Group meeting on 5th August, a presentation was delivered on behalf of the I&C Group (a group of shippers representing large gas customers), that raised a number of significant issues relating to Mod 194 and the conclusions reached by Centrica up to that point[5]. This note addresses a number of issues raised in this presentation, particularly:

- issues raised with specific regard to the reliability of Data Monitor Panel (DMP) data;
- a suggestion that Data Recorder (DR) data could reliably be used to augment DMP data;
- concerns that AQ levels are biased (and therefore may undermine Centrica's proposals); and that
- as a consequence of these concerns with RbD and the data driving this process, that undetected theft of gas cannot be assumed to be the "balancing factor".

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[1] This is an amended version of a paper originally prepared for Centrica in August 2008.

[2] After also adjusting for stock changes and shrinkage.

[3] AQ (Annual Quantity) is a value held for each meter point that reflects the expectation of the volume of gas that a meter point will consume in a year.

[4] Note that Corona energy has raised an alternate to Mod 194, that allocates unidentified NDM LSP gas volumes on a kWh basis (with a default value of zero allocation for each proposed category). This proposal has not been assessed in this paper.

[5] http://www.gasgovernance.com/NR/rdonlyres/8CB635A6-9447-4442-BDC5-A2F95B2F6C98/27441/WWApresentation0708.ppt

Overall, we conclude that:

- the sample size of the DMP is sufficient, and there is no immediate need to supplement this data with DR data;
- further analysis is required to understand the extent of any bias in the DMP data. However, in the event that bias is found, there are ways that this can be overcome without need for recourse to DR data;
- the argument that sampling error in the DMP data invalidates Centrica's Mod 194 proposal is spurious – but only so long as any bias identified in the DMP dataset is remedied; and
- so long as the DMP data sample can be shown to have no systematic bias (and assuming the other categories of unallocated gas are correct), then it seems reasonable to assume that theft of gas is the "balancing factor", given the inherent difficulty in quantifying volumes of undetected theft of gas.

1.2. Data Monitor Panel (DMP) data

The DMP is a sample of UK domestic customers, whose use of gas is monitored on a regular basis by Centrica. Data from this sample (which by January 2008 stood at just over 5,000 customers) is a key part of the process of the verification of RbD. Collected by DMP customers on a weekly basis (and collated by Centrica monthly), this data provides actual data on consumption from a large population of SSPs.

RbD verification (a process introduced in 1998 to give assurance that RbD was reliable) uses this actual consumption data to provide an indication of total consumption by domestic sites. This is done by scaling up DMP data to match the mix of metered sites in each local distribution zone, and taking the difference between this level of consumption and that calculated through the RbD process. Ofgem considers that DMP data should estimate domestic consumption by an average customer with 95% confidence that the estimate is accurate to 1% (nationally) and 3-4% (at distribution network level)[6].

A number of issues were raised with specific regard to the use of DMP data by the I&C Group. The most significant of these were:

- that the sample size of the data is too small and is systematically biased;
- that the level of sampling error invalidates the use of this data; and
- that recent trends suggest SSPs are being underbilled (and that this represents a structural and permanent change).

These issues are addressed in turn below.

[6] Review of Reconciliation by Difference (RbD), Ofgem, March 2006, page 5.

1.2.1. Sample size and structural bias

The size of the DMP sample has been steadily declining since 1998, from a high in February 1998 of 10,689 to a recent low of 5,094 in January 2008. This decline in the size of the sample, and the fact that the sample size is now at an all-time low, has been used by the I&C Group to suggest that the data sample is too low to reliably represent the population of national domestic gas consumers.

Fundamentally, for a sample to be able to deliver an unbiased estimate of the population from which it is drawn, the sample must be sufficiently large. The key question to be addressed in the case of the DMP sample is whether a dataset of 5,000 data points is sufficient. Determining a "sufficient" sample size is the subject of lengthy debate in statistical literature [7].

Although the literature does not provide a clear dividing line beyond which a sample size can be deemed to be sufficient, one useful guide can be drawn from the statistical test for significance of the average (mean) of a sample. In instances where the true statistical distribution of a data population is not known (as is the case in gas usage by UK gas customers), and sample sizes are not large, then statistical tests of significance are typically undertaken using a methodology that uses a distribution called the "Student's t distribution"[8]. The reliability of such tests improves as sample size increases, and for many years it was considered a sample size of over 30 was sufficient. However, more recent research has suggested that larger samples of 100 or up to 250 may be needed if there is significant skew in the true population[9].

An alternative approach to evaluating an appropriate sample size is to look at relevant precedents. Survey data is used in many comparable industries to evaluate national customer preferences and trends. One good example of this is in the postal industry, where the postal regulator (Postcomm) regularly commissions surveys of various aspects of this industry. Two of the key surveys published by Postcomm are the "Business Confidence" and the "Needs of Users of the Postal Service" surveys, both conducted over 2006 and 2007[10]. The sample sizes used in these surveys (in 2007) were 1,804 and 1,000 respectively. Such levels of sample size are also consistent with other polls that aim to reflect the national population (with the UK Parliamentary Office of Science and Technology suggesting that a sample size of around 1,000 is typical)[11]. On the basis of both the statistical literature and comparable surveys, it would therefore seem that a

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[7] In particular, the central limit theorem states that as sample size increases, the distribution of the sample average approaches the normal distribution with a mean μ and variance σ^2/n irrespective of the shape of the original distribution (where n is the sample size). This convergence improves asymptotically as n increases towards infinity.

[8] Further details can be found on the use of Student's t distributions in "Statistics for Business and Economics", Newbold (1995), page 282.

[9] See for example, "Identification of misconceptions in learning central limit theorem and evaluation of computer-based instruction as a remedial tool." Yu, C. H., Anthony, S, & Behrens, J. T. (1995, April). Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, page 7.

[10] All of these surveys are available on Postcomm's website http://www.psc.gov.uk/index.html

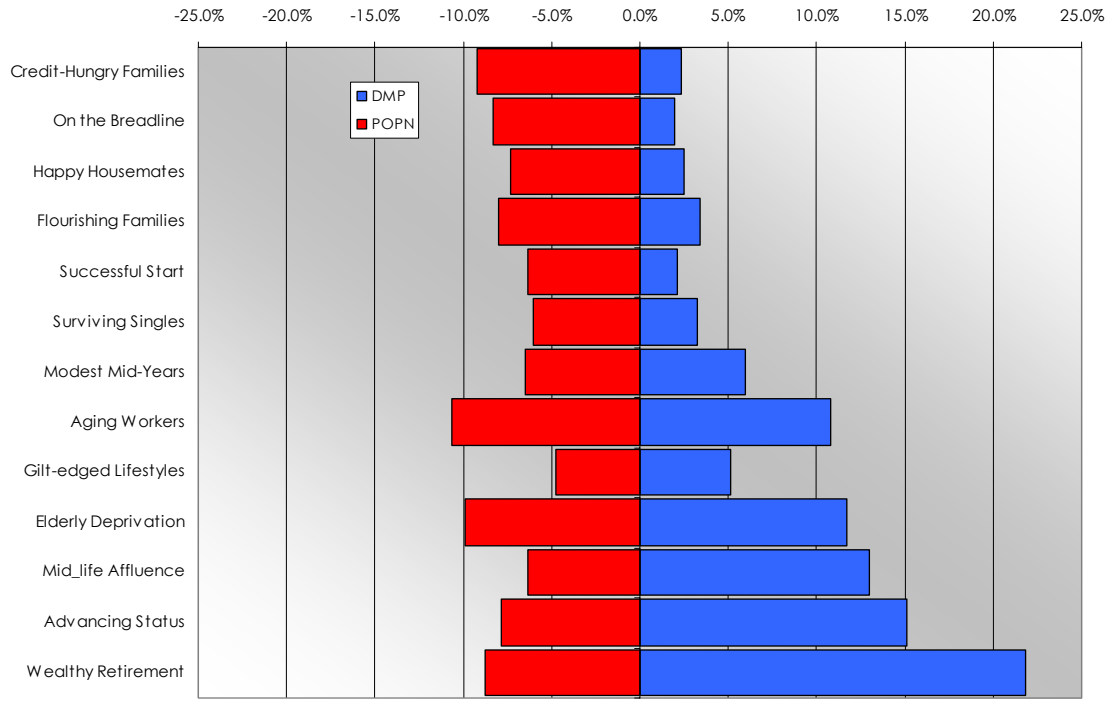
[11] "Public Opinion on Electricity Options", Parliamentary Office of Science and Technology, Postnote Number 294, October 2007, Page 2.

sample of size of over 5,000 is more than sufficient to provide an unbiased estimate of population trends.

A complicating factor in the use of DMP data (a challenge faced by all surveys that seek to represent national trends) is to ensure that the profile of customers within the dataset is representative of the profiling of customers in the population as a whole. This recognises that the behaviour of customers differs between class in response to exogenous factors (e.g. price changes). To mitigate this, scientific sampling techniques generally select groups of respondents in order to be representative of groups that exist in the relevant population. This can be done by simple random sampling with a very large number of respondents (i.e. over 1,000), or through quotas in which specific numbers of respondents are required from each defined class (e.g. income category or age)[12].

The DMP customer profile is categorised by a number of strategic customer classes, selected on the basis of a number of defining characteristics (including age, income and household size). The comparison of the profile of DMP customers to the general population is set out in Figure 1, below[13].

Figure 1: Comparison of DMP customer profile to national population



Source: Centrica

This figure illustrates that there is a significant divergence between the mix of customers in the DMP and that of the national population. The key differences are there being nearly 2.5 times as many "wealthy retired" consumers in the DMP sample as compared

[12] Ibid, Page 2.

[13] See also Table 1, below.

to the national profile, and a significant under-representation of low income families in the sample.

In most surveys of national customer behaviour, this issue is addressed by re-weighting the sample data until the balance of customer classes reflects that in the population as a whole. A good example of this is in both of the Postcomm surveys discussed above in which the weighting of the customer sample is a key part of the survey methodology. For example, the 2007 market research into customer needs was weighted to be representative of heads of households by gender, age, social class, region and disability[14].

Such a weighting can only be undertaken reliably when there are sufficient data points in each defined class of customer. The number of data points in each customer class in the latest available breakdown of DMP data, and a comparison to the national population is set out in Table 1 below.

Table 1: Sample size by customer class[15]

Category	Sample	% of sample	% of population	*Variance (percentage points)*
Credit-Hungry Families	134	2%	9%	*-7%*
On the Breadline	115	2%	8%	*-6%*
Happy Housemates	142	2%	7%	*-5%*
Flourishing Families	195	3%	8%	*-5%*
Successful Start	124	2%	6%	*-4%*
Surviving Singles	188	3%	6%	*-3%*
Modest Mid-Years	347	6%	7%	*0%*
Aging Workers	625	11%	11%	*0%*
Gilt-edged Lifestyles	298	5%	5%	*0%*
Elderly Deprivation	677	12%	10%	*2%*
Mid_life Affluence	749	13%	6%	*7%*
Advancing Status	874	15%	8%	*7%*
Wealthy Retirement	1263	22%	9%	*13%*
Missing	48	1%	N/A	N/A
Total	5779	100%		

Source: Centrica

This table shows that there are large samples of data in each of the classes of customer surveyed. Give there are over 100 surveyed customers in each customer class, this would suggest that a weighting of customer classes, so as reflect national trends would be

[14]The Needs Of Users Of The Postal Service – Customer Survey 2007, Postcomm, Page 22

[15]Data supporting a DMP / RbD Verification presentation delivered at a British Gas/ xoserve meeting on 12th August 2008.

possible, and may be an appropriate way of eliminating any potential bias in survey results[16].

1.2.2. Significance of sampling error

The I&C Group has observed that there is an estimated sampling error in the DMP data of 1.37%. Assuming national annual throughput to be in the region of 383TWh, the Group translates this into a potential sampling error of +/- 5.2TWh per year. The Group then proceeds to suggest that as the annual RbD "balancing factor" is around 4TWh, then this should be ignored (as it is below annual estimated sampling error).

Sampling error is a feature of all surveys. However, so long as there is no structural bias in a sample, and the sample size is sufficiently large, then the mean of a given sample should converge on the mean of the population from which it is drawn. As such, any observed error will be distributed equally (i.e. either above or below) the population mean, therefore the sample mean should not be consistently biased away from the true mean.

The logical conclusion of this point is that the best (and consistent) estimator of the population mean is the sample mean. Therefore, unless it can be shown that there is significant bias in the survey data, then the existence of sampling error does not invalidate the use of the sample mean as being the best indicator of the population mean. In other words, assuming no systematic bias in the sample, then DMP data remains a reliable indicator of total gas consumption.

1.2.3. Recent trends in RbD verification analysis

It has been reported that, in recent months, the RbD verification analysis has shown customers at SSPs being underbilled (i.e. a reversal in the trend of consistent overbilling observed since the inception of RbD)[17]. The I&C Group has suggested that this indicates a structural shift in behaviour, and therefore that the overbilling observed in the past has been reversed/ removed permanently. Structural changes suggested by the Group as prompting this shift in behaviour include rises in retail gas prices and the economic downturn, as well as better informed customers and Government initiatives to promote energy efficiency.

The Group has presented no clear evidence to support the assertion that commercial customers can be assumed to be reducing their gas consumption by more than domestic customers in the face of the economic downturn. As such, it is difficult to address the issues raised by the Group without detailed analysis of actual gas usage data (which is not yet available).

As set out above, we consider it likely that changes in the composition of the DMP customer mix may be affecting the RbD verification process results. The DMP customer mix is currently placing excessive weight on the consumption of wealthy retired

[16] We also note that in the Postcomm 2007 Business Confidence Survey the "large" and "top" expenditure classes had sample sizes of 79 and 69 respectively.

[17] See xoserve presentation to the RbD Subgroup on 8th April 2008.

customers (as opposed to low income households). Given that gas consumption by wealthy pensioners would be expected to be less sensitive to price changes than that of lower income consumers, then this could lead to the observations seen in the most recent RbD verification analysis.

We suggest that as a matter of priority, the DMP data is investigated to understand the extent to which the recent underbilling of customers reported by the RbD verification process is caused by the incorrect mix of customers in the DMP. In the event that this analysis shows the customer mix in the sample has an insignificant impact on overall results, then the arguments of the I&C Group should be investigated in more depth.

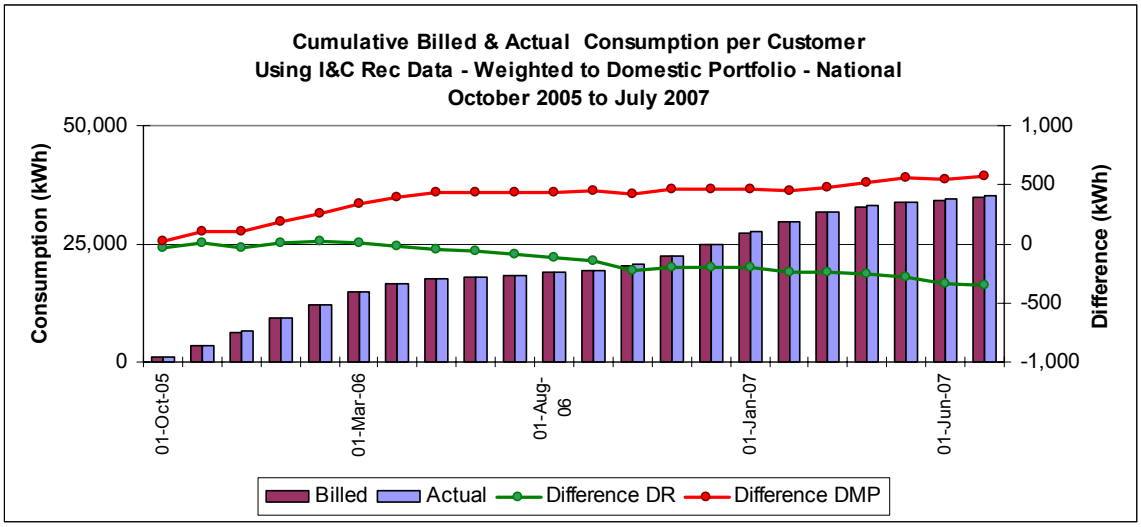
However, if it is shown that the DMP customer mix is responsible for this recent trend in the data, then we would propose weighting the results of the DMP (or repopulating the panel) so as to realign the customer mix with that observed for the population as a whole.

1.3. Use of Data Recorder data

In addition to the DMP data collected by Centrica, there is an additional data source on actual consumption, collected by Data Recorders (DR). This data, collected from over 4,000 sites comprises a combination of SSPs and LSPs, and we understand includes significant numbers of unusual data trends/ spikes. After removing DM customers and LSPs, and removing data outliers/ anomalies we understand the useful data sample is around 2,900 observations. The DR data is collected across all LDZs, and is balanced across each LDZ by four AQ bands.

The DR dataset is considered by the I&C Group to be especially relevant to discussions on Mod 194, as in recent years this data has shown a consistent trend of underbilling of SSP customers (i.e. a contradiction of conclusions drawn from DMP data). This is illustrated in Figure 2 below.

Figure 2: Comparison of DMP and DR assessment of customer under/ over billing



Source: xoserve

Without analysing the underlying DR data, it is difficult to draw a clear conclusion of the desirability or otherwise of combining the DR and DMP datasets. A significant advantage of the use of the DMP data is that this also provides data on representative customer classes (enabling the identification of potential skews in customer class representation as set out above). It is not clear that the DR data has any similar customer classification, potentially meaning that any significant bias towards any particular customer class in the combined dataset could pass undetected.

It is also unclear whether the DR data is subject to significant data anomalies (or the true extent of these anomalies). Again, without access to the base data, it is difficult to assess whether the use of this data would be advisable.

Finally, it is important to note that the DMP data is not a small sample. As discussed above, 5,000 data points are more than sufficient to provide a robust sample, hence there would seem to be no immediate need to increase the size of this sample (or at least until the composition of the DR data is at least as well understood as the DMR dataset)[18].

1.4. Potential bias in AQs

As set out above, AQs are an important component in the RbD process, as gas deemed to have been consumed at SSPs is allocated to shippers on the basis of SSP AQs (i.e. they are used as a proxy for market share). AQs are also relevant to this paper as a key element of Centrica's proposal to apportion "unallocated" gas deemed to have been the result of undetected theft is on the basis of AQs at meterpoints that are associated with allegations of theft.

The I&C Group has suggested that I&C AQs are too high, on the basis of both the economic slowdown, as well as because of the increased proliferation of Advanced Meter

[18] We also note that xoserve support this conclusion stating that "confidence in [DMR] results is not currently regarded as an issue" (see xoserve presentation to the RbD Subgroup on 8th April 2008, slide 7).

Reading (AMR) technology. This may have significant implications for UNC Mod 194, for if AQs of I&C customers tend to be overestimated relative to those of SSPs, then – under this proposal - unallocated gas caused by theft will tend to be overallocated to sites at LSPs.

The accuracy of AQs has been the subject of significant regulatory attention in recent years. At the time that RbD was implemented, Ofgem recognised that portfolio AQ bias was considered to present the greatest risk to the accuracy of RbD. This led to the introduction of numerous checks to ensure that total system throughput is approximately equal to the sum of AQs. It also led to a further requirement that an industry work group should review the AQ amendment process (and the annual policing of AQ appeals).

In addition, a series of code modifications have been approved by Ofgem in recent years to improve the process by which AQs are amended, including:

- Network Code modification 0624 in April 2003 ("Changes to the 2003 Annual Quantity (AQ) Amendment Process"), that prevented shippers submitting AQ amendments in a selective manner (i.e. gaming AQ amendments);
- Network Code modification 0640 in June 2004 ("End of Year Reconciliation of Specific Categories of Smaller Supply Points"), that allowed NGG to undertake an end of year reconciliation on certain categories of SSP threshold crossers; and
- UNC modification proposal 081 in August 2006 ("AQ Review Process-publication of information") that obliged transporters to publish data on the way in which the AQ review is conducted.

Most recently, the AQ annual review process was reviewed by an industry Review Group. This Group concluded in April 2008, with the recommendation that a rolling process of AQ review be adopted (essentially meaning that AQs could be amended more frequently than at present).

Given the importance of this issue, we would recommend further analysis of AQ data to understand the extent of any such bias. This analysis should assess the extent to which – if any –AQs differ in their *relative* accuracy in reflecting actual offtake between LSPs and SSPs.

1.5. Theft as the balancing factor

As set out above, the costs of any shortfall in gas allocation caused by the meter point reconciliation process are borne by the SSP market as part of the RbD smeared charge. This charge includes the cost of unallocated volumes resulting from theft of gas, shrinkage and errors. When first introduced, it was considered that the level of the RbD charge would fall over time (as data quality improved). However, since 2004, the level of this charge has *increased*, placing a consistent net allocation of charges on SSP shippers.

Analysis presented by Centrica to the Development Work Group for Mod 194 has suggested unallocated gas comprises a number of underlying causes, these being unregistered sites/ late confirmations, shrinkage, IGT issues, metering and theft of gas.

Given that the causes of unallocated gas other than undetected theft are comparatively easy to calculate, (and given theft of gas is difficult to assess), Centrica has suggested that theft of gas represents the "balancing factor" (effectively the volume of unallocated gas remaining after other factors have been considered).

The volume of gas stolen by customers is by its nature very difficult to quantify. It its review of RbD in 2006, Ofgem stated that the "traditional" attribution was for 0.3% of LDZ throughput to be deemed to be undetected theft (though did not present a view on the validity of this assumption). Ofgem also reiterated that the process for calculating the level of theft was more complex than merely identifying the difference between the "inputs to and offtake from the pipeline system"[19].

The I&C Group has suggested that assuming theft is the "balancing factor" once values have been assigned to the other cause of unallocated gas is incorrect, as it assumes "there is no sampling error" (and also that it assumes the other causes of unallocated gas are properly quantified).

As set out above, it is incorrect to assume that the existence of sampling error in the DMP data invalidates the apportionment of the RbD smear calculated using this data. Instead, the key issue is to ensure that the DMP data sample is free from systematic bias (as discussed in detail above). On the basis that the allocations to the other categories of unallocated gas seem reasonable, and that no systematic bias exists in the DMP data. then it is difficult to conclude anything other than that the most uncertain category – namely theft of gas – is the most likely balancing factor.

1.6. Conclusion

This paper has addressed a wide range of issues regarding the validity of the use of the DMP dataset, its use in the RbD process and the implications of these issues for Mod 194. The key conclusions are that:

- the sample size of the DMP is sufficient, and there is therefore no immediate need to augment this data with DR data that is comparatively less well understood (and is not thought to be structured by the same customer classes);
- there may be an issue regarding bias in the DMP data, but this may be overcome by weighting of customer classes to meet national customer mix (and there is sufficient data in each class of customer to do this reliably). Further analysis is necessary to understand the extent of any such bias;
- the argument that sampling error in the DMP data invalidates Centrica's Mod 194 proposal is spurious – but only so long as any bias identified in the DMP dataset is remedied; and
- so long as the DMP data sample can be shown to have no systematic bias (and assuming the other categories of unallocated gas are correct), then it seems

[19] Review of Reconciliation by Difference (RbD), March 2006, Ofgem, page 17.

reasonable to assume that theft of gas is the "balancing factor", given the inherent difficulty in quantifying volumes of undetected theft of gas.

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14 May 2007

Mr J. Majdanski
Secretary, Modification Panel
Joint Office
National Grid Gas

Dear Julian,

RE: MODIFICATION PROPOSAL 0115 – "Correct Apportionment of NDM Error"

Thank you for the opportunity to comment on the above modification proposal.

British Gas Trading (BGT), as the proposer of this modification, fully supports its implementation.

We have set out in further detail, under the following headings, why we believe our modification proposal better facilitates the achievement of the relevant objectives of the Uniform Network Code.

1. Executive Summary
2. Background
3. The Modification Proposal
4. Reconciliation
5. Potential Measurement Failure Points
6. Benefits of our Proposal
7. Implementation

In addition we have attached as Appendix (I), a report by Engage Consulting Limited that provides an independent overview of our case for UNC modification proposal 0115.

1. Executive Summary

Reconciliation by Difference (RbD) was introduced in 1998, as a prerequisite to the continued rollout of competition to the domestic Small Supply Point (SSP) sector. This was a key reason for the application of RbD to the SSP sector, as opposed to all non-daily metered supply points.

1. The RbD cost allocation methodology was intended to allocate costs accurately and fairly, it has not achieved this.

2. Charges arising from RbD were expected to be small, reducing and temporary, this has not been the case.

3. RbD has not been caused by SSP meter reading or deeming shortfalls, but is a consequence of measurement failures that are applicable to all non-daily metered sites. These measurement errors include:

- LDZ Off take metering errors
- Shrinkage
- Theft and meter bypasses
- Independent Gas Transporter network reconciliation
- Unregistered, unconfirmed and unrecorded sites
- Supply point metering
- Shipper / supplier processes
- Deeming algorithms

4. The independent demand verification analysis undertaken by xoserve proves that the domestic sector has been overcharged by more than 2% year on year.

5. It is unacceptable to unfairly allocate RbD costs to the SSP sector and penalise Shippers active within this market sector. These unfair costs adversely affect competition and result in increased prices for customers within the SSP sector.

6. The current RbD cost allocation methodology places disincentives upon the LSP sector that restrict its willingness to resolve the issues and so reduce the level of RbD.

7. Gaz de France concede in their alternative modification (0115a) that RbD charges should not be wholly apportioned to the SSP sector, but has raised this alternative proposal so that it can avoid these costs. Their proposal does not deliver the same benefits as our original proposal 0115 and we have provided a separate consultation response to this proposal.

8. We believe that our proposal better facilitates the achievement of the relevant objectives of the Uniform Network Code. It reduces the extent to which cross subsidies exist between Shippers, thereby securing effective competition between them. It also extends to the LSP sector incentives to tackle the root causes of RbD,

which will in turn stimulate more efficient and economic operation of the pipeline system.

2. Background

This section sets out the history of the Reconciliation by Difference (RbD) mechanism, describing the original rationale for its introduction and explaining why the rationale that underpins the present regime is no longer valid.

Put simply, RbD is defined as:

"Reconciliation by Difference (RbD) is the method of reconciling the difference between actual (metered) and deemed (estimated) measurements of gas."

RbD was introduced in 1998, further to approval of Network Code modification 194 by Ofgas[1]. This was an urgent modification proposal, deemed necessary to enable the sustained rollout of supply competition to the domestic "small supply point" sector. Whilst the final modification report itself suggested "the prospect of lower gas prices for end customers", there were significant concerns expressed at the time with regard to the risks of negative impacts upon the domestic sector.

On the 23rd December 1997 Eileen Marshall, Director, Regulation and Business Affairs at Ofgas wrote to Phil Nolan Managing Director at Transco, expressing a number of concerns, and seeking a number of assurances from the modification proposer. Within its letter Ofgas said;

"Transco is not proposing to accept a standard of service in relation to the size of the reconciliation to the domestic sector. Transco is proposing that the amount of any unallocated gas (the reconciliation variance) be monitored and that action be taken if this variance is, or becomes substantial (so implying greater risk for domestic Shippers)."

It went on to state:

"Ofgas considers this variance is an important measure of whether RbD is working efficiently. Discussion needs to continue to assess what should happen if this variance does increase unacceptably."

Ofgas approved the implementation of modification proposal 194, but in its decision letter dated 23rd January 1998, Ofgas again highlighted a number of key issues:

"Shippers have expressed concern that unless Transco is given an incentive to do so, once this modification is signed, it will not have sufficient motivation to limit the size of reconciliation to the domestic market. Ofgas shares these concerns."

[1] Ofgas was subsequently merged with the Electricity Regulator, Offer to become Ofgem.

The table below[2] shows the level of RbD charge to the domestic (SSP) sector. This represents over 2%[3] of LDZ throughput. The independent demand verification exercise undertaken by xoserve, that we shall describe in more detail later in section 4.2 also highlights a persistent year on year overcharge to the domestic sector of over 2%.

Year		**TWH**
1999	-	19.610
2000	-	14.506
2001	-	18.429
2002	-	11.322
2003	-	10.657
2004	-	12.407
2005	-	9.370
2006	-	13.054

This evidence demonstrates that Ofgas and Shippers were right to be concerned about the risks to the market of the RbD mechanism and further reinforces the need to reconsider how RbD costs are allocated.

An underlying principle of the allocation of RbD costs to the SSP sector, was that there is an equal and opposite energy impact for Larger and Smaller Supply Points, such that an over allocation to Daily Metered (DM) and large Non-Daily Metered (NDM) supply points represents an under allocation to SSPs. This assumes that the reason for all misalignment between actual (metered) and estimated (deemed) measurement of gas, is solely a result of issues attributable wholly to the SSP sector.

RbD was also believed to be essentially 'self correcting'[4]. It was believed that any deeming inaccuracies would ultimately be corrected as additional readings were provided by Shippers, with the Must Inspect obligations acting as a final backstop. Extending this rationale, any temporary deeming inaccuracies within the SSP sector and associated RbD charges would be corrected at least over a two-year cycle. The scale, consistency and duration of the RbD charge to the SSP sector demonstrates further that this charge is not a result of temporary deeming inaccuracies within the SSP sector.

The principle assumptions made when the methodology for smearing RbD to the SSP sector was developed can no longer be relied upon. In sections 4 and 5 we set out empirical evidence, which supports a view that the RbD charge should be applied equally across all NDM supply points.

[2] Sourced via xoserve.
[3] Ofgem RbD consultation 2006
[4] Section 1 Page 2 Modification Proposal 0194 Definition and Business Rules V1.0 17/11/1997

We have reviewed in some detail RbD modification proposal 194, the detailed business rules and process definition document and the Ofgas decision letter. From this it is apparent that the nature and extent of potential measurement failures, that span the whole NDM sector, was not fully understood at the time by the industry.

RbD is a balancing charge that can arise from a number of different potential measurement deficiencies. It is therefore not possible to precisely identify what proportion each type of measurement deficiency contributes to RbD. It is though possible to determine, whether such measurement deficiencies can exist, and whether they affect the SSP sector in isolation.

During 2006, Ofgem issued a consultation entitled 'Review of Reconciliation by Difference (RbD)', which sought comments from industry participants on whether the current arrangements remained valid and transparent. The industry currently awaits Ofgems conclusions from this consultation, but it was noted from their initial views which were released in July 2006, that Ofgem would rely on the industry to drive the reform of current arrangements.

BGT has therefore initiated modification proposal 0115 to correct the current inequities in the gas settlement process.

3. The Modification Proposal

This section describes our proposal, it details those options that we considered, explains our rationale for the options we chose, and reasoning behind the discounting of other options.

To address the inequities regarding the manner in which RbD costs are solely apportioned to the SSP sector and in line with Ofgem's view that industry reform in this area should be lead by industry participants, BGT raised Modification Proposal 115 in September 2006 entitled 'Correct Apportionment of NDM Error'.

It is important to note that prior to this modification, BGT initiated a number of other modification proposals aimed at ensuring improved robustness of the AQ Review process. These included:

- UNC Modification proposal 081 - "AQ Review Process - publication of information"

- UNC Modification proposal 094 – "Reconciliation following AQ Amendment, SSP becoming LSP with change of <20% or 15,000kWh"

- UNC Modification proposal 095 – "Reconciliation following AQ Amendment, SSP becoming LSP following change of Registered User"

- UNC Modification proposal 096 (followed by 0136) "Reconciliation following AQ Amendment, SSP becoming LSP following inter process amendment of AQ"

- IGT Modification proposals (various) – “Introduction of a revised IGT AQ Review Process (2006)”

These modification proposals provide for an increased level of robustness to the AQ Review process, across all market sectors and Shippers.

In developing modification 0115, we have endeavoured to seek simple solutions that can be easily implemented, and that result in arrangements which are fairer than those presently in existence. We have recognised that because essentially we are dealing with a balancing mechanism, a perfect solution is simply not possible.

We propose that all energy charged under the proposed revised arrangements, would be charged at the same rate across all market sectors, with the proposed rate to be used being the current SSP charge rate.

It is BGT’s view that this appropriate solution to charging ensures that all market sectors receive equal treatment and would provide the RbD arrangements with a consistent approach with that taken with regard to the application of charges under the existing Modification Proposal 0640 arrangements.

The modification proposal underwent significant development via the UNC Distribution Workstream over a period of six months. The subsequent output concluded, as detailed within the Workstream Report, that development of the proposal was complete with a recommendation that the Modification Panel should issue the proposal to consultation.

4. Reconciliation

4.1 The Reconciliation Process

“Reconciliation by Difference (RbD) is the method of reconciling the difference between actual (metered) and deemed (estimated) measurements of gas.” These reconciliations are used in the calculation of energy and transportation charges to shippers.

Under RbD, it is not necessary to reconcile the deemed gas consumption with an actual meter reading for every supply point. In simple terms, the rationale for RbD is that gas consumed on each Local Distribution Zone (LDZ) is calculated daily by metering the gas flowing into each LDZ, adjusting for any stock change and shrinkage, then removing the level of gas consumed at DM supply points. The residual amount of gas is then allocated between small and large NDM supply points on the basis of their Annual Quantity (AQ) and End User Categories (EUC). Together, the AQ and EUC

(essentially a consumer usage profile) provide a reasonable estimate of the gas consumed."[5]

A central argument for the application of RbD to the SSP sector only, is that there is an equal and opposite energy impact for larger and smaller supply points, such that an over allocation to DM and large NDM supply points represents an under allocation to SSPs. The equal and opposite effect may be evident to at least some degree between the DM and the NDM sector, however we do not agree that such a principle holds true within the NDM sector itself. There is now significant empirical and practical evidence that demonstrates that SSP sites are consistently over deemed as a result of the application of the RbD mechanism .

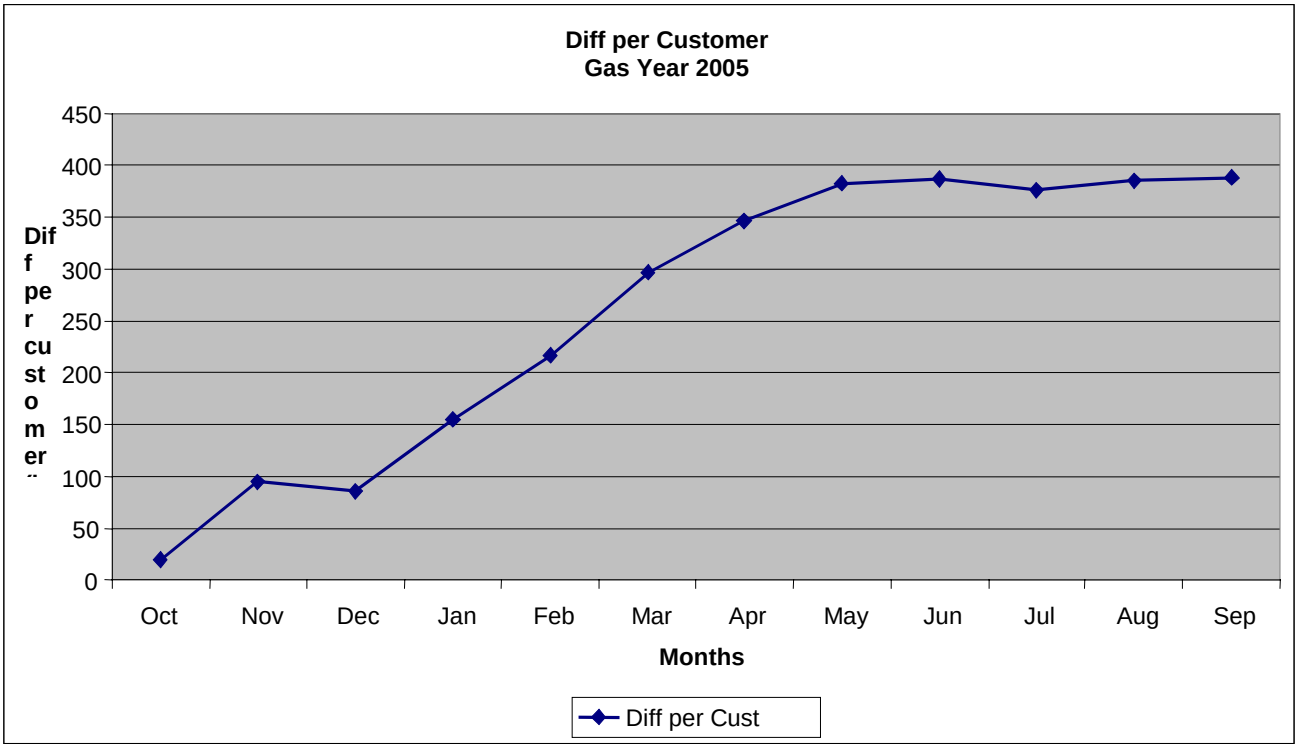
4.2 Domestic Monitor Panel

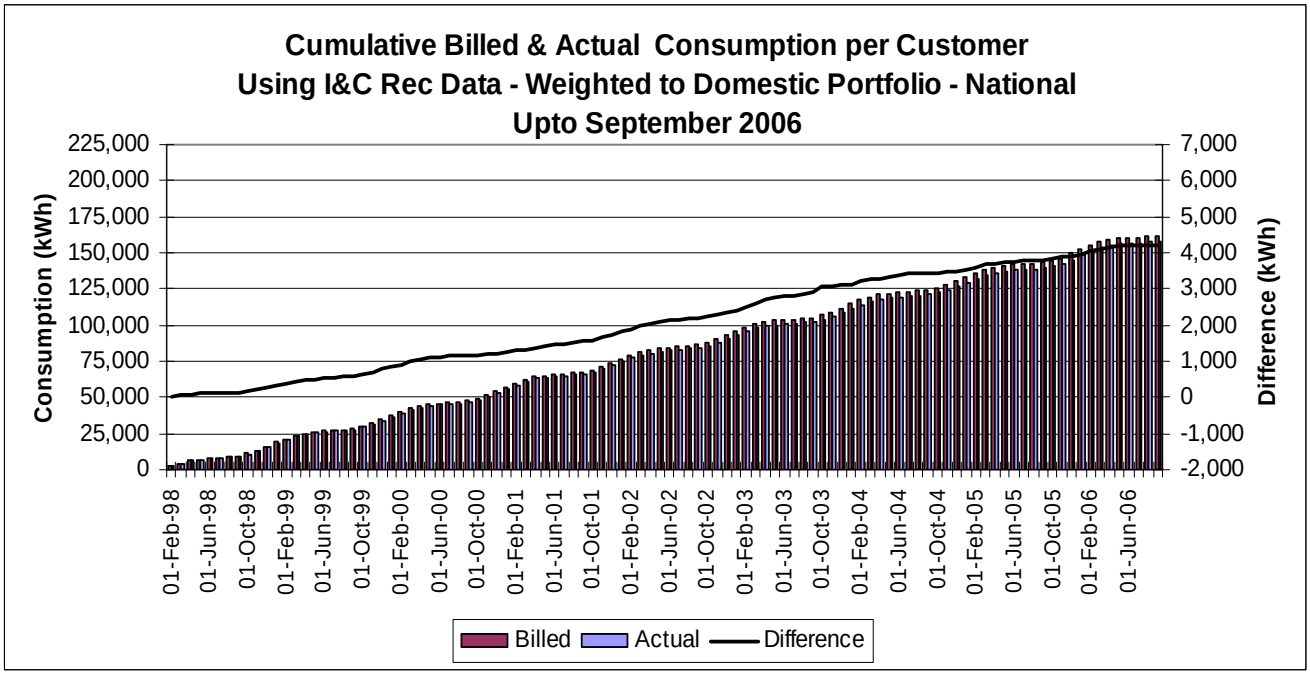
The domestic monitor panel was established further to the implementation of RbD. This was to provide assurance that the SSP sector was not being exposed to unacceptable charges or risk arising from the RbD mechanism.

The domestic monitor panel comprises circa 6,000 domestic meters for which readings are captured on a weekly basis. These reads are then fed into detailed statistical analysis tools by xoserve, that are used to verify the difference between actual and deemed consumption for these meters with that presented by RbD. In simple terms the domestic monitor panel applies meter point reconciliation to a statistically robust sample of sites, and compares the results with the RbD process.

The graph below sets out the difference between deemed and actual consumption as calculated by the domestic panel. [6]

[5] Extracted from Ofgem Review of Reconciliation by Difference 2006 Ref 57/06
[6] Source: xoserve – extracted from domestic monitor panel RbD verification output


Diff per Customer
Gas Year 2005
Diff per customer
450
400
350
300
250
200
150
100
50
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Months
Diff per Cust



The above graph clearly shows that deemed consumption exceeds actual consumption, and has done over a considerable period of time. This difference equates to, on average, over 2% deemed energy.

This independent, statistically robust analysis confirms that the effect of the RbD charge is to over charge the domestic sector by more than 2%.

4.3 Centrica Analysis

Centrica has commissioned its own portfolio specific analysis to compare its deemed energy charges with actual consumption, the energy recorded on consumer meters being used.

This analysis confirms that there was a propensity for sites to be over deemed, typically by over 2%.

Details of the Centrica analysis are provided within Appendix (II).

4.4 Impact of Reconciliation on the LSP NDM sector

The LSP sector is reconciled whenever readings are available, this is not the case for the SSP sector. However, the net effect of LSP NDM reconciliations over the past 9 years have consistently resulted in the following net credits to the LSP NDM sector.

Year	**TWH**
1998	5.69
1999	19.61
2000	13.97
2001	12.71
2002	11.98
2003	9.37
2004	11.80
2005	11.03
2006	13.62

- This demonstrates that increased availability of readings does not result in an increase in charges i.e. there is not a general tendency for AQs to be under deemed. There is no evidence to suggest that SSP AQs are under deemed.

We also questioned whether there were any reasons why energy deemed to the SSP sector, based on AQs, would be more likely to be under deemed than the LSP sector. We concluded that the RbD charge itself reduced any commercial incentive upon SSP Shippers to artificially reduce AQs.

4.5 Analysis of trends in RbD v SSP and LSP market

Attached, as Appendix (III) are detailed statistical comparisons between the scale of RbD charges, versus the relative scale of the LSP NDM, and SSP NDM market.

This analysis demonstrates that:

- There is **no** correlation between the scale of the SSP sector and the level of RbD.
- There is potentially a link between the scale of the LSP sector and the level of RbD.

5. Potential Measurement Failure Points

Throughout the gas supply chain there are a number of areas where measurement inaccuracies can occur, these are set out below. The risk/benefit of all such measurement failures across the supply chain is currently solely borne by the SSP Sector, via RbD.

Measurement errors are prevalent within the LSP sector as well as the SSP sector. Whilst it may be possible to argue that some issues affect each sector to different degrees, it is not possible to prove this. As the LSP sector is not exposed to RbD charges, the incentives upon it to detect, quantify and resolve measurement failures are weaker than those that are on the SSP sector. On this basis we argue that RbD costs should be borne equally across all NDM supply points.

5.1. LDZ Off-take Metering

Gas is delivered from the National Transmission System (NTS) to the Local Distribution System via Local Distribution Zone (LDZ) off-take meters.

Presently any inaccuracy in the measurement of gas entering the system, will have an equal and opposite effect on the volume of energy reconciled via the RbD mechanism to the SSP sector. There is no reason why the SSP sector should bear any more reward or risk from any LDZ metering off-take measurement inaccuracies.

The meters connected at LDZ off-takes are designed, constructed and maintained to ensure the measurement of standard volume flow. These standards allow for as much as a 2% +/- level of inaccuracy, at normal flow rates.

These LDZ off-take meters are owned and operated by the Distribution Network owners. As part of their price control[7] the network owners have a throughput incentive. The effect of this incentive is that the higher the volume of gas measured as entering the Distribution Network, the greater the allowed revenues of the network owners.

[7] Gas Distribution Gas Control 2002 – 2007 Paragraph 81 (ii)

These incentives could therefore create a bias towards the over measurement of energy entering the system. The consequences of any measurement failure in this area are currently inappropriately borne solely by the SSP sector.

5.2. Shrinkage

LDZ Shrinkage Factors are reviewed on an annual basis. The process for the forecasting of shrinkage for the forthcoming gas year is a somewhat arbitrary process, with a series of estimates made by the network owners for each component of shrinkage.

The purpose of the shrinkage process is to encourage network owners to reduce shrinkage from the system. However this can have a perverse effect, especially in terms of upstream theft. The number of detected upstream thefts is used to inform the calculation of the theft element of the shrinkage factor. The more theft detected, the higher the shrinkage factor, and the greater the costs to network owners. The network owners can therefore be penalised for detecting theft.

It should be noted that the present interpretation of "shrinkage theft", applied by the network owners, is constrained only to instances where physical interference upstream of the control valve has occurred. Theft, or gas flow through unregistered, or unrecorded sites, are not included in shrinkage factor calculations.

Any understatement of shrinkage is to the detriment of the SSP sector. As shrinkage relates to the whole of the LDZ network infrastructure, exposure to shrinkage miscalculations should be applicable to both the SSP and LSP sectors.

5.3. End User Theft

The current industry arrangements do not provide effective incentive arrangements upon Suppliers, Shippers or Gas Transporters to identify the theft of gas from the system. This was referenced within the Ofgem 'Theft of Gas and Electricity – Discussion Document' which was issued in April 2004.

Theft of gas is pertinent to both the domestic and non-domestic markets and all unaccounted for consumption is currently paid for by the SSP sector through RbD. Subsequently LSP sector Shippers and Suppliers have no commercial incentive to proactively identify and resolve cases of intentional consumer theft.

There is no evidence or industry data which shows that the level of undetected theft within the SSP sector is any more prevalent than levels of theft within the LSP NDM sector. However, under the current RbD arrangements an incorrect assumption is made that all theft within an LDZ is attributable to the SSP sector, which subsequently takes the full financial burden.

It is widely accepted across the industry that the scale of end user theft, across the whole gas market, is not clear and that there is a lack of robust data relating to the actual number of cases of theft and the total amount of energy which is illegally taken from the system.

In relation to detected theft, in 2005 xoserve recorded 139 allegations of theft in the LSP market, with 20 confirmed cases totaling 3,379,137 kWh being assessed as stolen[8]. This information categorically proves that theft does indeed exist within the NDM LSP sector. What this information does not demonstrate is the absolute level of theft in this sector. LSP Shippers pay transportation and energy charges when they detect theft, and receive no benefit from reduced RbD volumes. Typically recovery of monies is problematic, so LSP Shippers lose most and gain the least by detecting and reporting theft. This is further evidenced by the relatively high volume of cases where LSP theft has been detected, but no subsequent assessment submitted by the LSP Shipper, as to how much gas has been stolen.

BGT can confirm that it has detected theft within the LSP sector on both monthly read and non-monthly read sites. Information relating to these cases can be provided upon request.

5.4 Bypasses

The use of bypasses within the LSP NDM sector is commonplace, specifically where bypasses have been installed by the Gas Transporter when engineering work is required or on the assumption that work will be undertaken at a later date. The extent of these bypasses varies and they can be utilised at both large and small commercial sites. However, those which are installed at large sites can use significant volumes of unrecorded gas for significant periods of time.

Again, the LSP sector is immune to the costs associated with this unregistered gas, with the risk and costs being solely picked by the SSP sector via RbD. LSP Shippers and Suppliers therefore do not have any incentive to ensure that robust processes are in place to control and limit the impact of unregistered gas through bypasses.

5.5 Independent Gas Transporter CSEPs & NExAs

Shippers and Suppliers have expressed their concerns, over the past three years, as to the lack of robustness of the settlement and reconciliation processes that relate to sites connected to Independent Gas Transporter (IGT) networks.

IGT performance in this area has been monitored and reported to the IGT Work Group on a regular basis, by xoserve confirming the existence of a number of problems areas, three of which are detailed below.

[8] xoserve data – Theft of Gas Operations Forum

1. Weekly CSEP update process
2. I&C CSEP Reconciliation
3. IGT AQ Review

At the recent Ofgem CSEP NeXA meeting, which took place on 23rd April 2007, xoserve gave a presentation that provided the industry with an update on the performance levels and issues associated with each of the aforementioned areas and summarised below.

5.5.1 Weekly CSEP Update Process

The DN / IGT NeXA states that SPA updates should be submitted by IGTs to xoserve on a weekly basis. Although recent performance statistics show a 95% overall level of performance across all active IGTs, xoserve caveat these figures with the statement that they are unable validate the content of the file in terms of volume of supply points or validate whether IGTs have captured all new connections or transfers of ownership. The figures purely show that a weekly update file has been received.

Recent statistical information, collated by Ofgem, showed a significant mismatch between the number of supply points connected to IGT networks against the number of supply points which are known of by xoserve. This mismatch covered supply points across both the SSP and LSP market sectors.

5.5.2 I&C CSEP Reconciliation

There is an obligation upon IGTs within the current market arrangements, to ensure that all I&C NDM supply points are regularly reconciled.

Based solely upon the I&C supply points which are known by xoserve to exist, xoserve recently advised the IGT Work Group that there are a total of 3,570 I&C Logical Meter Numbers (LMNs). Of these only 4 LMNs have been reconciled within the last 12 months and only 728 LMN's have ever received a reconciliation invoice since the original introduction of IGT market arrangements. See Appendix (IV).

The lack of reconciliation across such a large number of LSP supply points and over such a long period of time has a direct impact to RbD and is of great concern.

5.5.3 IGT AQ Review

The AQ review is an established and important Network Code process which enables AQ values to be reviewed and amended on a yearly basis.

Further to recent information issued by xoserve, during the 2006 IGT AQ Review only 49,904 LMNs were submitted for amendment out of a total of 72,635 LMNs, which equated to only 68% of LMNs being amended.

This percentage is relatively low when compared with the 2006 UNC AQ Review process amendment figures, where 82% of supply points were amended and the reality that percentage figures within the IGT market should be higher due to the nature of the supply points and the impact of new connections.

The LSP sector provides a considerable proportion of the energy associated with connected IGT supply points and the lack of visibility of a large number of connected supply points and the relatively low level of AQ amendments, are providing risk and cost to RbD.

Further, the poor performance levels of I&C CSEP reconciliation and the fact that large numbers of I&C supply points have never been reconciled, are providing a significant level of risk and cost to the SSP sector via RbD, with no incentives upon LSP Shippers or Suppliers to pursue reconciliations.

5.6. Unrecorded Sites

Unrecorded Sites are those where premises exist that are receiving gas, but are not recorded on industry systems. These sites do not have meter point reference numbers allocated, and it can prove immensely difficult for a new occupant to therefore establish themselves as a customer with a Supplier. This scenario can and does exist in both the SSP and LSP sectors, however consumption associated with these sites flows directly through to RbD, the costs of which are currently solely borne by the SSP sector.

5.7 Unregistered and Unconfirmed Sites

Sites exist, across both the SSP and LSP market sectors, that are recorded on central industry systems (Sites and Meters) but which do not have a registered Shipper attached to them.

BGT recently presented on this particular issue to the April Service Delivery Ops Forum with a view to raising the profile of this issue across the industry and with a view to implementing better controls to prevent further uncertainty.

The existence of these unregistered and unconfirmed sites is resultant of numerous issues such as poor data quality, deficient industry arrangements or poor industry participant behaviour and is prevalent across both the SSP and LSP sectors.

5.8 Supply Point Metering

All gas for consumption leaving the distribution network should be registered on supply point meters.

There is potential for over or under measurement in all meters. The standards that relate to expected and allowable levels of accuracy are set out within 'The Gas (Meters) Regulations 1983' (as amended) and 'The Measuring Instruments (Gas Meters) Regulations 2006'. These standards are broadly similar across the whole of the NDM sector.

In our opinion, there is at least as much propensity for the over or under measurement of gas at end user meters in the LSP NDM sector as there is in the SSP sector, as both the metering technologies utilised and the applicable accuracy standards, do not differ widely across the majority of the whole meter point population.

In the LSP NDM sector should meters under register, whilst revenue is reduced so is cost. In the SSP sector if meters under register, revenue is lost but costs stay the same because of the application of RbD, which will balance any shortfall between end user metered gas, and gas metered at LDZ input meters.

5.9 Supplier Processes

5.9.1 AQ Review Process

The Uniform Network Code prescribes the way in which the annual AQ Review will be undertaken and details the relevant obligations on both Shippers and Gas Transporters.

While there is sufficient assurance that xoserve is operating the AQ Review process in accordance with the provisions of the UNC, historically there has been insufficient transparency regarding the participation and performance of Users.

Historically there has been the propensity for AQs to be artificially low within the SSP sector, hence a primary function for RbD is to capture these discrepancies and to smear the effects across the SSP sector.

As aforementioned, BGT initiated a number of modification proposals aimed at ensuring and improving the robustness of the AQ Review process.

The implementation of UNC Modification proposal 081 - "AQ Review Process - publication of information" provides an increased level of transparency and governance over the AQ Review processes.

In addition, the implementations of UNC Modification Proposals 094 – "Reconciliation following AQ Amendment, SSP becoming LSP with change of <20% or 15,000kWh" and 095 – Reconciliation following AQ Amendment, SSP becoming LSP following change of Registered User", removed exclusions from the UNC pertinent to the

Modification 0640 process, which provided additional restrictions on User's abilities to manipulate AQs.

There are however still gaps with regards to the LSP sector, specifically in terms of the visibility of AQ appeal behaviour and the outstanding loophole in the Modification 0640 reconciliation processes, which our UNC Modification Proposal 0136 (the follow up to 096) "Reconciliation following AQ Amendment, SSP becoming LSP following inter process amendment of AQ", seeks to address. Specifically, this proposal seeks to further safeguard the AQ Review process from User manipulation by removing the sole existing exclusion within the Modification 0640 process.

As described earlier, under the current arrangements the benefits of reducing AQs are stronger in the LSP sector than they are within the SSP sector.

5.9.2 Correction Factors

For supply points which consume less than 73,200 kWh per annum, a standard domestic correction factor is utilised in the calculation of energy, with a separate standard correction factor being used for sites consuming between 73,200 kWh and 732,000 kWh.

A bespoke correction factor is calculated for all sites with an annual consumption in excess of 732,000 kWh, in accordance with the 'Gas Calculation of Thermal Energy Regulations 1996'.

Where there has been an error in the calculation of a bespoke correction factor, there is a propensity for the error to be in favour of the customer, with the amount of energy calculated being less than the volume actually used.

In these circumstances the result of any under calculation and subsequent under deeming of AQ is picked up via RbD.

5.9.3 User Suppressed Reconciliation Values

User Suppressed Reconciliation Values (USRVs) are generated from submitted meter readings, which are deemed by xoserve to be out of tolerance upon validation. USRVs are specific to the LSP sector and can be generated for any Larger Supply Point.

Modification Proposal 0637, implemented in February 2005, introduced a regime to incentivise Users to process and clear all USRVs in an efficient and timely manner,

Information recently issued to the industry by xoserve identifies that the general level of current User performance in this area is consistently below the expected standard,

with large numbers of items outstanding, going back as far as November 2001. See Appendix (V).

It is evident that the existing incentive regime is not working and BGT has raised UNC Modification Proposal 0141 – "Revision to the 'User Suppressed Reconciliation Values' Financial Incentives arrangements", in order to further improve the operation of the current arrangements.

In the meantime, it is evident that there are a large number of outstanding USRVs and without the timely reconciliation of these affected LSPs, there continues to be a high level of risk upon RbD and to the SSP sector.

5.10 Deeming Processes

There are number of various algorithms which are used within the deeming process. Should these algorithms contain any level of inaccuracy the consequences are all inappropriately borne by the SSP sector.

6. Benefits of our Proposal

BGT believe that this modification proposes an effective and appropriate solution.

Simple & Transparent: Our proposal does not require complicated algorithms, nor contain multiple variables. We suggest simply that RbD is smeared at the same energy and transportation charging rate to all NDM supply points based on throughput.

We propose a hard "cutover" to any new arrangements, which again moves to arrangements that are simple and easy to understand.

Efficient & Effective: Our proposal does not require significant system change. We understand it can be easily implemented be xoserve on behalf of the transporters.

We have set out below more specifically how our proposal shall better facilitate the achievement of the relevant objectives.

6.1 Consequences of non-Implementation

Should our proposal not be implemented an unacceptable cross subsidy across market sectors and Shippers will remain. This will continue to compromise competition between Shippers. Costs in the SSP sector, and therefore to domestic customers, will be disproportionately high, when compared to the non-domestic sector.

In addition there will be a continuing lack of incentive upon LSP Shippers to address issues, which cause unreconcilled energy.

6.2. Extent to which implementation of the proposed modification would better facilitate the achievement of the relevant objectives

A11.1 (a) the efficient and economic operation of the pipe-line system to which this licence relates.

Our proposal extends to a broader range of Shippers incentives for identifying and resolving measurement failures that manifest as unreconciled energy and resultant charges to RbD. Such issues have been described earlier. This includes for example theft and IGT reconciliation issues, where the engagement of the SSP Shippers has been extensive, but other Shippers minimal.

We believe that as a result the extent to which measurement failures persist will be reduced, and that this will enable more efficient operation of the pipeline system.

A11.1 (d) – the securing of effective competition (i) between relevant shippers and (ii) between relevant suppliers.

Our proposal reduces the extent to which the SSP market sector, and Shippers / Suppliers operating predominately within it, cross subsidise the LSP NDM market sector, and the Shippers / Suppliers operating predominately in it.

Shippers operating in the SSP sector, presently bear the full burden of RbD charges, whilst LSP NDM Shippers bear no charges. It can be argued that the LSP sector should bear a greater burden than the SSP sector and vice versa. However, it has been widely accepted that no sector should bear the full burden of RbD charges.

Our proposal therefore provides a fairer and more equitable allocation of costs than exists today. An element of cross subsidy may still remain further to the approval of our modification, and which direction cross subsidy is in may be debatable. However, ultimately the level of any cross subsidy will be lower than it is at present.

The reduction of a cross subsidy between market sectors and individual Shippers / Suppliers operating in them, in our view, better secures effective competition between Shippers and Suppliers.

7. Implementation

In line with discussions that took place during the development of this modification proposal, it is proposed that the most efficient and effective invoicing solution to deliver the aims and objectives of the proposal, would be achieved by the utilisation of an off-line invoicing system. This solution would use the current ad-hoc invoicing mechanisms, would not provide a significant impact upon xoserve systems, processes or procedures and therefore would be relatively straightforward to implement.

In the event that this proposal is approved, BGT recommend that implementation of the modification is undertaken as soon as practicable, following appropriate consultation via the UK Link Committee.

In order to ensure that a clean transition occurs from the current arrangements to the revised proposed arrangements, we recommend as part of our modification proposal that a hard landing approach is taken to implementation.

This would mean that the application of any subsequent debits or credits, calculated post the date of implementation of this proposal, would be applied to all Users and across all market sectors, under the terms of the new arrangements.

Should you have any queries with regard to this response please do not hesitate to contact me 07769 548070.

Yours sincerely,

Steve Briggs
National Industry Manager

Appendix (I) Report by Engage Consulting

REVIEW OF BGT'S MODIFICATION PROPOSAL UNC 115

"Correct Apportionment of NDM Error"

An independent review of British Gas Trading's modification proposal UNC 115

Prepared for BGT by

Engage Consulting Limited

April 2007

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1. INTRODUCTION

Engage Consulting Limited has been asked by British Gas Trading (BGT) to undertake an independent review the factual evidence supporting their proposal UNC 115 ("Correct Apportionment of NDM Error"). The brief for this research was to review BGT's rationale and supporting evidence in support of the modification proposal, based on available industry data and the findings from a series of internal (non-public) investigations.

In this report we present our findings, noting that this is designed to be read in conjunction with BGT's response to the industry consultation process. We have assumed that readers are familiar with common industry terminology and standard abbreviations.

2. BACKGROUND TO ENGAGE CONSULTING

Engage Consulting provides consultancy, data and assurance services to clients in the Electricity and Gas sectors, both in the UK and abroad. Formed in 1999 it has expertise in balancing and settlement mechanisms from both these markets together with a high level of expertise and experience in retail, transportation and transmission processes underpinning the energy trading markets. Within the gas sector, Engage people were part of the pre and post Network Code regimes and consequently have first hand experience of the practicalities of the operation and evolution of the competitive regime.

3. OVERVIEW

The Reconciliation by Difference ("RbD") mechanism was introduced in 1998 to enable competition in domestic gas supply to be implemented whilst avoiding significant and costly amendments to the existing UKLink systems. It was approved following a Network Code modification proposal by Transco, the monopoly Gas System Operator at the time, and was directed by Ofgas following extensive consultation with industry representatives and other interested parties at the time.

The RbD principal is based on the concept that the gas flows attributable to domestic supply points within an LDZ is the difference between the flows into the an LDZ and the flows attributable to non domestic supply points; this latter quantity being determined from daily metered supply points and supply points that are metered less frequently and reconciled. In this way gas flows attributable to the domestic supply points can be deduced rather than individually metered and reconciled against a deemed flow at individual meter point level. A necessary consequence of the RbD mechanism is that errors attributable to unreconciled energy and any other errors in energy measurements within the system, are attributed wholly to the domestic SSP market sector. Consequently, for RbD to be an equitable mechanism, shippers' error volumes have to be in the same proportions as the sum of their AQs. In this way errors are smeared in the same proportions as they arise.

The existence of persistent energy errors (errors that are not removed over time through reconciliation) within the LSP market is a contentious issue when considering RbD. Some proponents of the existing RBD arrangements have argued that almost all energy flows to LSP sites will ultimately be reconciled.

In theory, with almost all errors being reconciled over time the system energy allocation should tend towards the actual flows on a particular day. BGT has evidence that this is not the

case and that a significant volume of persistent error is created in the non domestic sector that, as a direct consequence of the existing RbD mechanism, is smeared in different proportions to that in which it is created. The original implementation of RbD was predicated on the assumption that errors (for example due to unregistered, duplicate or mismatched supply points et al) would reduce over time, and that a number of control mechanisms (such as the tuning of the AQ review processes) would reduce the overall level of energy needing to be reallocated through the RbD mechanism. Industry data suggests that this has not happened as expected.

BGT has proposed modification UNC 115 in response to Ofgem's draft conclusions from the 2006 Consultation on RbD. The proposal suggests that it will be more equitable to the market as a whole if the RbD charge were to be applied across a wider group of supply points, namely the entire NDM sector (both domestic and I&C). The proposal suggests that this would provide an incentive to participants to reduce, as far as may be possible, the errors that contribute to the RbD charge. BGT believes that it is a logical step forward and reflects the overall industry view, as described by Ofgem, about how to refine the RbD mechanism for the medium term.

The proposal represents a practical and logical step towards:

- Providing an increased incentive on shippers and Gas Networks to minimise errors which may impact RbD;
- Ensuring that, where energy from the LSP sector (both monthly and non monthly sites) impacts the domestic sector, the effect is reflected across all NDM sites.

The modification proposes a solution which is both low-cost and straightforward to implement. It is consistent with Ofgem's suggestion[9] that industry change mechanisms should be used to address shortfalls in the RbD process and addresses the fact that significant errors arise in the sectors of the market other than the domestic sector.

By its very nature, the 'by difference' methodology provides a mechanism for attributing the total LDZ input flows across the respective supply point groups. As a consequence, any discrepancies between actual and estimated energy in areas such as Theft of Gas are directly bourn by the Domestic SSP shippers - which may of course result in a debit or a credit to the RbD 'account'. BGT can demonstrate, through work that it has done in this area, that there are actual instances of detectable theft of gas in the LSP supply point market, both in the monthly and non-monthly read sector.

The volume of theft identified by BGT when sampling sites in 2 LDZs cannot be reliably extrapolated across the system but BGT's have evidence from site that it exists and this supports the extension of the RBD mechanism across the wider market.

We have discussed with BGT the technical analysis that they have carried out in support of their proposal and we discuss the finding from our review and discussions with BGT in more detail within the body of this report.

We conclude that the Modification proposal UNC 115 is a logical development arising from the Ofgem RbD consultation and that there is sufficient evidence to suggest that the RbD allocation process would be made more equitable by the reallocation across the wider supply point groups.

In the following sections, we examine some of the details underpinning BGT's case in support of the proposal UNC 115.

[9] See the presentation document 'PresentationReconciliationbyDifferenceRbD_FINAL.pdf', Ofgem, July 2006

4. BGT'S RESPONSE TO THE PROPOSAL

In the following sections we look at BGT's rationale in support of the modification.

4.1 Summary of BGT Views

BGT's support for the proposal falls into 2 broad areas.

Firstly, BGT views the proposal as a logical development of the RbD mechanism in a manner that is consistent with Ofgem's draft conclusions from the 2006 RbD Consultation process. They have also cited the original decision document published by Ofgas and that the industry's expectations at the time of implementation (that the quantity of energy being allocated through the RbD mechanism would reduce over time) have not been met.

Secondly, they assert that there is key factual evidence that demonstrates that the RbD energy charge is not solely due to the effects of domestic supply points and that the effect can be attributed to the LSP sector.

There is evidence within BGT's domestic gas portfolio that demonstrates that there is a regular and systematic over-deeming against their Domestic Gas Supply Point Portfolio. This has been demonstrated using internal billing account analysis and also correlated against the results of the DMP (Domestic Monitoring Panel) analysis published by xoserve.

BGT has also performed statistical analysis of system and LDZ daily flows against both the SSP and LSP sector flows in an attempt to measure any correlation – and this has not been found.

There has also been an internal study of incidences of theft of gas which has proved beyond reasonable doubt that incidences of theft of gas have occurred in both monthly and non-monthly supply point groups.

We look at each area in more detail in the sections below.

4.2 The logical case for UNC 115

In addition to looking at the quantitative evidence behind the modification proposal, we have reviewed a number of key documents which signal Ofgem's views about how RbD should evolve. Collectively, we have identified that the route BGT proposes for 115 meets the majority of the criteria that have been signalled. These are considered below:

4.2.1 Retaining the RbD mechanism in the medium term

In their 'Initial Thoughts' presentation at the conclusion of the 2006 RbD consultation, Ofgem concluded that:

- The RbD mechanism is fit for purpose for the immediate term
- RbD issues should be addressed under existing industry arrangements
- No regulatory intervention is necessary at this stage
- It is up to the Industry to take the lead
- Ofgem would facilitate coordination of industry activity through an RbD issues log

BGT's proposal for 115 supports the view that the RbD mechanism should be retained, demonstrates that it is 'taking a lead' on promoting a case for change, and is not seeking direct Regulatory intervention. Hence, we can see a logical continuity in the approach.

Ofgem has commented that, in the longer term, a widespread take up of Advanced Metering technology should prompt a review of RbD. When this occurs, a cost benefit analysis should evaluate whether RbD remains the most appropriate mechanism or whether such technological advances provide more appropriate options. The industry is clearly not at this point and the 115 proposal is logical in this context.

4.2.2 Reducing the potential for misallocation of energy

In its notice of implementation of Network Code Modification 640[10], Ofgem commented that "it is appropriate … to propose modifications that remove the potential for misallocation of transportation and energy amongst RbD shippers". When considering theft, Ofgem states[11] that "theft is not acknowledged in the LSP market". Given that BGT has evidence of the existence of LSP theft, there is a strong case for 115 on the grounds that there is evidence that some costs are clearly attributable to NDM supply points and which should be apportioned more equitably. This principle can also logically be applied to misallocated or unregistered sites, which impact the RbD charge but cannot be shown to apply solely to the domestic sector.

BGT's proposal that the RbD charge should be reallocated across the whole NDM portfolio is logical in that it reflects the mechanism in place prior to the introduction of domestic competition, a fact highlighted by Ofgem when acknowledging that "prior to the implementation of RbD, any error in shrinkage was spread across all NDM shippers (excluding Daily Metered sites)[12]".

4.2.3 Removing disincentives

Again, in the RbD consultation document, Ofgem highlighted the fact that "there is little incentive either financial or commercial for parties to comply with the terms of the CSEP NExA to trigger a reconciliation. The lack of timely AQ Updates and reconciliation volumes by IGTs is considered to create undue risk to RbD, in terms of creating a potential misallocation of energy volumes through the RbD smearing mechanism, and thereby impacting on costs". BGT's view is that there is potential for IGT energy to not be properly allocated across independent networks and that this can give rise to quantities of energy which are attributed to the domestic SSP sector and are unlikely to be properly reconciled within a reasonable timescale.

Work has recently been sponsored by Ofgem to look at certain aspects of independent gas networks and it is important that the RbD impact from IGTs is evaluated and understood. If an energy impact is found to be material and the result of LSP supply points, this provides an incentive for RbD shippers to seek corrective action through the mechanism proposed by BGT.

Likewise, the incentive to LSP shippers to detect and deal with theft of gas (and other sources of potential error cited by BGT) is increased by the fact that these shippers will bear a proportion of the financial burden for it.

[10] Ofgem document reference 'net/cod/mod/0640, dated 8th June 2004
[11] 'Review of RbD' document (Ofgem reference 57/06)
[12] Review of Reconciliation by Difference, Ofgem (ref 57/06)

4.2.4 Simple, low cost implementation

BGT has consulted with xoserve to develop a proposal for a practical and low-cost implementation of 115. The proposal outlined in UNC 115 would facilitate a simple and straightforward implementation route that has minimum impact on both xoserve and the shippers. Importantly, BGT and xoserve believe that it will not require significant amendments to UK Link systems to implement.

4.3 The factual case for UNC 115

The nature of the 'by difference' mechanism, whereby all domestic gas flows, together with un-reconciled energy and any energy accounting errors, are attributed to the domestic SSP sector means that such error quantities are generally unknown. Empirical studies of theft of gas and leakage serve to give an indication of some sources of errors in energy accounting but cannot be absolutely determined. BGT's proposal does not seek to clarify what these quantities may be, rather it seeks acknowledgement that it is feasible that these errors cannot be solely attributed to the domestic sector.

BGT has conducted a number of internal research projects that demonstrate key features in support of the proposal. Three of these significant projects are described below:

4.3.1 Internal Theft of Gas Survey

Given that a central tenet of the UNC 115 proposal is that a number of factors potentially influencing the RbD charge are not confined solely to the domestic sector, BGT has sought to confirm the existence of detectable theft in the monthly and non-monthly LSP sectors. We have seen the results of a site-level investigation of a selected number of LSP sites in 2 LDZs that has confirmed that theft of gas exists in the LSP market. This confirms Ofgem's view that "Although there is also a likelihood of theft of gas by industrial and commercial users, the current reconciliation process does not apportion any costs for theft of gas to the DM or large NDM sectors"[13].

This adds weight to the argument that the energy allocation should be extended to the LSP sector, although it doesn't indicate how much energy is at stake.

BGT has confirmed that it does not believe that the theft study data can be reliably extrapolated to derive a representative value for all LDZs but we accept that its study demonstrates that that LSP theft is a reality.

4.3.2 Internal Invoice Imbalance Analysis

Having access to a large portfolio of gas customer consumption data, BGT has analysed the deemed energy against the actual usage data for a sample of domestic supply points which are known to be correctly registered on the Sites and Meter database and have a valid set of 'clean' meter reading data (defined as 6 or more true cyclic reads). They have been able to compare the actual gas consumption (as billed to the end consumer) against the energy deemed against the group of supply points. One conclusion from this internal study was that "there is a systematic bias in imbalance across the domestic (SSP) market of between 1.5% - 2.5% which is consistent with [DMP] analysis". The fact that there is a consistent positive

[13] Review of Reconciliation by Difference, Ofgem (ref 57/06) , section 2.32, page 17

over-allocation to the domestic portfolio suggests that this is a symptom of energy accounting errors elsewhere in the system. There is no evidence that we have seen suggesting that this energy allocation is temporary or transitory in nature which supports the view that allocation across domestic supply points only is not ideal and the interests of the industry would be better served, in the medium term, by the adjustment to the RbD mechanism as proposed.

4.3.3 Statistical Analysis of RbD quantities

BGT has attempted to validate the hypothesis that, if the energy allocation was fundamentally geared to the Domestic SSP flows, one might reasonably expect to see a statistical correlation between the energy flowing to the domestic supply point group and the total system energy. This study was conducted in 2006 with support from xoserve and the results, based on the evidence we have seen, reveal no such correlation, either compared to the whole system or against individual LDZs. BGT take a view that, perversely, there is evidence to suggest a stronger correlation of RbD charges against the non-domestic LDZ flows but we remain to be convinced that this is significant. In our view, this does not provide absolute proof that the RbD charge is not driven by domestic supply points but it adds weight to view that that the effect is system-wide and supports BGT's logic underpinning their proposal.

5. CONCLUSIONS

The RbD mechanism is an appropriate method of ensuring the daily reconciliation of energy flows within the system but has the disadvantage that, irrespective of where errors in energy measurement originate, they are attributed to wholly the domestic gas supply points. In theory, the energy correction can be either a positive or a negative quantity but BGT's experience is that there is consistently a net positive charge which suggests that there are other influences over and above that due to purely domestic gas flow and has compelling evidence that a proportion of this error is attributable to the non domestic sector. The quantities allocated have not been reducing over time since implementation and the comments made at the time of implementation, together with the conclusions from the industry consultation in 2006, suggest that a review of RbD is timely.

BGT has responded to Ofgem's recommendations with a modification proposal that does not fundamentally change the principle of reconciliation for the domestic sector gas flows, yet does allow effects that are clearly attributable in part to the LSP sector to be reflected within that supply point group.

The proposal is a logical interim refinement in the absence of a wider adoption of advance metering technology. We accept that BGT's proposal is a logical extension of the RbD consultation process and is a constructive option for the industry at this point in time.

Appendix (II) Centrica Analysis

Centrica have undertaken a large scale exercise to identify the key drivers of imbalance in the SSP market. Across every MPRN in its portfolio it has replicated calculated the imbalance incurred over the last 16 months by comparing the energy charged to each site with the volumes billed.

In calculating volumes billed, the analysis has taken into account:

- Recreation of the deeming calculations
- Matching in reconciliation and ad hoc invoices
- Apportionment of RbD charges to its SSP portfolio

The imbalance for each site was plotted on a frequency distribution graph. It would be expected that there would be some sites with significant imbalance as SSP sites are not reconciled to reflect consumption changes e.g. when there is a change of ownership. Overall, if the industry worked as originally anticipated, imbalance would be evenly distributed around zero.

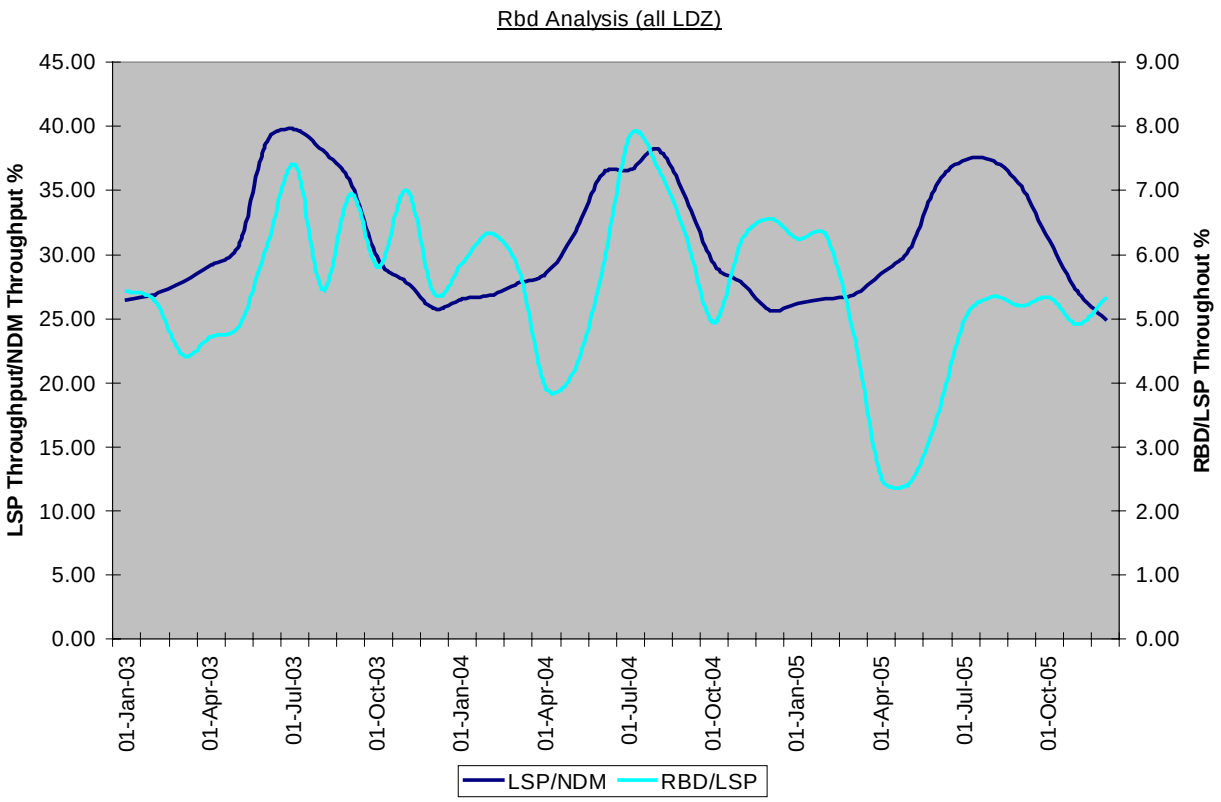
However, the chart clearly shows a positive skew and demonstrates that there is a systematic level of imbalance in excess of 2% of deemed volumes driven by the energy allocation algorithms.

As a further step in the analysis an analysis of MPRNs for which at least two actual reads had been obtained in the last twelve months to eliminate the impact of any issues around billing estimation. This analysis also showed an average imbalance of greater than 2%.

APPENDIX (III) Analysis of LSP / SSP Throughput versus Level of RbD

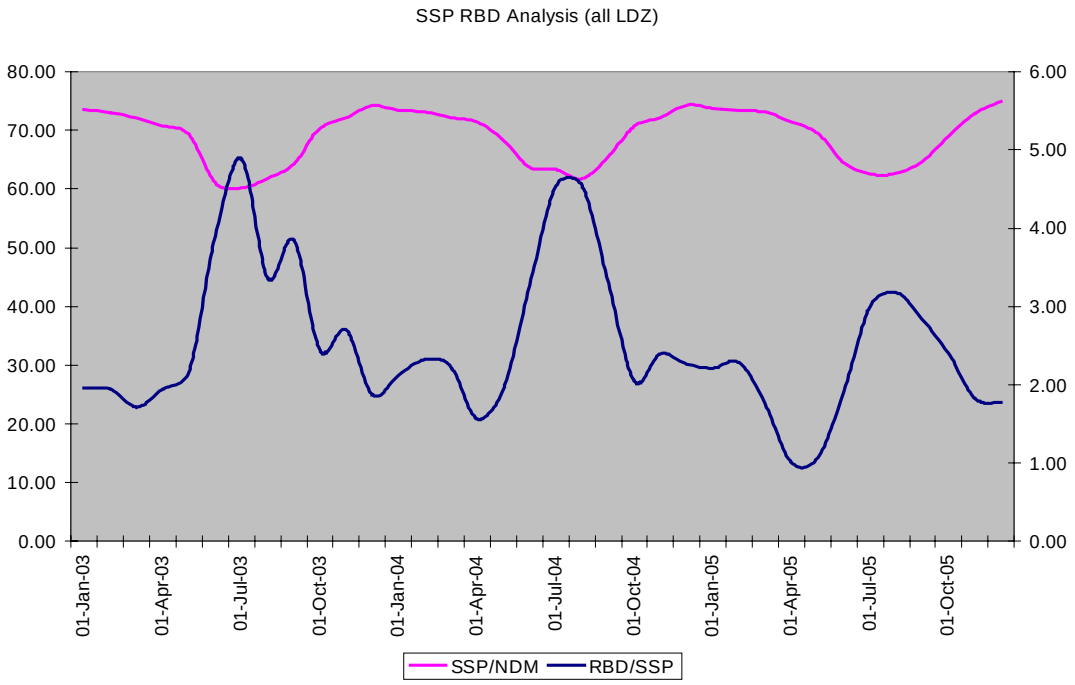
Using flow month data for RbD values and throughput values for the SSP and LSP markets the correlation coefficients were calculated. This analysis was not carried out on an LDZ basis due to potential for bias in regions.

Comparison of LSP NDM throughput with level of RbD



A correlation / common pattern between the two lines can be seen.

Comparison of SSP throughput with the level of RbD



No clear correlation between the two lines is evident

This analysis suggests that;

- There is no positive correlation between and SSP throughout RbD levels.
- There is a stronger correlation between LSP throughout and RbD levels.

The data underlying this analysis is shown below:

Market Flow Data
GWh

	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
RBD	1,201	1,059	743	601	497	393	453	298	532	857	1,142	1,077
SSP	61,306	54,488	43,318	30,881	22,951	10,078	9,265	8,852	13,832	35,179	42,235	57,595
LSP	22,125	20,053	16,776	12,723	10,178	6,406	6,120	5,453	7,661	14,777	16,295	20,006
NDM	83,432	74,541	60,094	43,605	33,129	16,484	15,385	14,305	21,494	49,956	58,530	77,601

	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
RBD	1,247	1,235	1,134	520	392	387	518	429	488	650	1,037	1,250
SSP	58,781	53,188	50,916	33,309	20,220	11,847	11,421	9,442	14,783	31,771	43,217	55,116
LSP	21,243	19,498	19,583	13,300	9,361	6,744	6,598	5,837	7,753	13,160	16,628	19,040
NDM	80,024	72,685	70,499	46,608	29,582	18,591	18,019	15,279	22,536	44,930	59,845	74,156

	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05
RBD	1,259	1,244	846	345	248	235	302	320	370	555	871	1,034
SSP	56,846	54,498	48,243	34,492	23,296	12,210	10,029	10,078	13,058	23,099	47,712	58,399
LSP	20,170	19,724	17,718	13,793	10,187	6,732	5,996	5,999	7,120	10,409	17,745	19,463
NDM	77,016	74,222	65,961	48,285	33,483	18,942	16,024	16,077	20,178	33,509	65,456	77,863

APPENDIX (IV) CSEPs Reconciliation Data

Source: xoserve presentation to industry CSEP / NexA Meeting on 23rd April 2007.

CSEPs Reconciliation Update - All LMNs both Live and Closed

IGT ID No.	Total LMNs	LMNs Received	LMNs Invoiced	LMNs Outstanding	LMNs Not Received	% of LMNs Cleared
A	2534	697	697	1837	1837	28%
B	515	3	3	512	512	1%
C	79	1	1	78	78	1%
D	1	0	0	1	1	0%
E	0	0	0	0	0	0%
F	2	2	2	0	0	100%
G	258	0	0	258	258	0%
H	36	0	0	25	36	0%
I	125	25	25	100	100	20%
J	0	0	0	0	0	0%
K	20	0	0	20	20	0%
L	0	0	0	0	0	0%
M	0	0	0	0	0	0%
	3570	**728**	**728**	**2842**	**2842**	**20%**

APPENDIX (V) Analysis of Outstanding USRVs

Source: USRV Statistics – March 2007 Age Analysis issued by xoserve to industry participants on 27th April 2007.

Reporting Month			
Number of Outstanding Filter Failures			
Sent Month	JAN	FEB	MAR
20/03/2007			6542
20/02/2007		6679	3773
20/01/2007	4670	2613	1631
20/12/2006	3759	2192	1813
20/11/2006	2486	1914	1616
20/10/2006	2091	1541	1386
20/09/2006	1459	1196	1055
20/08/2006	1165	969	813
20/07/2006	1227	1025	868
20/06/2006	844	658	530
20/05/2006	603	482	417
20/04/2006	608	485	405
20/03/2006	648	553	517
20/02/2006	411	345	308
20/01/2006	292	254	242
20/12/2005	364	306	285
20/11/2005	596	502	478
20/10/2005	241	223	215
20/09/2005	360	296	273
20/08/2005	283	245	210
20/07/2005	237	206	198
20/06/2005	186	164	149
20/05/2005	151	140	138
20/04/2005	112	100	97
20/03/2005	101	85	82
20/02/2005	107	105	102
20/01/2005	72	66	64
20/12/2004	66	58	56
20/11/2004	57	53	50
20/10/2004	54	47	46
20/09/2004	26	25	25
20/08/2004	32	29	29
20/07/2004	29	26	26
20/06/2004	30	29	29
20/05/2004	12	10	10
20/04/2004	14	13	13
20/03/2004	7	6	6
20/02/2004	15	13	13
20/01/2004	24	24	24
20/12/2003	13	12	12
20/11/2003	13	11	10
20/10/2003	17	17	17
20/09/2003	19	18	18

20/08/2003	9	7	7
20/07/2003	1	1	1
20/06/2003	8	7	7
20/05/2003	4	4	4
20/04/2003	2	2	2
20/03/2003	3	3	3
20/02/2003	8	8	8
20/01/2003	5	5	5
20/12/2002	6	6	6
20/11/2002	16	15	15
20/10/2002	8	7	7
20/09/2002	1	1	1
20/08/2002	13	13	12
20/07/2002	2	2	2
20/06/2002	13	12	12
20/05/2002	0	0	0
20/12/2001	1	1	1
20/11/2001	1	1	1