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ENERGY CONSULTING

Review of consumption information estimation methodology options

For: Gas Industry Co

May 2009

Preface

Strata Energy Limited specialises in providing services relating to the energy industry and energy utilisation. The Company was established in 2003. Strata Energy provides advice to clients through its own resources and through a network of associate organisations. Strata Energy's consulting division, Strata Energy Consulting, has completed work on a wide range of topics for clients in the energy sector in both New Zealand and overseas.

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Executive Summary

Introduction

1. This report details a review conducted of:

    a. gas retailers' consumption information forecasting;

    b. estimation in New Zealand's retail electricity sector and the associated accuracy;

    c. possible alternatives to the existing approaches to improve the accuracy of non – TOU consumption information submitted for the initial allocation; and

    d. at a high level, a possible financial wash-up arrangement for upstream gas balancing.

2. The report sets out the process followed, the results of the review, and recommendations on the changes required to improve the accuracy of the initial estimates of consumption submitted to the Allocation Agent.

Background

3. Prior to the beginning of each gas year, Gas Industry Co must, after consulting with allocation participants, determine and publish the percentage of error for the accuracy of consumption information provided for initial allocation for non - TOU meters. This percentage is then applied to the consumption periods in the following gas year.

4. The percentage of error for the 2008-2009 gas year was set at 15%. Gas Industry Co has noted that there were 123 instances of retailers submitting consumption information which fell outside this accuracy threshold for the October 2008 period. The percentage of error for the 2009-2010 gas year has been set at 12.5%.

5. The accuracy of submissions is important because transmission balancing charges are based on the initial allocations at gas gates and there are no wash-ups based on actual volumes.

Electricity Industry and Gas Industry Rules comparison

6. As the Gas (Downstream Reconciliation) Rules ('Gas Rules') were based on part J of the Electricity Governance Rules ('Electricity Rules') they are fairly similar in their requirements. However, there are differences including: the submission and revision cycles differ slightly and the electricity industry allows for a 13th day revision of all consumption periods in every month. In addition, the electricity industry has a

materiality threshold of 100MWh before the percentage error is calculated.

7. The reporting requirements for historical estimates are also different in that the Electricity Rules set out the proportion of historical estimates required for each submission period and electricity retailers report against the proportions. The Gas Rules only require that the final submission contains no historical estimates.

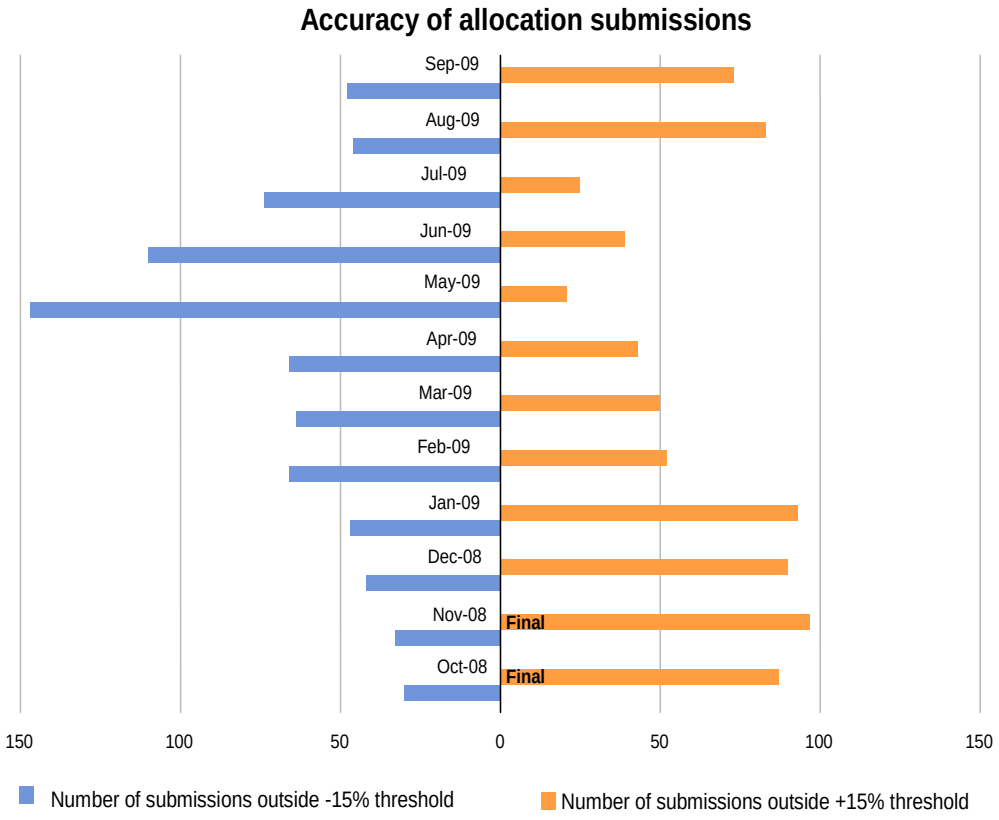
8. It is recommended that the materiality threshold be considered when reviewing the forecasting accuracy of initial submissions, as it could eliminate immaterial breaches of the Gas Rules.

Breaches for the year October 2008 to September 2009

9. A breach of the Gas Rules occurs when the initial submission of consumption quantities for GP3-GP6 varies from the final submission by more than 15%. The graph below shows the number of breaches under and over this threshold per month. The months of October and November[1] use final submission data and the remainder use interim submission data. The interim data indicates that there is potential for a breach if the final submission data is unchanged from the interim submission data.

10. It is interesting to note that the breaches relating to errors over the 15% threshold are highest in the Spring and Summer months while the breaches relating to errors where the submitted volumes were less than the final (or interim) quantities by more than 15% (i.e. under the threshold) were highest in the Winter months. This seasonal effect indicates that temperature has a significant impact on the actual quantities consumed.

[1] Final submissions to March 2009 were received at the end of the investigation. The impact on the number of breaches of the breaches can be seen in Table 1 and Graph 1 on page 21. All analysis in the report is based on the original data received.



Materiality threshold

11. The following three volume levels for materiality have been examined based on suggestions from retailers: 50GJ, 360GJ and 500GJ. The 360GJ level is equivalent to the 100MWh threshold used in the electricity industry. Using a gas price of $7/GJ the financial impact (value) of breaches has been calculated.

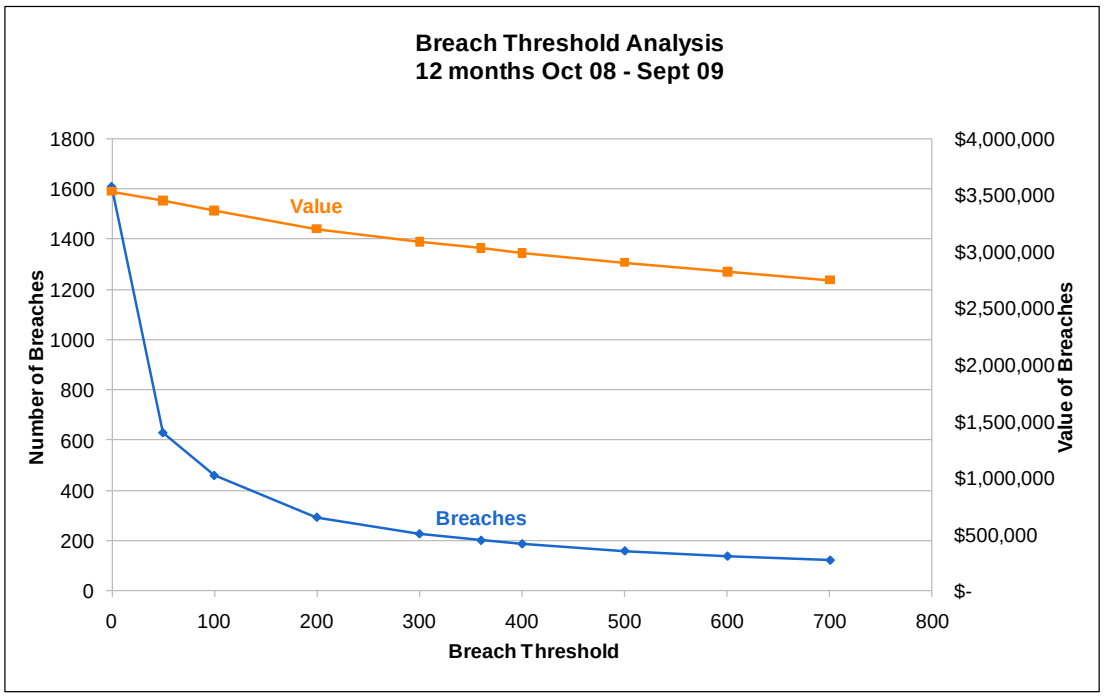
12. The 360GJ threshold appears to provide the advantage of reducing the number of breaches to a reasonable level, but extending it to 500GJ has the potential to eliminate a small number of breaches that could be material.

13. There is a possibility that choosing the 360GJ threshold could lead to perverse incentives for retailers. One way of handling the apparent disadvantages of the 360GJ threshold might be to reduce the threshold to the point where the threshold is low enough to provide a meaningful reduction in immaterial breaches but does not incentivise retailers to be less accurate with their total submission or be inclined to limit their marketing efforts.

14. Examination of the relative number and value of breaches indicates that a threshold of 200GJ will have a significant impact on the number of

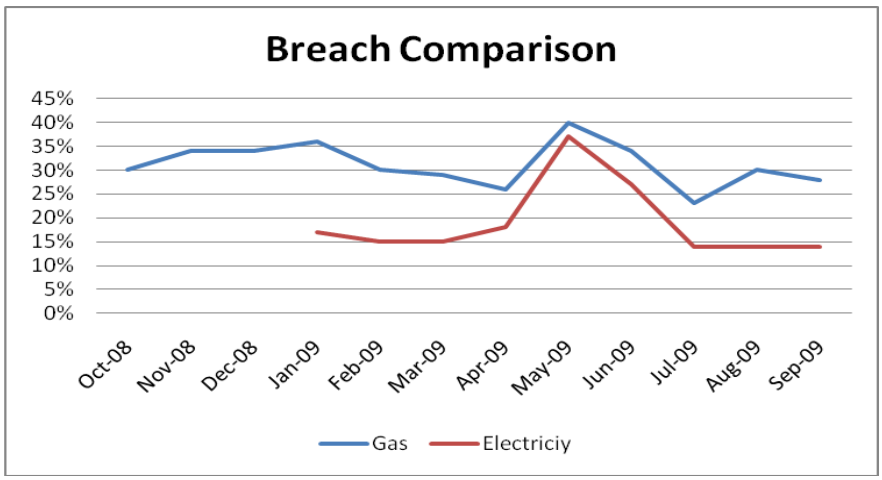
breaches and will also capture a large proportion of the higher value breaches.

15. The graph below illustrates the changes in the numbers and values of the breaches, assuming a gas value of $7/GJ



Comparison between gas and electricity breaches

16. The number of breaches per month per submission was compared between the electricity and gas industries. The graph below illustrates that with no materiality threshold, the number of gas industry breaches is much higher than for the electricity industry for comparable months, except over the months of May and June 2009.



17. Because the information available is for such a short period, it is not possible to conclude that the gas industry is generally less accurate than the electricity industry in respect of the quality of submissions. More information from the Electricity Commission would be required to conduct a detailed analysis.

Market share and top down analysis

18. Market share by volume for each retailer across all gas gates was calculated using the volumes available from the interim or final submissions over the period October 2008 to September 2009.

19. The rate of change of market share indicates that there is a significant amount of volatility. However, given that we have very few final submission months, it is not clear that market shares are totally accurate or stable.

20. Further analysis was done at the gas gate level to ascertain if there was potential to apply market shares to the residual volumes to improve the accuracy of the initial submissions. Five gates were chosen to examine whether it was feasible to apply each retailer's market share to allocate the residual quantities, after the TOU quantities had been allocated at each gate. It was concluded from the 4 months of available data that the gas gate market share varies too much to be useful in applying a top down approach.

Retailer views

21. Submissions on the "Consultation on rule 37 accuracy requirements under the Gas (Downstream Reconciliation) Rules 2008" dated August 2009, as well as responses by retailers to the alleged breaches of rule 37, which were received by the Market Administrator during December 2009, indicated that the three main factors that are likely to have an influence on the accuracy of submissions are meter reading, switching, and availability of seasonally adjusted daily shape values (SADSVs).

22. These submissions also contained a number of suggestions on how to improve the accuracy of submissions and estimating techniques.

23. A questionnaire was prepared and sent to retailers to capture views on these suggestions. The objective was to obtain retailers' perspectives on their usefulness and ease of implementation. For the full set of responses please refer to Annexure 2.

24. The suggestions put to retailers to improve the accuracy of submissions and estimation, were divided into two sections:

    - Changes to the current approach to submissions; and
    - Possible changes to improve estimation of quantities.

25. Responses from the questionnaire indicated that:

- the most influential factor in the accuracy of submissions was the frequency of meter reading; and,

- the most valuable suggestion for improving the accuracy of submissions by improving the quality of estimates was "the allocation agent provides the actual GGRPs before initial allocation for groups 4 and 6".

Washups of balancing costs

26. Vector is not in favour of performing washups of the transmission balancing charges, as the current system would have to be automated to do this. The cost of automation would be likely to exceed $1.5 million. Vector has concerns that it would obtain no benefit from the expenditure and may not be able to recover the costs due to regulatory constraints on its revenue.

27. The current level of transactions through the BPP is of the order of $5 million per year but proposed changes to the MPOC could lead to Vector being exposed to $10 million and even up to $40 million. The level of exposure will depend on changes to MDL's operating procedures and assumes that accuracy of nominations does not improve.

28. An alternative to the current approach would be to establish the balancing pool as a clearing house which would be responsible for managing the sale and purchase of the gas quantities necessary to settle imbalances but would not be exposed to credit risk. The wholesale electricity market and the New Zealand Stock Exchange (NZX) are examples of markets which use this approach. In both these markets, the clearing house provides a service to participants but the participants carry the risk of default and manage this through prudential arrangements.

29. If the roles of Vector as both the transmission system operator and the Balancing Agent were examined to remove disincentives to develop a more efficient balancing system, it could lead to more innovation by Vector and consequent improvement in the allocation of charges. If, for instance, Vector was set up as a service provider for clearing and settlement of transmission balancing charges, it would be neutral in respect of payments.

Recommendations

30. It is recommended that:

i. Gas Industry Co introduces a volume materiality threshold 200GJ for reducing the number of breaches of rule 37 that are processed through the compliance regime;

ii. the use of top down allocation using market shares be revisited in 12 months' time when more data will be available and the quality of the data may have improved;

iii. the reconciliation process be amended so that:

a. the production of the GGRPs is done before the initial submissions for GP4 and GP6 are processed; and

b. that retailers apply the resultant SADSVs before submitting the consumption information for GP4 and GP6 to the Allocation Agent;

iv. Gas Industry Co initiate a project to investigate the following issues related to the introduction of smart gas meters:

i. functional specification for smart gas meters;

ii. integration of smart gas meters into the advanced metering infrastructures being established;

iii. access provisions for gas utilities to existing smart meters with multi-utility capability to provide protection of access rights for gas utilities;

iv. management of data from multi-utility metering installations; and

v. a coordinated pilot study on dual fuel smart metering to determine the costs and potential benefits of such installations relative to single fuel installations;

v. a full cost benefit study be undertaken on the automation of the BPP system to enable the revision of transmission balancing charges; and

vi. the risks to Vector as the party managing the BPP should be examined, and the funding and governance arrangements reviewed, to investigate a clearing house approach to the balancing pool.

Contents

Introduction and purpose

1. The Gas Industry Company Limited ('Gas Industry Co') engaged Strata Energy Consulting Limited ('Strata') to undertake a review of:

    a) gas retailers' non–TOU consumption information forecasting methods and any associated key issues;

    b) estimation techniques in New Zealand's retail electricity sector and their associated accuracy;

    c) possible alternatives to the existing approaches of the gas retailers, intended to improve the accuracy of their consumption information submitted for the initial allocation; and

    d) at a high level, a possible financial wash-up arrangement for upstream gas balancing.

2. This report sets out the processes followed, the results of the review, and recommendations on changes to improve the accuracy of consumption estimates.

Background

3. Gas Industry Co has concerns about the accuracy of the estimated consumption information provided to the allocation agent for consumer installations in allocation groups (GP) 3 to 6 for the initial allocation of gas to retailers.

4. Prior to the beginning of each gas year, Gas Industry Co must, after consulting with allocation participants, determine and publish the percentage of error allowed for the accuracy of consumption information provided for initial allocation. This percentage is then applied to the consumption periods in the following gas year.

5. In making its determination, Gas Industry Co must have regard to the following matters:

    a) The primary aim of ensuring consumption information provided for initial allocation is as accurate as possible when compared with consumption information provided for final allocation;

    b) The extent to which retailers are able to comply with the percentage of error;

    c) Any expected costs that would be reasonably incurred by retailers to achieve compliance with the percentage of error; and

    d) Any other matter it considers relevant to its determination.

6. The percentage of error for the 2008-2009 gas year was set at 15%. Gas Industry Co has noted that there were 123 instances of retailers submitting consumption information which fell outside this accuracy threshold for the October period. The percentage of error for the 2009-2010 gas year has been set at 12.5%.

7. The accuracy of submissions is important because transmission balancing charges are based on the initial allocations at gas gates and there is no wash-up of these upstream balancing charges based on actual volumes.

Scope

8. The scope was to:

   a) Assist Gas Industry Co with reviewing gas retailers' consumption information forecasting methods, as described to Gas Industry Co by the gas retailers. This required:

      i. discussions with personnel from Gas Industry Co, gas retailers and the allocation agent;

      ii. review of forecasting accuracy based on analysis undertaken by Gas Industry Co using available historical information; and

      iii. consideration of the potential impact of switching activity on retailers' forecasting accuracy.

   b) Review estimation techniques in New Zealand's retail electricity sector and their associated accuracy.

   c) Examine possible alternatives to the existing regime, intended to improve the accuracy of gas retailers' consumption information submitted for the initial allocation, such as:

      i. changing the incentives for submitting accurate consumption information for the initial allocation;

      ii. scaling the allowable percentage of error for consumption information submitted for the initial allocation based on, for example, the number of ICPs at a gas gate; and

      iii. using 'top-down' gas gate forecasting and market share allocation rather than relying on the current 'bottom-up' approach.

   d) Examine a possible financial wash-up arrangement for upstream balancing (as opposed to a physical wash-up).

Definitions

9. The following definitions have been obtained, verbatim, from the Gas (Downstream Reconciliation) Rules 2008, and have the meanings stated unless the context otherwise requires.

allocation agent means the service provider appointed in accordance with rule 7.1 to be the allocation agent;

allocation group means an allocation group as set out in rule 6;

allocation participant means a retailer, distributor, meter owner, or transmission system owner;

consumption period means a month during which gas is supplied to consumers;

distributor means a gas distributor as defined in the Act and, to avoid doubt, may include the owner of a transmission system to which a consumer installation is directly connected;

final allocation means, in relation to a gas gate, the allocation of gas quantities in accordance with rule 45 in the month that is 13 months after the relevant consumption period;

gas gate means the point of connection between –
(a) a transmission system and a distribution system; or
(b) a transmission system and a consumer installation; or
(c) two gas distribution systems; or
(d) a group of gas gates, as determined and published by the industry body, treated as a single gas gate for the purposes of these rules;

GJ means gigajoule;

initial allocation means, in relation to a gas gate, the allocation of gas quantities in accordance with rule 45 in the month immediately after the relevant consumption period;

interim allocation means, in relation to a gas gate, the allocation of gas quantities in accordance with rule 45 in the month that is 4 months after the relevant consumption period;

meter means an instrument designed to measure the amount of gas passed through it;

retailer means a gas retailer as defined in the Act;
seasonal adjustment daily shape values (SADSV) means the total gas consumption (expressed as daily GJ values) published by the allocation agent in accordance with rule 53.1, for each gas gate, derived from each gas gate residual profile for all retailers at that gas gate for the previous 24 months in which allocations have been performed;

TOU meter means a meter which has an associated data logger to allow register readings or gas consumption to be recorded automatically at pre determined intervals;

TOU means time of use;

UFG means unaccounted for gas, including technical and non-technical losses or gains, being the difference between the amount of gas supplied to consumers at consumer installations through a gas gate and the gas injection amounts measured at the gas gate.

10. **Definition of Allocation Groups**

Allocation group 1 (GP1): Assigned to ICPs that have a TOU meter with telemetry and where actual gas quantities are recorded daily;

Allocation group 2 (GP2): Assigned to ICPs that have a TOU meter without telemetry and where actual gas quantities are recorded daily;

Allocation group 3 (GP3): Assigned to ICPs where the daily gas quantities are determined by application of an approved static deemed profile to monthly gas quantities taken from register readings that are required under rule 29 to be recorded monthly;

Allocation group 4 (GP4): Assigned to ICPs where the daily gas quantities are determined by application of the gas gate residual profile to monthly gas quantities taken from register readings that are required under rule 29 to be recorded monthly;

Allocation group 5 (GP5): Assigned to ICPs where the daily gas quantities are determined by application of an approved dynamic deemed profile to monthly gas quantities taken from register readings that are not required under rule 29 to be recorded monthly;

Allocation group 6 (GP6): Assigned to ICPs and where the daily gas quantities are determined by application of the gas gate residual profile to monthly gas quantities taken from register readings that are not required under rule 29 to be recorded monthly.

11. **Acronyms**

AGCL: Auckland Gas Ltd
BPP: Balancing and Peaking Pool
CTCT: Contact Energy Ltd
EDNZ: Energy Direct NZ Ltd
EGAS: E-Gas 2000 Ltd
EGLT: E-Gas Ltd
GENG: Genesis Energy Ltd
GEOL: Energy on Line Ltd
GGRP: Gas gate residual profile
GNGC: On Gas Ltd
GNVG: Nova Gas Ltd
MDL: Maui Development Ltd

MEEN: Mighty River Power Ltd
MPOC: Maui Pipeline Operating Code
SADSV: seasonal adjustment daily shape values

Part One: Electricity Industry and Gas Industry Rules comparison

12. This section compares the gas and electricity industry rules with regards to the submission and estimation of consumption information.

13. As the Gas (Downstream Reconciliation) Rules ('Gas Rules') were based on part J of the Electricity Governance Rules ('Electricity Rules') they are similar in their requirements. The table below outlines the comparison, the main differences being:

    a) The submission and revision cycles differ slightly and the electricity industry allows for a 13th day revision of all consumption periods in every month.

    b) In the gas industry the percentage error allowed between the initial and final submissions has been reduced from 15% to 12.5% from October 2009. The allowable error in the electricity industry between submissions is 15%. The electricity industry also has a materiality threshold of 100MWh before the percentage error is calculated (the materiality threshold is something that could be considered when reviewing the forecasting accuracy of initial submissions, as it could eliminate immaterial breaches of the Gas Rules – this is considered further later in this report).

    c) The reporting requirements differ for historical estimates in that the Electricity Rules set out the proportion of historical estimates required for each submission period and the electricity retailers report against the proportions. The Gas Rules only require that the final submission should contain no historical estimates.

GAS RULES (non TOU)	ELECTRICITY RULES (non half hour)
Allocation	**Reconciliation**
Interrogation (rule 29) 90% of all non TOU meters must have a validated register reading once every four months 100% of all non-TOU meters must have a register reading once every 12 months (except in unusual circumstances)	**Interrogation (rule5 of J2)** 90% of all non half hour meters must have a validated meter reading once every four months 100% of all non-half hour meters must have a register reading once every 12 months (except in unusual circumstances)
Provision of consumption information (rule 31) Initial - 4th business day following the consumption period Interim – 9th business day of the 4th month following the consumption period Final – 14th business day of the 13th month following the consumption period	**Provision of submission information (rule 4 of part J)** 4th business day of the reconciliation period submission information for immediate prior period Revision - 13th business day revised submission information for any consumption period J

GAS RULES (non TOU)	ELECTRICITY RULES (non half hour)
Submission cycle (rules 31, 32 and 33) Initial Allocation Interim Allocation 4 months Final Allocation 13 months	**Revision cycle (rule 11 of part J)** 1, 3, 7 or 14 months after the reconciliation period
Historic and forward estimates (rule 34) Historic estimates must be derived from validated register readings or permanent estimates. Forward estimates must be based on retailer's methodology	**Historical and forward estimates (rule 2.2 of J3)** Historical estimates must be derived from validated meter reading or permanent estimates Forward estimates based on retailer's methodology
Accuracy of submission for initial allocation (rule 37) Initial Allocation must be within 12.5% of Final Allocation, this has been reduced from 15%, which applied to September 2009.	**Accuracy of submission (rule 2.2.3 of J3** ensure accuracy of initial submission information against each subsequent revision cycle is within 15%
Reporting (rule 40) 1st business day of each month; proportion by volume of historic estimates in consumption information for the previous initial, interim and final allocation for groups 3 to 6. 10th business day of October: number and percentage of validated register readings obtained from: • consumer installations with non-TOU meters supplied continuously for 12 months, which must have register readings recorded once every 12 months; • consumer installations with non-TOU meters supplied continuously for 4 months, 90% of which must have validated register readings at least once every 4 months. -	**Reporting** **(rule 4 of J3)** on 13th business day of each reconciliation period report the proportion of historical estimates per NSP within its non half hour submission information, which must be at least 80% at the month 3 revision at least 90% at the month 7 revision 100% at the month 14 revision (except in unusual circumstances) **(rules 5.4.1 and 5.5.1 of J2)** 20 business days after month end reconciliation participant must report on: • percentage, which should be 100%, of ICPs from which consumption information was collected and reported in the previous 12 month period • percentage of the ICPs, which should be 90%, from which consumption information was collected and reported in previous 4 months • percentage of non half hour meter interrogations on a rolling 4 month basis, within that period

Part Two: Current accuracy

Introduction

14. This section:

    a) examines breaches of the Gas Rules regarding consumption estimates between October 2008 and 2009 and how they varied across the year;

    b) looks at materiality and how the value of breaches compares to the number of breaches as a hypothetical threshold is increased; and

    c) compares the gas and electricity industries in terms of breaches.

Breaches for the year October 2008 to September 2009

15. Gas Industry Co provided details on the submission information available from the GAR170 report for January 2010 and also an internal analysis of the submissions. The following analyses are based primarily on the information obtained from these reports.

16. The submissions contained in the reports were the initial submissions from October 2008 through to September 2009, the interim submissions from December 2008 to September 2009, and final submissions for October and November 2008. Additional information on breaches has become available and the total number of breaches resulting from the final submissions from October 2008 to March 2009 is shown, for information, in Table 1 and Graph 1. Further analysis is based on information available as at January 2010.

17. A breach of rule 37 occurs when the initial submission varies from the final submission by more than 15%. The table below shows the number of breaches for the period October 2008 to September 2009 and the number of breaches under and over the 15% threshold per month. The months from October 2008 to March 2009 use final submission data and the remainder use interim submission data. The interim data indicates that there is potential for a breach if the final submission data is unchanged from the interim submission data.

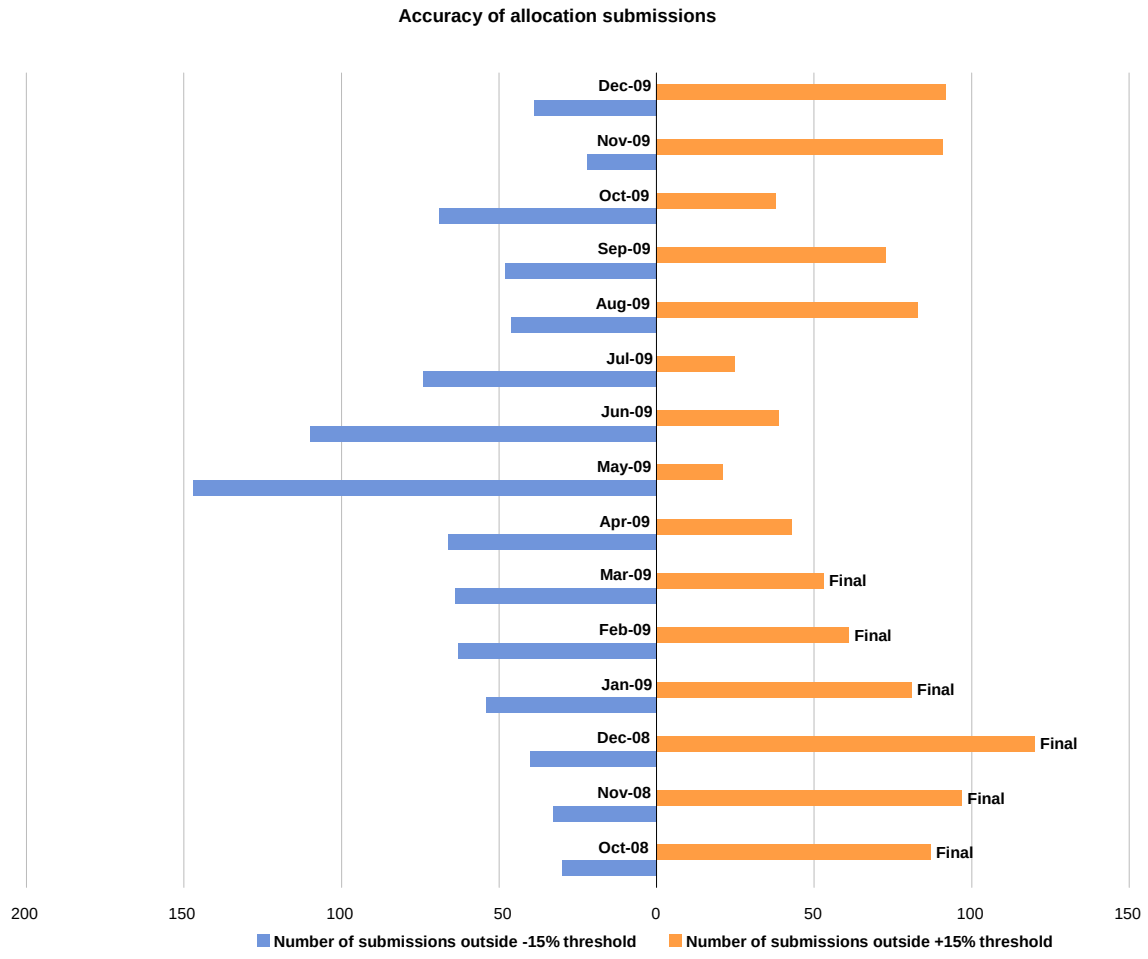
18. It is interesting to note that the breaches relating to errors over the 15% threshold are highest in the Spring and Summer months while the error relating to breaches where the submitted volumes were less than the final (or interim) quantities by more than 15% (i.e. under the threshold) were highest in the Winter months. This seasonal effect indicates that temperature has a significant impact on the actual quantities consumed.

Table 1: Breaches and potential breaches for the year October 2008 to September 2009 (denotes final)*

Month	Under threshold	Over threshold	Total Breaches	Total submissions
Oct-08	30	87	117*	387
Nov-08	33	97	130*	388
Dec-08	40	120	160*	391
Jan-09	54	81	135*	397
Feb-09	63	61	124*	410
Mar-09	64	53	117*	413
Apr-09	66	43	109	414
May-09	147	21	168	418
Jun-09	110	39	149	434
Jul-09	74	25	99	432
Aug-09	46	83	129	436
Sep-09	48	73	121	438

19. The graph below represents the data in Table 1 above.

Graph 1: Accuracy of allocation submissions



Materiality[2]

20. As noted above, the Electricity Rules use a materiality threshold volume for the initial submissions to eliminate immaterial breaches from the report.

21. To determine whether a similar approach might be a viable option for the gas industry, the submission volumes and number of breaches for the consumption periods of October 2008 to September 2009 have been analysed.

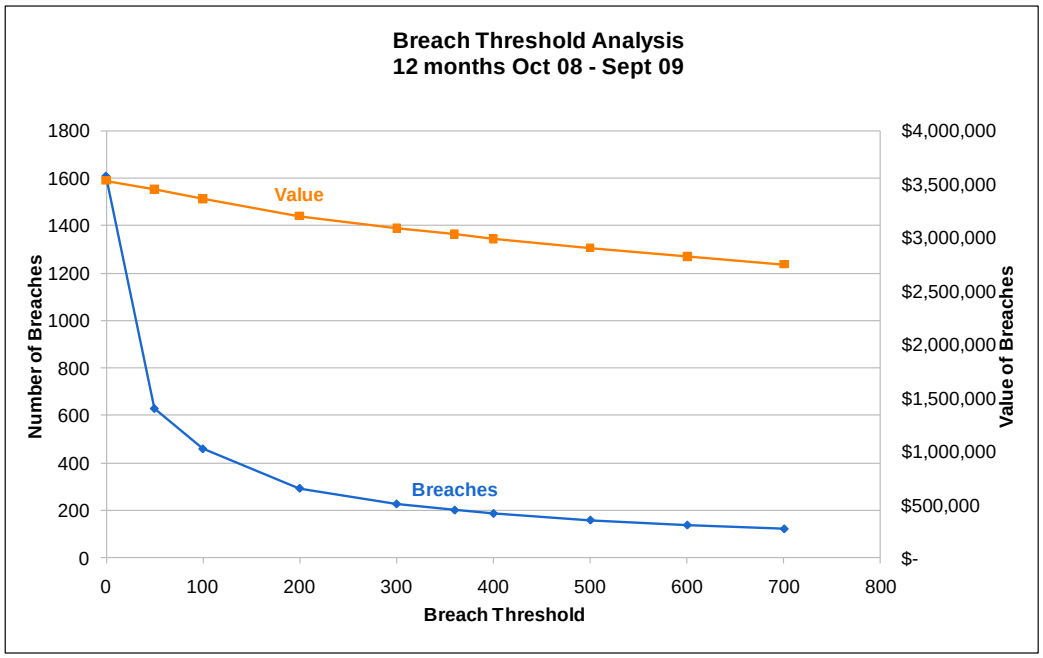
22. A large number of breaches occur that involve relatively low volumes and monetary values. This observation may support the case for applying a minimum volume threshold for investigating the breaches of the accuracy requirement under rule 37 of the Gas Rules. With a minimum volume threshold, the more significant breaches will still be identified but those of a lesser value will not, therefore reducing the overall time and cost of investigation.

23. In this analysis, the materiality threshold has been applied to the difference between initial consumption submission for GP 4 and GP 6 and final submissions (where available) or interim submissions for each retailer at each gas gate. A gas price of $7/GJ has been used to estimate the value of each breach.

24. Graph 2 shows the relationship between breach thresholds, number of breaches, and total breach values for the 12 consumption months ending September 2009. It illustrates the rapid non-linear decrease in the number of breaches as the threshold is increased to approximately 300GJ. After that point, the reduction tends to be more linear. Total breach value, in contrast, declines much more slowly. Therefore, applying a threshold of some sort would eliminate a large amount of immaterial breaches while largely preserving the overall value of the breaches for determination and investigation.

[2] The extensive input and advice received from Pam Caird and Andrew Walker of Gas Industry Co on this section is gratefully acknowledged.

Graph 2: Breach threshold analysis



25. Three volume levels for the materiality of breaches have been examined, 50GJ, 360GJ and 500GJ. These levels were based on suggestions from retailers. The 360GJ is equivalent to the 100MWh threshold used in the electricity industry. Using a gas price of $7/GJ the financial impact (value) of breaches has been calculated.

26. Table 2 shows the number and value of breaches for each month decreasing as the threshold is increased from 50GJ to 500GJ. For example, a 360GJ threshold for May 2009 eliminates over three-quarters of the breaches (from 168 to 39), but retains over 92% of the breach values (from $791,194 to $729,018). Increasing the threshold further to 500GJ would eliminate over 80% of breaches and retain 89% of breach value.

Table 2: Volume materiality thresholds

Month	Number of Breaches				Value of Breaches			
	0GJ	50GJ	360GJ	500GJ	0GJ	50GJ	360GJ	500GJ
Oct-08	117	44	12	10	$235,226	$228,151	$193,918	$188,006
Nov-08	130	44	13	9	$146,048	$138,804	$106,715	$93,949
Dec-08	132	47	14	11	$169,294	$160,933	$126,532	$117,339
Jan-09	140	50	10	5	$152,362	$145,668	$107,505	$92,769
Feb-09	118	36	8	6	$116,003	$109,770	$84,260	$78,275
Mar-09	114	38	12	11	$306,298	$301,255	$275,174	$271,935
Apr-09	109	43	12	11	$106,803	$101,572	$73,306	$70,403
May-09	168	86	39	31	$791,194	$782,911	$729,018	$705,376
Jun-09	149	79	26	20	$348,648	$343,620	$289,061	$272,437
Jul-09	99	44	22	18	$455,590	$450,672	$428,516	$416,432
Aug-09	129	55	14	14	$498,810	$492,509	$455,539	$455,539
Sep-09	121	43	13	8	$181,629	$176,090	$148,197	$132,889

27. Table 3 repeats the data from Table 2, but shows the data in percentages.

Table 3: Percentage remaining of number of breaches or potential breaches and their value at each threshold level

Month	Number of breaches			Value of breaches		
	50GJ	360GJ	500GJ	50GJ	360GJ	500GJ
Oct-08	38%	10%	9%	97%	82%	80%
Nov-08	34%	10%	7%	95%	73%	64%
Dec-08	36%	11%	8%	95%	75%	69%
Jan-09	36%	7%	4%	96%	71%	61%
Feb-09	31%	7%	5%	95%	73%	67%
Mar-09	33%	11%	10%	98%	90%	89%
Apr-09	39%	11%	10%	95%	69%	66%
May-09	51%	23%	18%	99%	92%	89%
Jun-09	53%	17%	13%	99%	83%	78%
Jul-09	44%	22%	18%	99%	94%	91%
Aug-09	43%	11%	11%	99%	91%	91%
Sep-09	36%	11%	7%	97%	82%	73%
Average	39%	13%	10%	97%	81%	77%

28. The marginal impact of different threshold levels on breaches from the 12 consumption months to September 2009 is summarised in the table below. With this dataset, it appears that a 360 GJ threshold is the first point at which the percentage of breaches eliminated is equal to the percentage of value eliminated. At 200GJ, 82% of the breaches have been eliminated and only 9% of the value.

Table 4: Elimination of value as threshold increases

Threshold (GJ)	Breaches eliminated	Value eliminated
50	61%	2%
100	11%	2%
200	10%	5%
300	4%	3%
360	2%	2%
400	1%	1%
500	2%	2%
600	1%	2%
700	1%	2%

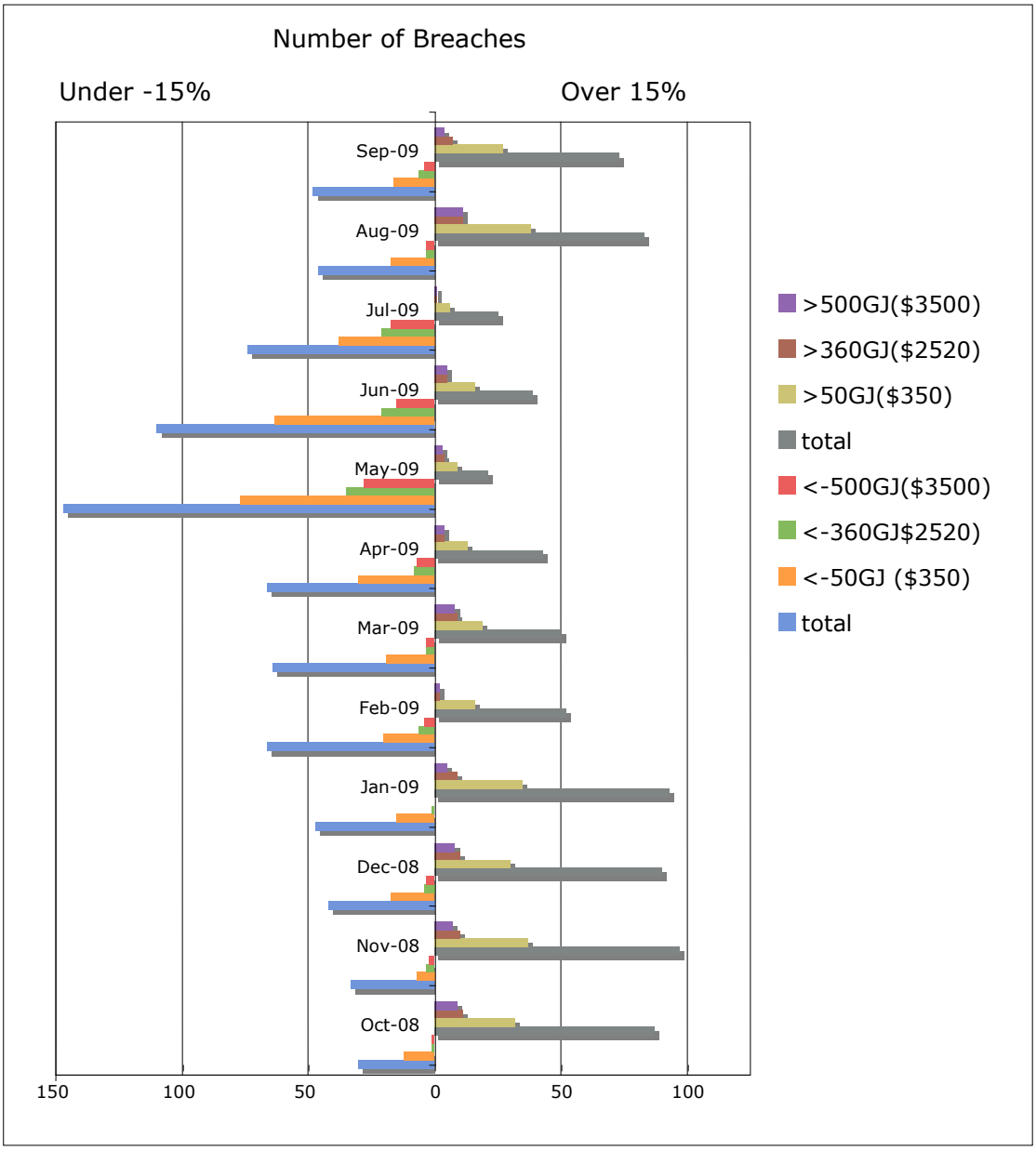
29. Given that the 360GJ threshold is also consistent with that used in the Electricity Rules, albeit slightly differently as the threshold is applied to the submission volumes, the 360GJ threshold could be adopted to reduce the number of breaches which should be considered for compliance investigation.

30. The threshold could either be applied to the initial submission volumes, as per the Electricity Rules, or to the error quantities. This analysis has been based on applying the threshold to the error quantities as this enables immaterial error quantities to be eliminated from the compliance process no matter how large the submission volume[3].

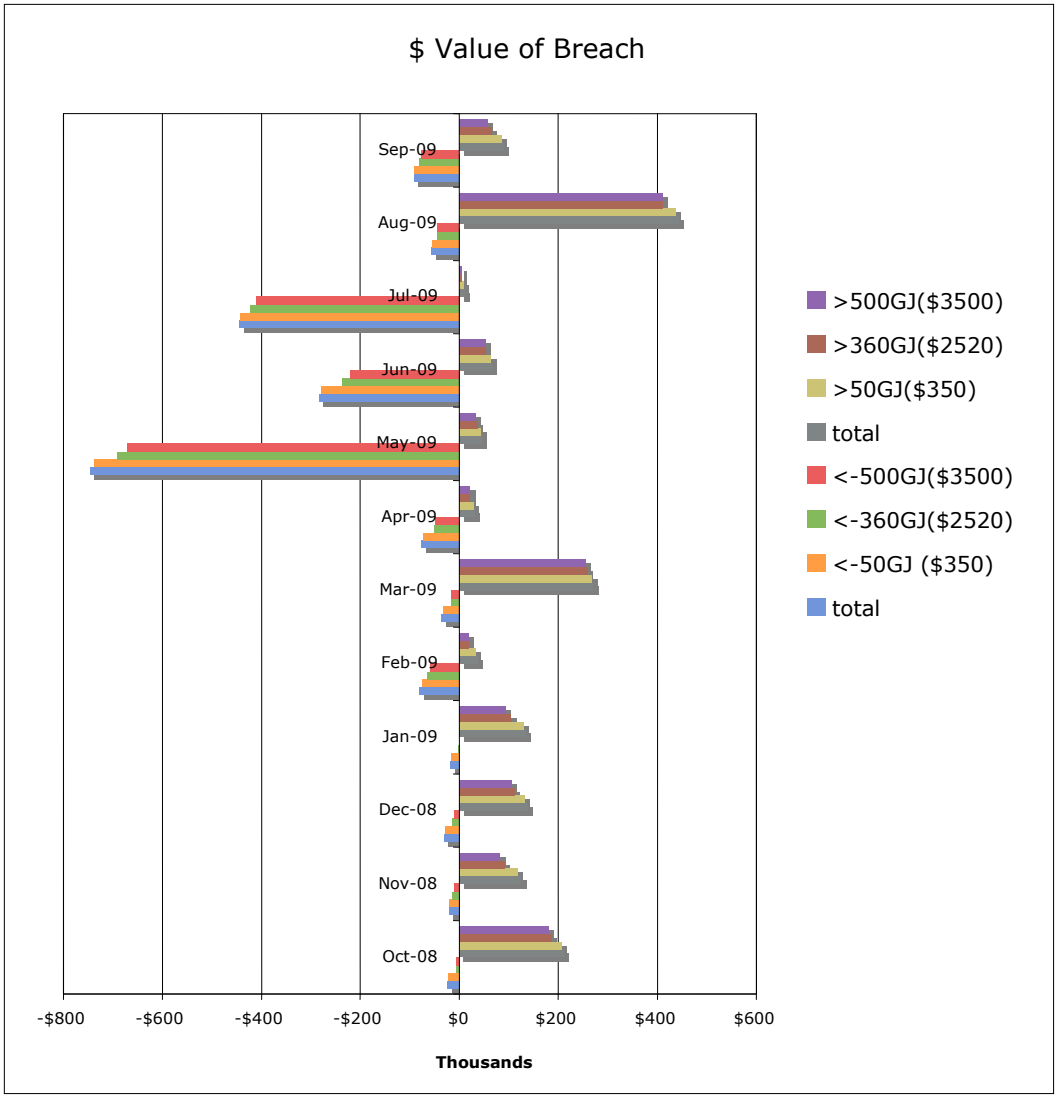
31. Graphs 3 and 4 illustrate the changes in the numbers and values of the breaches respectively with different materiality thresholds applied.

[3] Applying the threshold to the submission volume would not, for example, eliminate a 200GJ error in a 1000GJ submission.

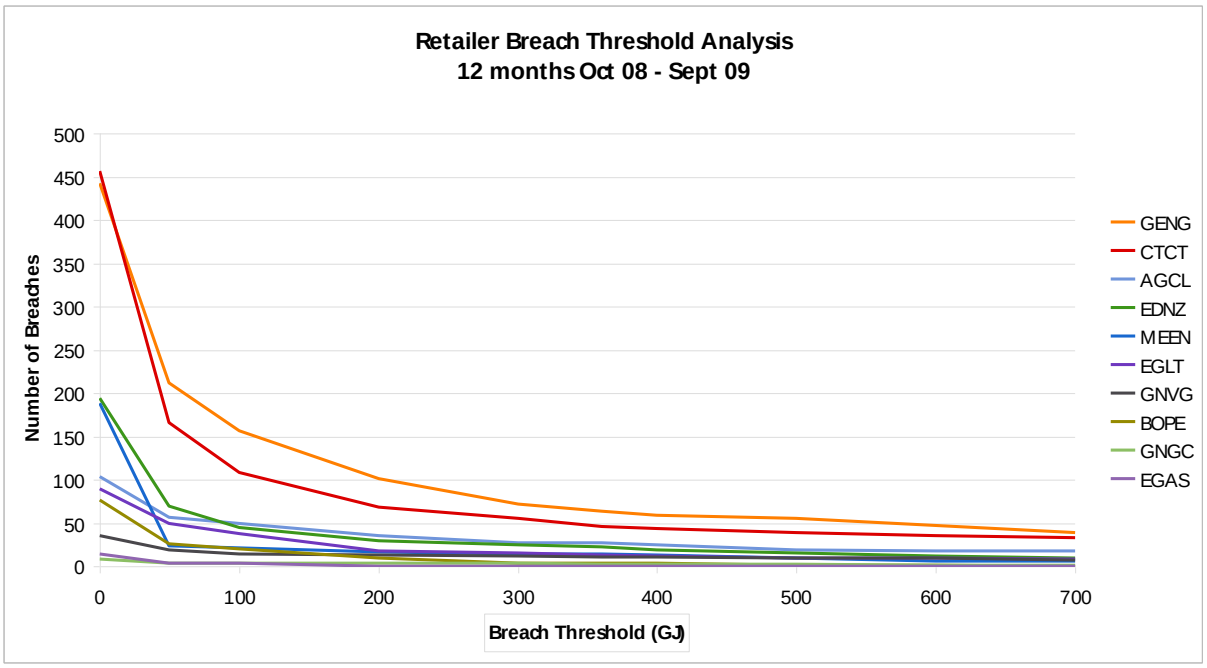
Graph 3: Number of breaches



Graph 4: Value of breaches



Graph 5: Breach threshold analysis



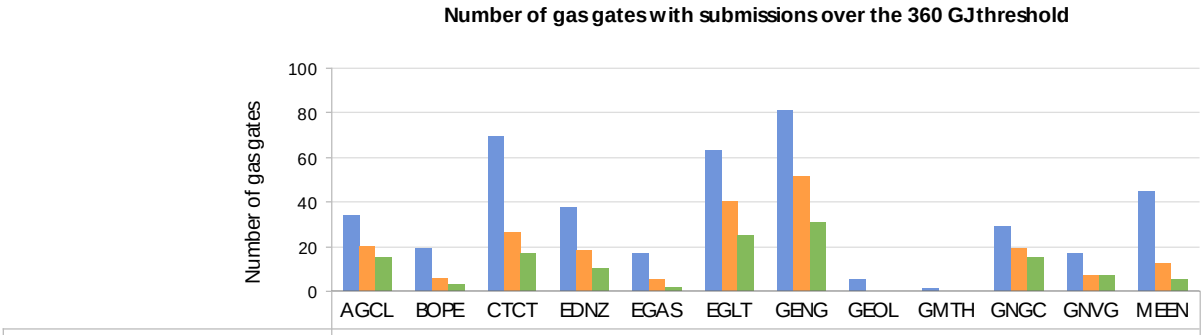
32. Graph 5 illustrates for each retailer the impact on the number of breaches that would be considered for varying breach threshold quantities. It can be seen that from 200GJ, most retailers see significant reductions in the number of breaches.

33. Using a 360GJ threshold would presumably mean that gates where submissions are less than 360GJ would never be subject to breach. A total of 417 consumption submissions were received for December 2009. In July 2009 (the highest consumption month for which there is allocation information), less than half of consumption submissions (204 or 49%) were for quantities over 360 GJ. In the lightest consumption month (February 2009), only 130 submissions (31%) were greater than 360 GJ. This effect is shown in graph 6 below.

34. The question arises whether implementing a 360GJ threshold would provide a perverse incentive on retailers to become less accurate in their submissions where consumption quantities are small. Would retailers concentrate on the accuracy of the 200 or so sizable submissions at the expense of accuracy on the small submissions? And would such an action be desirable, from the regulator's perspective?

35. While small retailers would benefit from this change, as they would become less at risk of being investigated for accuracy breaches, an analysis of the reconciliation data shows that large retailers are also likely to benefit to a similar extent.

Graph 6: Gas gates with submissions over 360GJ



	AGCL	BOPE	CTCT	EDNZ	EGAS	EGLT	GENG	GEOL	GMTH	GNGC	GNVG	MEEN
no threshold (as at Dec 09)	34	19	69	37	17	63	81	5	1	29	17	45
360 GJ threshold high consumption month (Jul 09)	20	6	26	18	5	40	51		0	19	7	12
360 GJ threshold low consumption month (Feb 09)	15	3	17	10	2	25	31			15	7	5

36. These results suggest another possible perverse incentive that a 360GJ threshold might create. Retailers might be incentivised to keep as many of their consumption submissions as possible under the threshold, as a way of avoiding potential compliance actions under the Gas Rules. Such an incentive would run counter to Gas Industry Co objectives of promoting retail competition: if a retailer was close to the threshold at a particular gas gate, potentially, it would be disincentivised to acquire new customers at that gas gate, if the cost of compliance were to be higher than the benefits from additional customers.

37. One way of handling the apparent disadvantages of the 360GJ threshold might be to reduce the threshold to the point where the threshold is low enough to provide a meaningful reduction in immaterial breaches but does not incentivise retailers to be less accurate with their total submission or be inclined to limit their marketing efforts.

38. Examination of the relative number and value of breaches indicates that a threshold from 200GJ will have a significant impact on the number of breaches and will also capture a large proportion of the higher value breaches. This applies to the pattern of individual retailers for the number of breaches as can be seen in Graph 5. Annexure 4 shows the impact of the threshold on both the value and number of breaches for individual retailers.

39. There is therefore a range between 200GJ and 360GJ that would achieve the aim of reducing the number of breaches without discarding breaches that would be material in terms of their value. The selection of the threshold would depend on the value of gas and the accuracy requirement used in terms of rule 37.

40. A threshold of 200GJ would appear to reduce the number of breaches and would not lead to breaches with a significant value being ignored. Consequently, it is recommended that this lower value be used as the threshold.

Recommendation

It is recommended that Gas Industry Co introduces a volume materiality threshold of 200GJ for reducing the number of breaches of rule 37 that are processed through the compliance regime.

Comparison between the Electricity and Gas Industries

41. The Electricity Rules provide for a report to be issued by the Reconciliation Manager each month on the accuracy of submissions. This report, GR – 170, compares the initial submissions with subsequent revisions thereby providing an analysis of the initial submission quality. The Reconciliation Manager only reports where the purchaser's total monthly submission is greater than the submission accuracy threshold parameter.[4]

42. The Electricity Commission provided amended GR – 170 reports for the months January to September 2009. Unfortunately, the volumes for the submissions could not be provided and its report on the percentage differences between submissions used a 0MWh threshold and not the 100MWh threshold used to determine breaches. It was therefore not possible to determine the impact of the materiality threshold in reducing the number or financial value of the breaches.

43. The number of breaches per month per submission was compared between the electricity and gas industries. The data received on electricity breaches contained a number of cases where the percentage errors were based on 0 value submissions and 100% variation. These were removed to present the information more clearly.

44. Table 5 shows the level of electricity industry breaches and the percentage of the submissions that were in breach of the allowable accuracy requirement of ±15%. Table 6 shows the same set of data for the gas industry.

Table 5: Electricity industry breaches (no threshold)

Month	Total breaches	Total submissions	% Breaches of total submissions
Jan-09	200	1203	17%
Feb-09	182	1224	15%
Mar-09	186	1237	15%
Apr-09	226	1237	18%
May-09	464	1269	37%
Jun-09	350	1281	27%
Jul-09	175	1296	14%
Aug-09	178	1300	14%
Sep-09	188	1302	14%

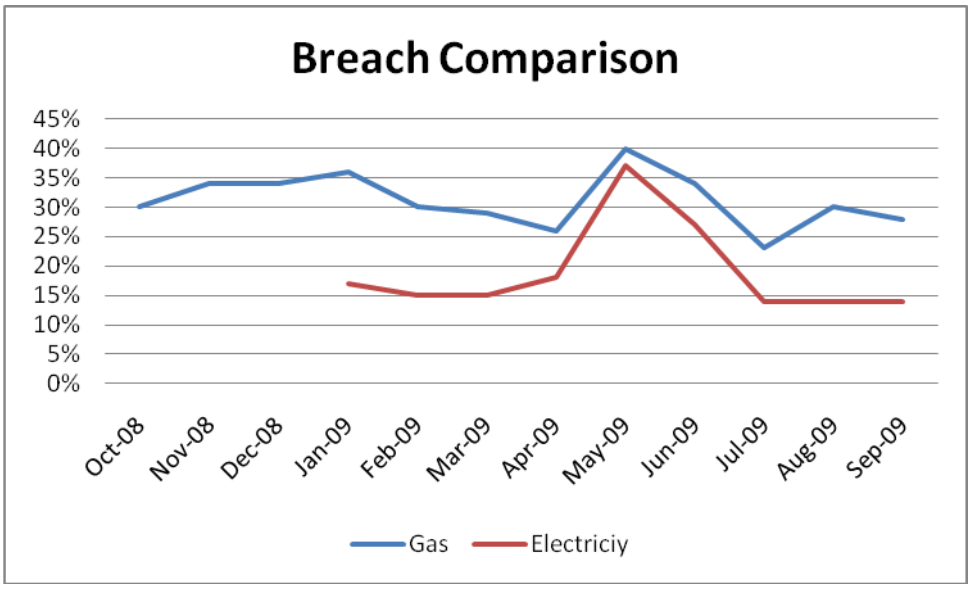
[4] Reconciliation Manager functional specification

Table 6: Gas industry breaches (no threshold)

Month	Total Breaches	Total expected submissions	% Breaches of total submissions
Oct-08	117	387	30%
Nov-08	130	388	34%
Dec-08	132	388	34%
Jan-09	140	391	36%
Feb-09	118	391	30%
Mar-09	114	391	29%
Apr-09	109	414	26%
May-09	168	418	40%
Jun-09	149	434	34%
Jul-09	99	432	23%
Aug-09	129	436	30%
Sep-09	121	436	28%

45. Graph 7 illustrates that with no materiality threshold, the gas industry breaches are much higher than their electricity industry counterparts for comparable months except over the months of May and June 2009.

Graph 7: Comparison between electricity and gas breaches



46. Because the information available is for such a short period it is not possible to conclude that the gas industry is less accurate than the electricity industry in respect of the quality of submissions on a general basis. More information is required to conduct a detailed analysis but there is a short term indication that this is the case.

Part three: Improvements to submission estimation

Introduction

47. This section:

    a) identifies ways to improve the estimation of volumes in the initial submission of consumption information each month;

    b) considers whether the 'top down approach' could be used to predict gas usage (i.e. where market share is used to predict gas usage by applying each retailer's market share to the residual quantities at each gas gate in order to estimate the quantities to be allocated); and,

    c) recommends that:

    - the top down approach as a way of allocating gas gate residual volumes be revisited in 12 months' time when more data will be available and the quality of the data can be expected to have improved; and

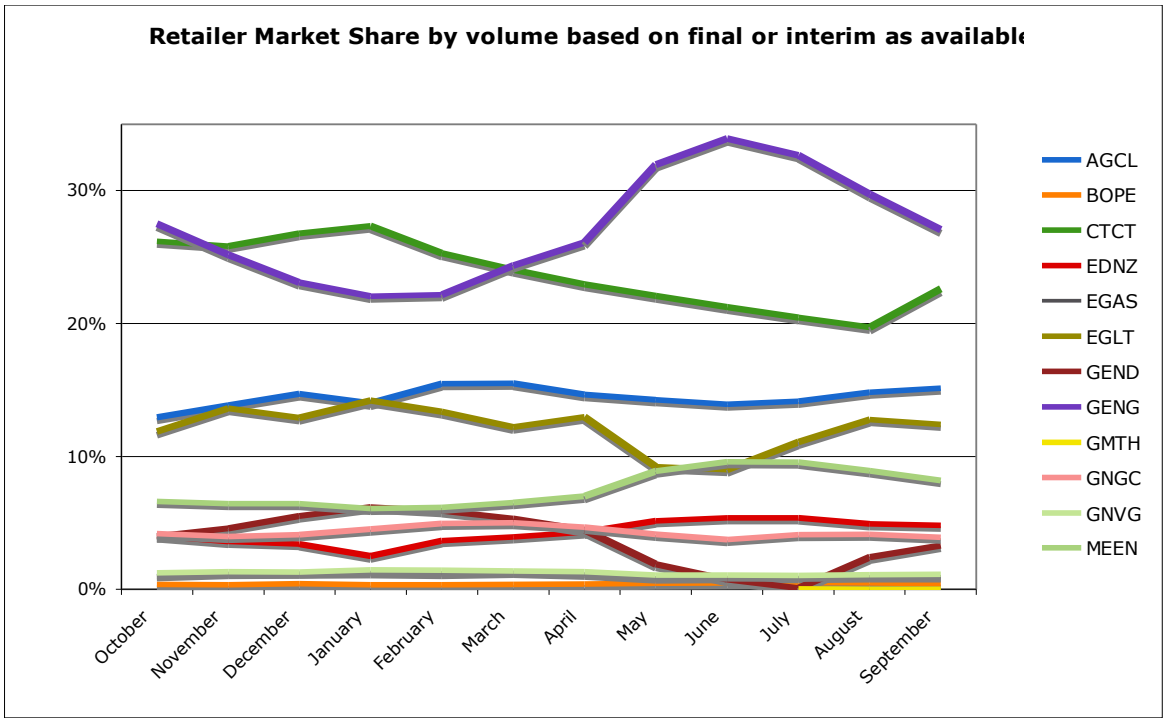
    - incentives to encourage an increase in the frequency of meter reading by the large mass market retailers be investigated.

48. A market share analysis, based on both volume and number of ICPs, was also carried out to check whether there was any correlation between market share and the number of breaches.

Market share by volume

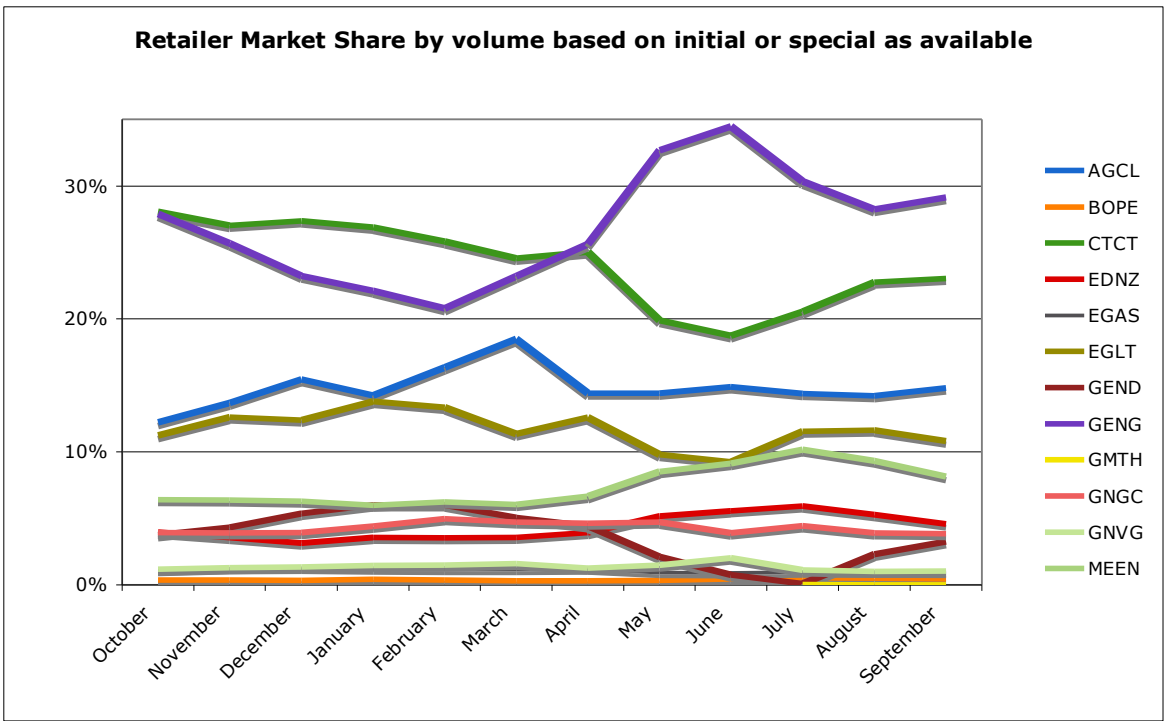
49. Graph 8 shows the market share by volume for each retailer across all gas gates – this was calculated using the volumes available from the interim or final submissions over the period October 2008 to September 2009.

Graph 8: Retailer Market Share by volume based on final or interim as available



50. Market share has remained fairly constant until March and April when it changed, and then remained constant again for the rest of the year. Similar patterns were present in the initial submissions as shown in Graph 9.

Graph 9: Retailer Market Share by volume based on initial or special as available



51. The rate of change of market share indicates that there was a significant amount of volatility over the period. Due to the volatility of the individual market shares and the fact that there are few final submission months, it is difficult to make any useful projections using market share. Further analysis was done at the gas gate level to ascertain if there was potential to apply market shares to the residual volumes to improve the accuracy of initial submissions.

Gas Gate level top down approach

52. Five gates were chosen to examine whether it was feasible to use a top down approach and apply the market share of each retailer to allocate the residual quantities (after the TOU quantities had been allocated) at each gate.

53. The following approach was applied:

- A four month average of the GP3-6 Market Share for each was calculated at each gas gate as shown in Table 7.

- The gas gate injection quantity was identified and the GP1 and GP2 volumes for the gas gate were deducted from this. The GP3-6 four month market share average was applied to the residual gas volume. This figure was then used as the predicted initial submission volume and compared to the final submission to see if it resulted in a reduction of the number of breaches.

54. Table 8 shows that there was an increase from 30 to 45 breaches.

Table 7: Gas Gate Market Share based on Final Submissions

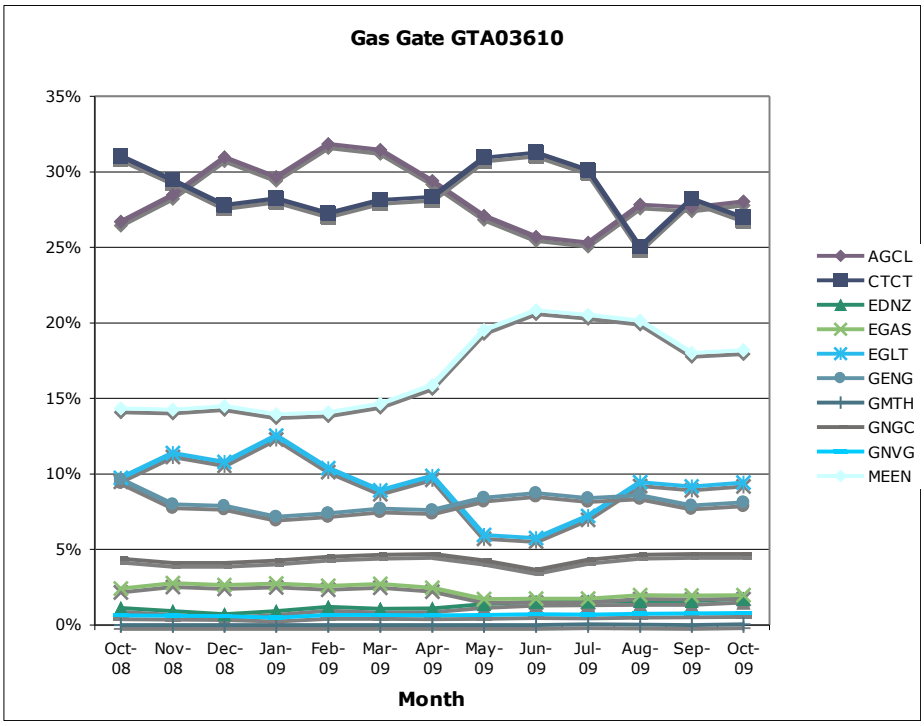
Gas Gate	Allocation Participant	Oct-08	Nov-08	Dec-08	Jan-09	lowest	highest	difference	4 month Average
BEL24510	AGCL	9.8%	12.1%	12.2%	12.3%	9.8%	12.3%	2.6%	11.6%
	CTCT	6.1%	5.9%	5.6%	5.3%	5.3%	6.1%	0.8%	5.7%
	EDNZ	1.0%	1.1%	0.8%	0.7%	0.7%	1.1%	0.4%	0.9%
	EGAS	0.1%	0.2%	0.2%	0.3%	0.1%	0.3%	0.2%	0.2%
	EGLT	11.2%	12.1%	13.5%	16.4%	11.2%	16.4%	5.2%	13.3%
	GENG	63.1%	60.3%	59.2%	57.3%	57.3%	63.1%	5.8%	60.0%
	GNGC	1.0%	1.2%	1.2%	1.2%	1.0%	1.2%	0.2%	1.1%
	GNVG	3.4%	3.3%	3.3%	2.5%	2.5%	3.4%	0.9%	3.1%
	MEEN	4.2%	4.0%	4.1%	4.0%	4.0%	4.2%	0.2%	4.1%
GTA03610	AGCL	27.4%	28.3%	29.9%	29.7%	27.4%	29.9%	2.5%	28.8%
	CTCT	31.5%	29.3%	28.0%	27.1%	27.1%	31.5%	4.5%	29.0%
	EDNZ	1.1%	0.9%	0.7%	0.9%	0.7%	1.1%	0.5%	0.9%
	EGAS	2.2%	2.6%	2.7%	2.6%	2.2%	2.7%	0.4%	2.5%
	EGLT	9.5%	11.9%	11.7%	12.7%	9.5%	12.7%	3.2%	11.5%
	GENG	8.3%	8.0%	7.9%	7.5%	7.5%	8.3%	0.8%	7.9%
	GNGC	4.5%	4.1%	4.1%	4.6%	4.1%	4.6%	0.5%	4.3%
	GNVG	0.7%	0.6%	0.6%	0.5%	0.5%	0.7%	0.2%	0.6%
	MEEN	14.8%	14.2%	14.5%	14.5%	14.2%	14.8%	0.5%	14.5%
GTW06910	AGCL	4.8%	5.4%	5.3%	5.8%	4.8%	5.8%	1.0%	5.3%
	CTCT	7.3%	7.5%	8.3%	8.0%	7.3%	8.3%	1.1%	7.8%
	EDNZ	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	EGAS	0.1%	0.2%	0.2%	0.4%	0.1%	0.4%	0.3%	0.3%
	EGLT	13.4%	14.6%	13.7%	14.5%	13.4%	14.6%	1.2%	14.0%
	GENG	69.3%	67.0%	66.5%	65.6%	65.6%	69.3%	3.7%	67.1%
	GNGC	0.5%	0.6%	0.9%	1.0%	0.5%	1.0%	0.5%	0.7%
	GNVG	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	MEEN	4.6%	4.6%	5.0%	4.7%	4.6%	5.0%	0.3%	4.7%
GTW33901	AGCL	11.2%	15.7%	9.5%	12.7%	9.5%	15.7%	6.2%	12.3%
	CTCT	12.6%	8.7%	4.2%	8.5%	4.2%	12.6%	8.4%	8.5%
	EGAS	0.9%	1.0%	1.2%	0.4%	0.4%	1.2%	0.8%	0.9%
	EGLT	5.8%	8.8%	10.7%	8.4%	5.8%	10.7%	4.8%	8.4%
	GENG	52.3%	48.7%	57.4%	54.0%	48.7%	57.4%	8.7%	53.1%
	MEEN	17.2%	17.1%	17.0%	16.1%	16.1%	17.2%	1.1%	16.8%
TWA35610	AGCL	8.6%	9.2%	10.8%	12.9%	8.6%	12.9%	4.2%	10.4%
	CTCT	37.5%	35.2%	32.9%	30.0%	30.0%	37.5%	7.4%	33.9%
	EDNZ	1.0%	0.7%	0.3%	1.2%	0.3%	1.2%	0.8%	0.8%
	EGAS	0.7%	0.9%	1.1%	1.4%	0.7%	1.4%	0.7%	1.0%
	EGLT	14.0%	16.8%	16.8%	17.8%	14.0%	17.8%	3.8%	16.3%
	GENG	26.3%	25.9%	26.9%	25.5%	25.5%	26.9%	1.5%	26.2%
	GNGC	5.4%	5.1%	4.8%	5.0%	4.8%	5.4%	0.7%	5.1%
	GNVG	1.7%	1.9%	2.1%	2.0%	1.7%	2.1%	0.4%	1.9%
	MEEN	4.7%	4.4%	4.3%	4.3%	4.3%	4.7%	0.4%	4.4%

Table 8: Table showing comparison of number of breaches

Gas Gate	Allocation Participant	Total breaches	Total breaches using predicted initial submission
BEL24510	AGCL	1	1
	CTCT	4	0
	EDNZ	1	2
	EGAS	0	3
	EGLT	0	2
	GENG	3	0
	GNGC	0	1
	GNVG	2	1
	MEEN	2	0
GTA03610	AGCL	0	0
	CTCT	0	0
	EDNZ	1	2
	EGAS	0	1
	EGLT	0	1
	GENG	1	0
	GNGC	0	0
	GNVG	0	1
	MEEN	0	0
GTW06910	AGCL	3	0
	CTCT	1	0
	EDNZ	0	0
	EGAS	0	2
	EGLT	0	0
	GENG	0	0
	GNGC	0	3
	GNVG	0	1
	MEEN	4	0
GTW33901	AGCL	1	4
	CTCT	2	1
	EGAS	1	2
	EGLT	0	2
	GENG	0	2
	MEEN	0	1
TWA35610	AGCL	0	3
	CTCT	2	1
	EDNZ	1	4
	EGAS	0	2
	EGLT	0	1
	GENG	0	0
	GNGC	0	0
	GNVG	0	1
	MEEN	0	0
Total		**30**	**45**

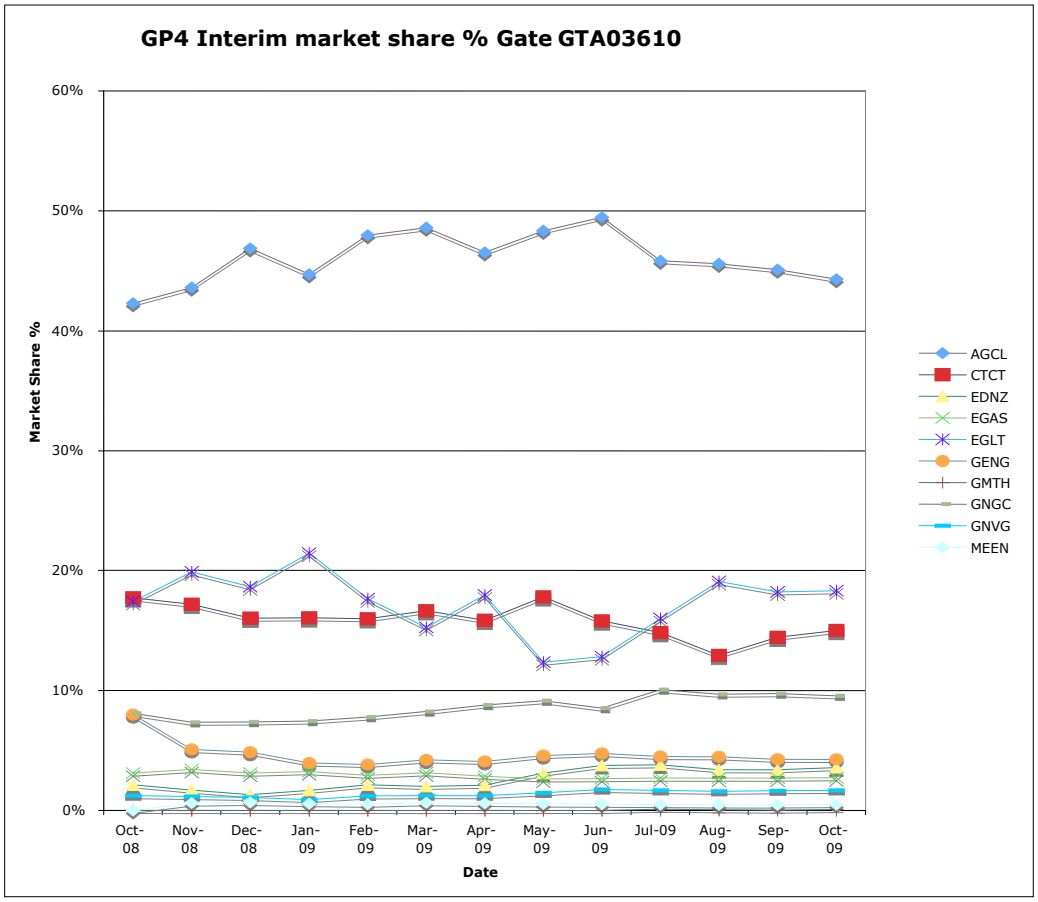
55. The interim market share was examined over the period from October 08 to September 09. Market shares at gate GTA03610, shown in Graph 10, illustrate that the market share is volatile and may not be consistent enough to be used for prediction. The graphs showing the market share trends for the other four gates are in Annexure 1 and show the same inconsistency.

Graph 10: GPs 3-6 Market Share Gate GTA03610

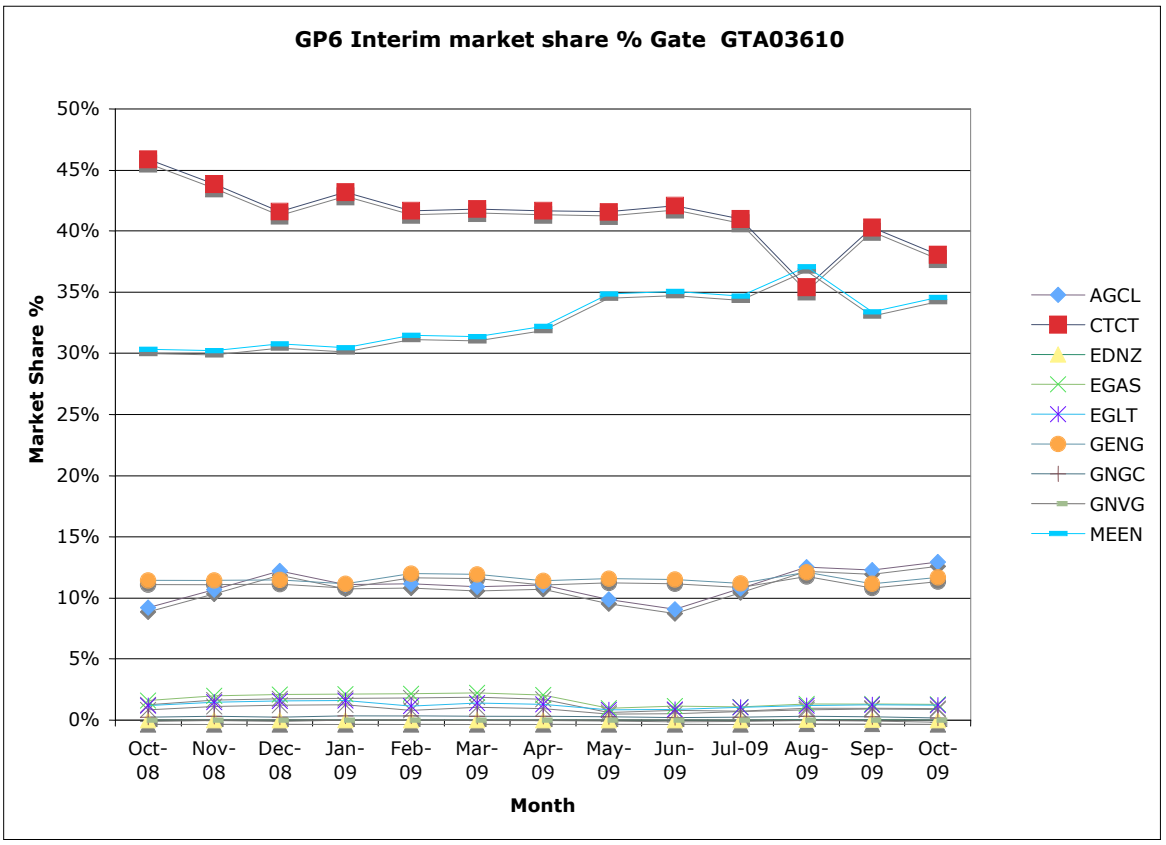


56. It was considered that analysing the market share after disaggregating to GP4 and GP6 at gas gates might show some correlation with the seasonality of the gas market. The same five gates as above were used. The market share was broken down into GP4 and GP6 and plotted. Graphs 11 and 12 below show that there is no correlation and again highlights the inconsistency in market share. The remainder of the graphs are in Annexure 1 and show the same level of inconsistency.

Graph 11: GP4 Market Share Gate GTA03610



Graph 12: GP6 Market Share Gate GTA03610



57. In summary, the analysis indicates that gas gate market share varied considerably over the 4 months for which there was data, and it is therefore likely to be too variable to implement a top down approach to allocate gas gate residual volumes to retailers.

58. It is possible that October 2008 market share could be applied to October 2010 residual quantities for a more accurate prediction. However, this data is as yet unavailable.

Recommendation

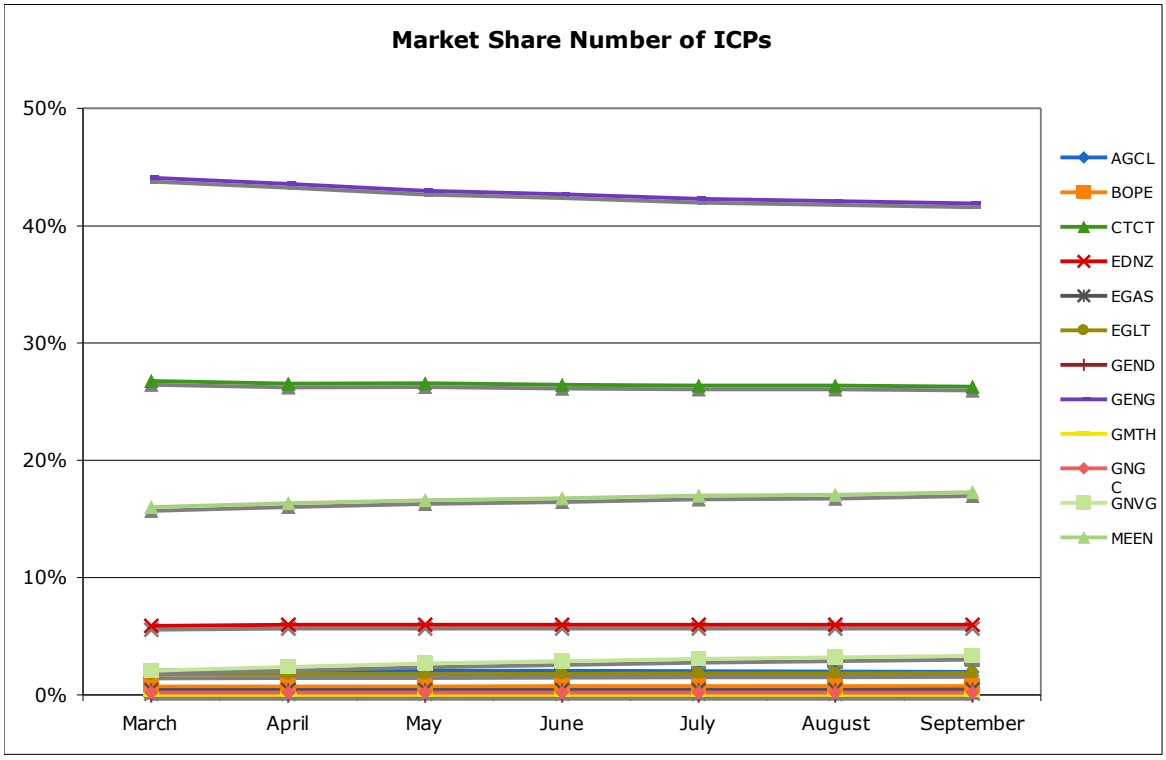
59. It is recommended that the top down approach as a way of allocating gas gate residual volumes be revisited in 12 months' time when more data will be available and the quality of the data can be expected to have improved.

Market Share by ICPs

60. The market share by number of installations (ICPs) was examined and this indicated that the market share by ICP for each retailer is significantly less volatile than the market share by volume. It was also observed that some of the larger retailers are showing a downward trend in terms of this measure of market share. This may predominantly be due to data cleansing in which ICPs incorrectly labelled as active have been reassigned to inactive.

61. However, the stable nature of the overall ICP market shares was not reflected at all the gas gates and it was concluded that applying ICP market shares to residual volumes would not improve the accuracy of the initial volumes.

Graph 13: Market Share Number of ICPs



Market Share vs. Proportion of Breaches

62. The proportion of breaches for each retailer was compared with retailer market share of the GP4 and GP6 consumers to see if there was a correlation.

Table 9: Comparison of market share by volume and share of breaches

	AGCL	BOPE	CTCT	EDNZ	EGAS	EGLT	GEND	GENG	GMTH	GNGC	GNVG	MEEN
Average market share by volume	14%	0%	23%	4%	1%	12%	4%	26%	0%	4%	4%	7%
Average share of breaches	6%	5%	27%	12%	1%	5%	0%	29%	0%	1%	2%	12%

63. It can be seen in Table 9, that BOPE, CTCT, EDNZ, GENG and MEEN have a higher proportion of breaches compared with their market share. In contrast, AGCL, EGLT and GEND have a lower proportion of the total number of breaches than their market share.

64. The results are inconclusive in that there is still some volatility in market shares which will have an effect on the results for those with low market shares and the differences between the proportion of market share and proportion of breaches for those with high market shares are not particularly high and could also be volatile.

Part Four: Questionnaire on suggestions to improve the accuracy of submissions and estimation

Introduction

65. This section:

    a) summarises the influence that retailers think meter reading, switching and availability of SADSVs have on accuracy;

    b) sets out retailer responses to suggestions to improve the accuracy of initial submissions;

    c) sets out retailer responses to suggestions to improve estimation; and,

    d) recommends that

        a. the reconciliation process be amended to allow for the production of the GGRPs before the initial submissions for GP4 and GP6 be processed, and that retailers apply the resultant SADSVs before submitting the consumption information for GP4 and GP6 to the Allocation Agent; and

        b. Gas Industry Co initiate a project to investigate issues relating to the introduction of smart gas meters

66. Submissions on the "Consultation on rule 37 accuracy requirements under the Gas (Downstream Reconciliation) Rules 2008" dated August 2009, as well as responses by retailers to the alleged breaches of rule 37 (received by the Market Administrator during December 2009) indicated that the three main factors that are likely to have an influence on the accuracy of submissions are meter reading, switching, and availability of seasonally adjusted daily shape values (SADSVs).

67. These submissions also contained a number of suggestions on how to improve the accuracy of submissions and estimating techniques.

68. A questionnaire was prepared and sent to retailers to capture views on these suggestions. The objective was to obtain retailers' perspectives on their usefulness and ease of implementation. For the full set of responses please refer to Annexure 2.

69. The suggestions put to retailers to improve the accuracy of submissions and estimation, were divided into two sections;

    - changes to the current approach to submissions; and

    - possible changes to improve estimation of quantities.

Factors Influencing Accuracy

70. Retailers were asked to assess the relative influence of:

    a) meter reading;

    b) switching; and

    c) availability of SADSVs.

71. A scale from 1 to 10 was used, where 1 means little influence and 10 means significant influence.

Meter Reading

72. Retailers noted that where actual meter readings are available on a monthly basis the level of accuracy is higher than where meters are read bi-monthly (and estimates are provided in between the actual bi-monthly reads).

73. Some retailers indicated that the timing of meter readings can also have an effect on the accuracy of submissions. For example, if group 4 meter readings occur closer to the end of a month, the accuracy of submissions could improve.

74. The mix of consumers at a gas gate can also have an influence on the accuracy of submissions, particularly where changes in consumption of a small number of (relatively) large consumers can have a disproportionate effect on gas volumes. In these situations, monthly meter readings may be justified.

75. To assist in enabling this, there may be a justification for reducing the consumption threshold for the allocation group 4 ICPs. This would increase the number of sites that are read monthly.

76. The retailers assessed the influence of meter reading as high:

INFLUENCE: scale of 1 to 10 (Average)	**Comment**
7.75	Meter reading was considered to have the largest impact on accuracy. It was also considered important that the read was done as close to the end of the month as possible

Switching

77. There is evidence that inaccuracies can occur if submissions do not contain consumption information for new consumers gained by the retailer, or if submissions contain consumption information for consumers that the retailer no longer supplies. Recent improvements in the registry should reduce the chance of omissions, assuming retailers' systems and processes are robust.

78. Other switching-related factors that affect the accuracy of submissions include:

- a lack of consumption history for consumers that switch to a retailer; and
- switch notifications that are not processed in time to be included in the initial allocation submission.

79. Consumption history can be sourced from the losing retailer, the consumer or the data collector. Obtaining history at the time of the switch could contribute to improving the accuracy of submissions.

80. The retailers assessed the influence of switching as low:

INFLUENCE - scale of 1 to 10 (Average)	**Comment**
2.2	This was considered to have very little influence on accuracy.

Availability of SADSVs

81. The SADSVs are an essential component of all forecasting methodologies. However, because gas consumption is highly seasonal and temperature sensitive, using historical SADSVs may not provide accurate consumption information for initial submissions.

82. A number of retailers have indicated that the accuracy of their submissions would be improved if the SADSVs for the consumption period being allocated were available prior to the submission of the non - TOU initial consumption.

83. Making SADSVs available prior to the deadline for submitting consumption information for the initial allocation may require adjustments to allocation processes and timing of submissions and allocations. For example, submission of TOU consumption information for the initial allocation might be earlier than the 4th working day or submission of non-TOU consumption information for the initial allocation might be later than the 4th working day.

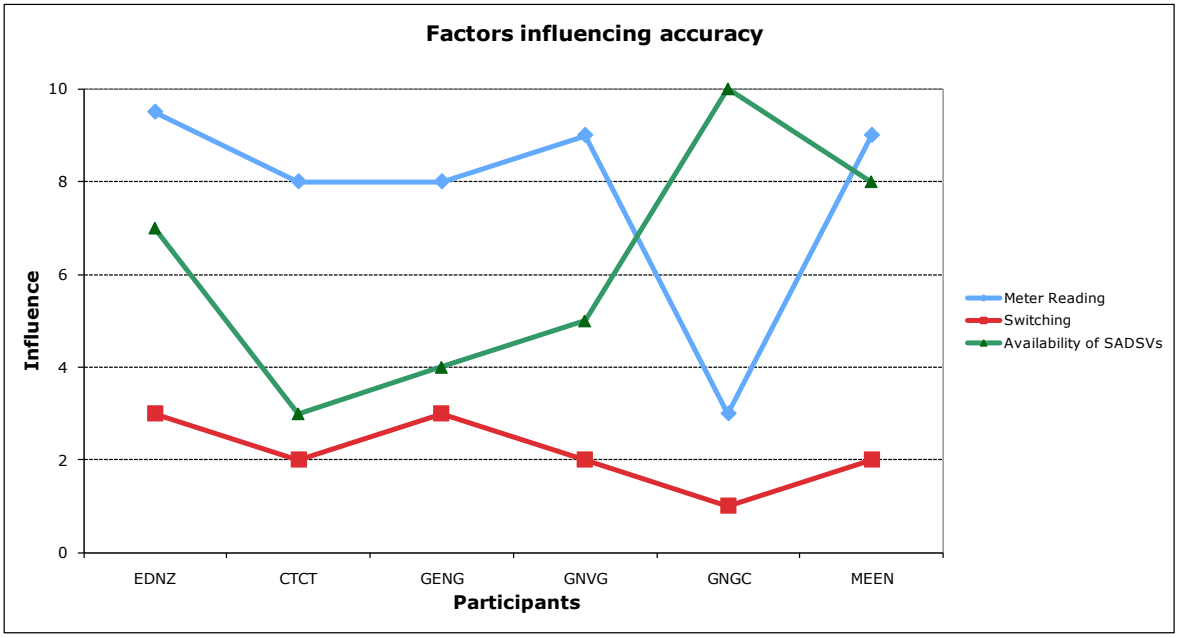
84. The retailers assessed the influence of this factor as moderate:

INFLUENCE - scale of 1 to 10 (Average)	**Comment**
6.2	This has a moderate affect on accuracy. If the same SADSVs are applied by all retailers, then all retailers will receive a share of UFG proportional to their actual consumption. If different retailers apply different SADSVs, UFG may be shared disproportionately.

85. Graph 14 shows each retailer's assessment of each factor. Meter reading and the availability of SADSVs are seen, by all retailers, as more important than switching.

86. The low rating for meter reading, awarded by OnGas (GNGC) is reflective of its own meter reading practice. They note that: "OnGas reads all customer meters on a monthly basis. Only affect [on accuracy] will be if there is a meter breakdown or access issue".

Graph 14: Factors influencing accuracy



Suggestions to increase accuracy of initial submission

87. Retailers were asked to assess the potential influence on the accuracy of initial submissions of the following suggestions (again using a scale of 1 to 10, where 1 means little influence and 10 means significant influence). They were also asked to assess the difficulty of implementing the suggestion using the same scale.

88. The suggestions were:

a) monthly meter reading for group 6;

b) adjusting the timing of group 4 meter reading to be close to the end of the month;

c) selective monthly meter reading of group 6 where consumer mix warrants this;

d) reduce volume threshold for group 4;

e) provision of historical consumption data with switch;

f) improving the timing of switch notifications; and,

g) Allocation Agent provides actual GGRPs before initial allocation submissions for groups 4 and 6.

89. The summary of the assessments and responses is shown below.

Monthly meter reading for group 6

INFLUENCE - scale of 1 to 10 (Average)	**DIFFICULTY - scale of 1 to 10 (Average)**	**Comment**
5.7	7.2	Most retailers considered the influence on accuracy was high but a number of participants already read GP6 monthly and considered that for them the influence was low. Those that don't read monthly consider the influence and the difficulty to implement (cost) as being high.

Adjusting the timing of group 4 meter reading to be close to the end of the month

INFLUENCE - scale of 1 to 10 (Average)	**DIFFICULTY - scale of 1 to 10 (Average)**	**Comment**
4.8	6.6	A few participants do this but for larger numbers of customers this would be costly and difficult for meter readers.

Selective monthly meter reading of group 6 where consumer mix warrants this

INFLUENCE - scale of 1 to 10 (Average)	**DIFFICULTY - scale of 1 to 10 (Average)**	**Comment**
4.7	6.8	This was considered logistically difficult and of only moderate influence.

Reduce volume threshold for group 4

INFLUENCE - scale of 1 to 10 (Average)	**DIFFICULTY -scale of 1 to 10 (Average)**	**Comment**
3.3	5.8	Some already read all meters monthly so would have little influence on accuracy.

Provision of historical consumption data with switch

INFLUENCE - scale of 1 to 10 (Average)	DIFFICULTY - scale of 1 to 10 (Average)	Comment
4	6.5	Some already acquire the history with a switch. Most thought it would be useful but could be difficult with differing file formats.

Improving the timing of switch notifications

INFLUENCE - scale of 1 to 10 (Average)	DIFFICULTY - scale of 1 to 10 (Average)	Comment
2.6	4.25	New rules mean this is not such a significant issue.

Allocation agent provides actual GGRPs before initial allocation submissions for groups 4 and 6

INFLUENCE - scale of 1 to 10 (Average)	DIFFICULTY - scale of 1 to 10 (Average)	Comment
7.5	3.75	Most considered this very useful but concerns were raised over timing and accuracy.

90. The responses were plotted on a scatter graph to illustrate the assessed level of usefulness and difficulty of each of the suggestions. These can be seen in Graph 15 below.

91. The suggestion which was considered of high influence and relatively easy to implement was "Allocation Agent provides actual GGRPs before initial allocation submissions for groups 4 and 6."

92. Meter reading suggestions are also considered as high in influence but relatively difficulty to implement especially for those retailers who currently do not read meters monthly.

93. The developments in smart meters for both gas and electricity are creating a revolution in the management of consumer accounts and the ability to have two way communications with meters. Most of the attention appears to be focused on the electricity meters but companies like British Gas are rolling out both electricity and gas meters in dual fuel households.[5]

94. Advanced metering infrastructures are being established in New Zealand and these have the capability to cater for multi-utility applications so that

[5] http://tv.theiet.org/technology/power/british-gas-vision.cfm

the potential for gas meters to be read remotely is being created. The costs and benefits arising from smart gas meters are matters for the individual retailers to consider but there is a potential role for Gas Industry Co to facilitate the work involved in moving to remote meter reading for gas consumers in GPs 4 and 6.

95. The issues that might be fruitful for the gas industry to investigate include:

    a. functional specification for smart gas meters;

    b. integration of smart gas meters into the advanced metering infrastructures being established;

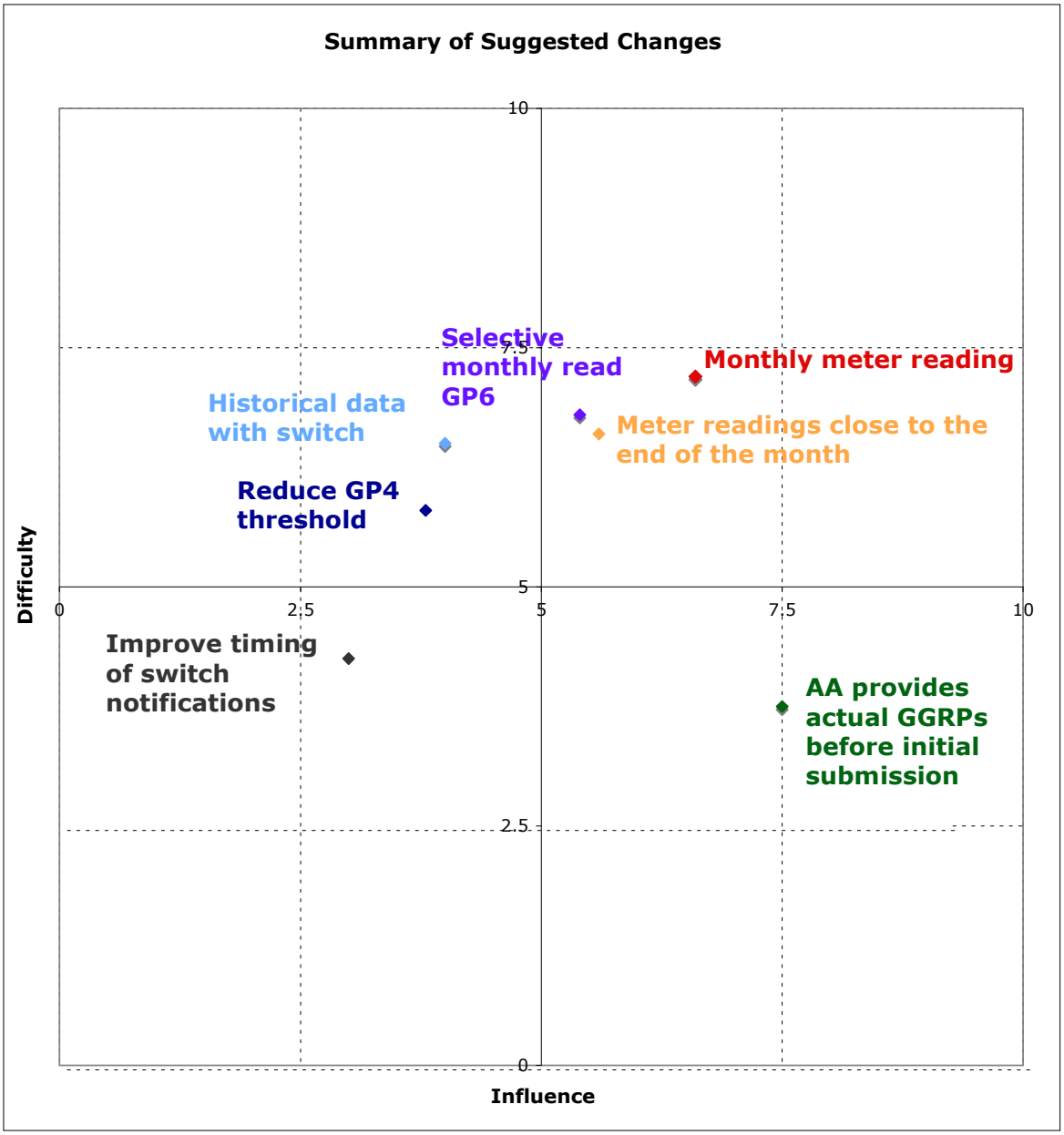
    c. access provisions for gas utilities to existing smart meters with multi-utility capability to provide protection of access rights for gas utilities;

    d. management of data from multi-utility metering installations;

    e. a coordinated pilot study on dual fuel smart metering to determine the costs and potential benefits of such installations relative to single fuel installations.

96. Gas Industry Co could have a coordinating and facilitating role for the gas industry in these investigations.

Graph 15: Summary of suggested changes



97. The numbers in the graph may differ from the averages in the tables because the numbers were only graphed if they were in a pair, i.e. the retailer had responded to both the influence and the difficulty, whereas all numbers submitted were averaged for the tables above.

Suggested changes to estimation

98. The following section provides a summary of retailer assessment of the suggested changes to the current approach to estimation (again using a scale of 1 to 10, where 1 means little influence and 10 means significant influence). They were also asked to assess the difficulty of implementing the suggestion using the same scale.

99. The suggestions were:

    a) Allocation Agent provides *actual* SADSVs in sufficient time for retailers to use in their initial allocation submissions for groups 4 and 6;

    b) Allocation Agent provides *estimated* SADSVs in sufficient time for retailers to use in their initial allocation submissions for groups 4 and 6;

    c) more information on temperature adjustment factors (degree days) for gas gates is published by Gas Industry Co or the Allocation Agent;

    d) knowing details of others' estimation methodologies;

    e) willingness to share information relating to your estimating methodologies; and,

    f) regulatory incentives for reducing the proportion of forward estimates in initial allocation submissions are increased.

100. The summary of the assessments and responses is shown below.

Allocation Agent provides actual SADSVs in sufficient time for retailers to use in their initial allocation submissions for groups 4 and 6

USEFULNESS - scale of 1 to 10	**DIFFICULTY scale of 1 to 10**	**Comment**
7.5	3.9	Most indicated that this would be very useful but concerns were raised over timing.

Allocation Agent provides estimated SADSVs in sufficient time for retailers to use in their initial allocation submissions for groups 4 and 6

USEFULNESS - scale of 1 to 10	DIFFICULTY scale of 1 to 10	Comment
3.8	3.4	Some thought that this would be useful while others indicated that it introduced another estimation into the estimation process

More information on temperature adjustment factors (degree days) for gas gates is published by Gas Industry Co or the Allocation Agent

[The full question is included at Annexure 3 along with an explanation of "Heating Degree days".]

USEFULNESS - scale of 1 to 10	DIFFICULTY scale of 1 to 10	Comment
2.5	4.4	This was not considered useful. The information was readily available for those that wanted it. Others were already gathering temperature information and were concerned about paying for something they already had.

Knowing details of others' estimation methodologies

USEFULNESS - scale of 1 to 10	DIFFICULTY scale of 1 to 10	Comment
6	5	Some thought this would be very useful while others thought it would not be useful at all. There were concerns over IP.

Willingness to share information relating to your estimating methodologies

USEFULNESS - scale of 1 to 10	DIFFICULTY scale of 1 to 10	Comment
2.75	5	Some were willing to share but didn't consider it would be useful.

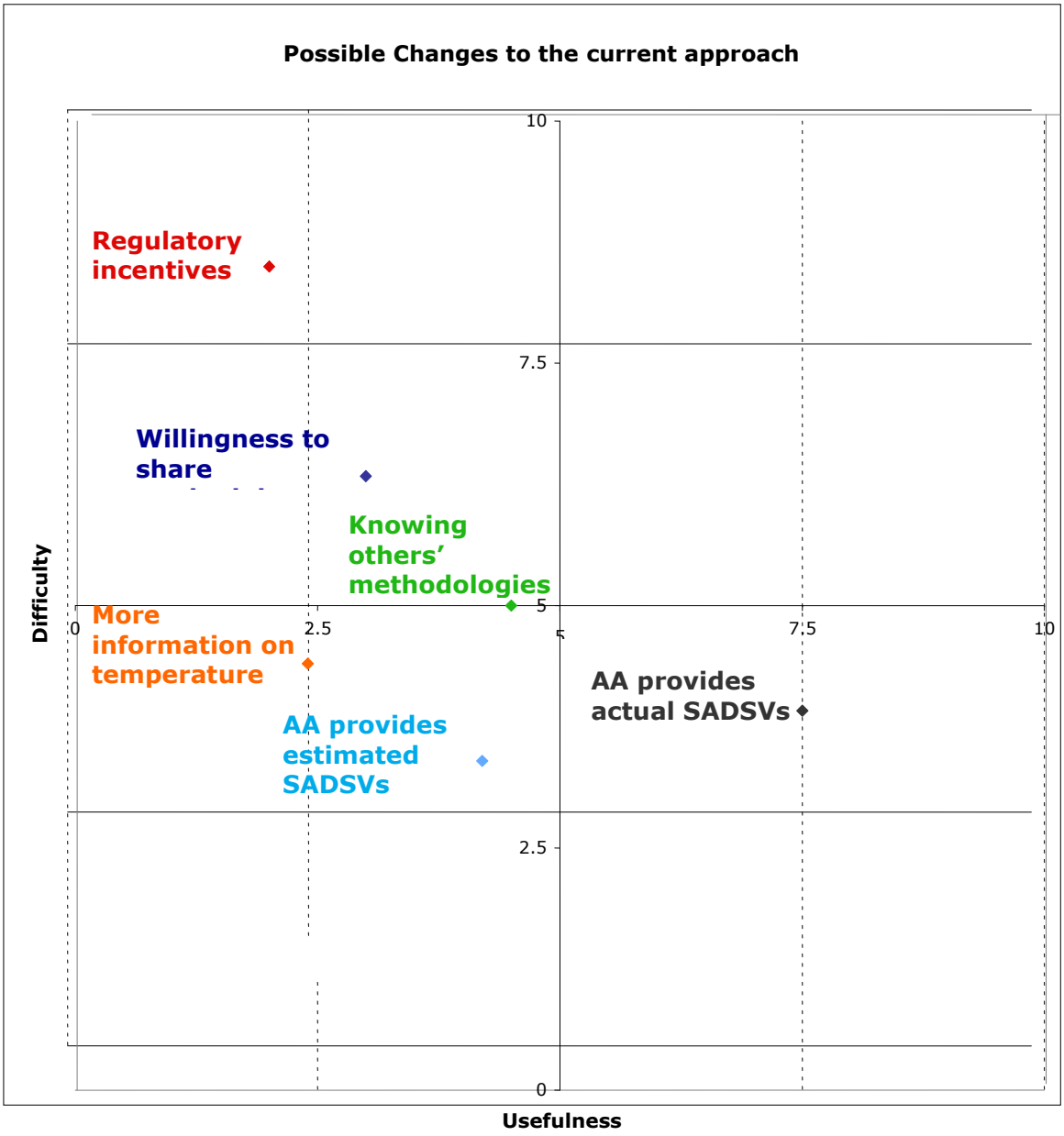
Regulatory incentives for reducing the proportion of forward estimates in initial allocation submissions are increased

USEFULNESS - scale of 1 to 10	DIFFICULTY scale of 1 to 10	Comment
1.8	8.5	This was not considered useful. There were concerns over costs and whether it would have any influence on accuracy

101. The assessments were plotted on the scatter graph below and, as for the previous suggestions, only one appeared to provide a high level of influence on improving the estimating techniques and that was "Allocation Agent provides actual SADSVs in sufficient time for retailers to use in their initial allocation submissions for groups 4 and 6".

102. This suggestion was discussed with the Allocation Agent and there seems to be no impediment provided that the reconciliation processing period can be extended by one day. There would also be low, if any, costs involved.

Graph 16: Scatter graph of the average of possible changes to current approach



103. The numbers in the graph may differ from the averages in the tables because the numbers were graphed only if they were in a pair, i.e. the retailer had responded to both the usefulness and difficulty for a particular question, whereas all numbers submitted were averaged for the tables above.

Recommendations

104. It is recommended that:

a. the reconciliation process be amended to allow for the production of the GGRPs before the initial submissions for GP4 and GP6 are processed and that retailers apply the resultant SADSVs before

submitting the consumption information for GP4 and GP6 to the Allocation Agent;

b. Gas Industry Co initiate a project to investigate the following issues related to the introduction of smart gas meters:

    i. functional specification for smart gas meters;

    ii. integration of smart gas meters into the advanced metering infrastructures being established;

    iii. access provisions for gas utilities to existing smart meters with multi-utility capability to provide protection of access rights for gas utilities;

    iv. management of data from multi-utility metering installations;

    v. a coordinated pilot study on dual fuel smart metering to determine the costs and potential benefits of such installations relative to single fuel installations.

Part five: Transmission balancing charges wash-up arrangements

Introduction

105. This section considers:

    a) the lack of wash-up provisions in the allocation of gas transmission balancing charges;

    b) at a high level, a possible financial wash-up arrangement for upstream gas balancing; and,

    c) recommends that:

        - a full cost benefit study be undertaken on the automation of the BPP system to enable the revision of transmission balancing charges; and,

        - the risks to Vector as the party managing the BPP be examined and the funding and governance arrangements reviewed to investigate a clearing house approach to the balancing pool.

106. In comparing gas and electricity reconciliation arrangements, the most striking difference is the lack of wash-up provisions in the allocation of gas transmission balancing charges. Balancing costs incurred by retailers as a result of errors in initial submission volumes are fixed – i.e. they are unable to be washed up as a result of subsequent, more accurate, consumption information.

107. This means that retailers who have submitted accurate consumption figures in their initial submissions could be burdened with transmission balancing charges that result from inaccurate submissions by other retailers.

Impact on accuracy

108. The lack of wash-ups could provide an incentive on retailers to underestimate at some periods of the year, to avoid the impact of inaccuracies by others. On the other hand, if wash-ups of the balancing charges were performed, it could be argued that there would not be an incentive on retailers to improve the accuracy of the initial submissions as over- or under-payments would be adjusted at the time of subsequent submissions.

109. However, failure to submit accurate consumption volumes is a breach of the Rules if the error between the initial and final submission is outside

the (current) ±12.5% allowable error. The degree of tolerance has an impact on incentives to improve accuracy and the Gas Industry Co's move to reduce the allowable error from ±15% to ±12.5% addresses this to some extent.

110. Further reductions in the allowable error by increasing the accuracy requirement set out in rule 37 could increase the incentives to improve the accuracy of initial submissions to avoid penalties. If combined with the ability to wash-up the volumes, this could reduce incentives to underestimate.

111. The "Consultation on rule 37 accuracy requirement under the Gas (Downstream Reconciliation) Rules" pointed out that developments in information disclosure, coupled with the compliance regime, provide retailers with the opportunity to seek redress if they feel that they have been adversely affected by other retailers' inaccuracies. This should also provide incentives for improved accuracy but could lead to costs to recover damages. There are, therefore, a number of factors that drive behaviours with regards to the accuracy of submission of consumption volumes.

112. However, there would appear to be more advantages to having a regime in which all the parties have incentives to improve accuracy to avoid breaching the Rules (and incurring penalties or litigation costs), than one where there was a countervailing incentive to provide inaccurate submissions to avoid unjust penalties incurred when other participants breached the Rules. While wash-ups for transmission balancing charges would contribute to such a regime, the costs of developing an automated system to achieve this need to be measured against the benefits it would deliver.

113. Vector is currently the Balancing Agent and has no incentive to incur the cost of upgrading the allocation system to enable wash-ups to occur. All the benefits rest with the market participants.

114. An alternative to the current approach would be to establish the balancing pool as a clearing house which would be responsible for managing the sale and purchase of the gas quantities necessary to settle imbalances. It would not be exposed to credit risk, and systems could be developed that would enable allocations based on initial submissions to be revised. The wholesale electricity market and the New Zealand Stock Exchange (NZX) are examples of markets which use this approach. In both these markets the clearing house provides a service to participants but the participants carry the risk of default and manage this through prudential arrangements.

115. In the electricity market, the clearing manager (which is the NZX) is a service provider that operates within the Electricity Rules which include provision for wash-ups. The clearing manager has a service provider agreement with the Electricity Commission and is paid for its services in terms of that agreement. Provisions within the agreement relate to the system that is used and payment for system changes requested by the

Electricity Commission. The Electricity Commission recovers the costs for service providers through its levy on participants.

Costs and benefits of a wash-up regime for transmission balancing charges

Costs

116. In order to perform wash-ups of the transmission balancing charges, the current system would have to be automated and upgrading could cost in excess of $1.5 million. Vector has noted that it is not in favour of this as it would obtain no benefit from the expenditure and may not be able to recover the costs due to regulatory constraints on its revenue.

117. The current system is mainly based on spreadsheets and manual operation and to obtain a more accurate estimate of the costs to develop a new way of managing the BPP would involve a scoping study.

118. The current level of transactions through the BPP is in the order of $5 million per year but proposed changes to the MPOC could lead to Vector being exposed to $10 million and even up to $40 million. The level of exposure will depend on changes to MDL's operating procedures and assumes that nominations do not improve. The consequent financial impact of errors in initial submissions to participants will also increase substantially, which reinforces the case for wash-ups.

Benefits

119. Wash-ups would introduce less risk for retailers which, despite providing accurate initial submissions, can be subject to unfair allocation of transmission balancing charges as a consequence of inaccurate submissions by other retailers. These misallocated charges are wealth transfers so there is no economic benefit in reducing them, but there are efficiency benefits that would accrue if risks were reduced and retailers did not have to incur costs managing these risks.

120. Moving from a manual system based on spreadsheets to an automated system would probably reduce costs within the Vector back office and increase the security and integrity of the BPP system.

121. Incentives to underestimate consumption in Winter months to avoid transmission balancing charges would be reduced, which would lead to a more efficient and transparent market. Improvements in the market's efficiency and transparency would have competition benefits.

122. If the roles of Vector as both the transmission system operator and the Balancing Agent were examined to remove disincentives to develop a more efficient balancing system, it could lead to more innovation by Vector and consequent improvement in the allocation of charges. If, for instance, Vector was set up as a service provider for clearing and

settlement of transmission balancing charges it would be neutral in respect of payments.

Recommendations

123. It is recommended that:

a. a full cost benefit study be undertaken on the automation of the BPP system to enable the revision of transmission balancing charges; and

b. the risks to Vector as the party managing the BPP be examined and the funding and governance arrangements reviewed to investigate a clearing house approach to the balancing pool.

Summary of recommendations

124. The recommendations developed in the previous parts of the report are summarised below.

125. It is recommended that:

i. Gas Industry Co introduces a volume materiality threshold of 200GJ for reducing the number of breaches of rule 37 that are processed through the compliance regime;

ii. the use of top down allocation using market shares be revisited in 12 months' time when more data will be available and the quality of the data may have improved;

iii. the reconciliation process be amended so that:

   a. the production of the GGRPs is done before the initial submissions for GP4 and GP6 are processed; and

   b. that retailers apply the resultant SADSVs before submitting the consumption information for GP4 and GP6 to the Allocation Agent;

iv. Gas Industry Co initiate a project to investigate the following issues related to the introduction of smart gas meters:

      i. functional specification for smart gas meters;

      ii. integration of smart gas meters into the advanced metering infrastructures being established;

      iii. access provisions for gas utilities to existing smart meters with multi-utility capability to provide protection of access rights for gas utilities;

      iv. management of data from multi-utility metering installations; and

      v. a coordinated pilot study on dual fuel smart metering to determine the costs and potential benefits of such installations relative to single fuel installations;

v. a full cost benefit study be undertaken on the automation of the BPP system to enable the revision of transmission balancing charges; and

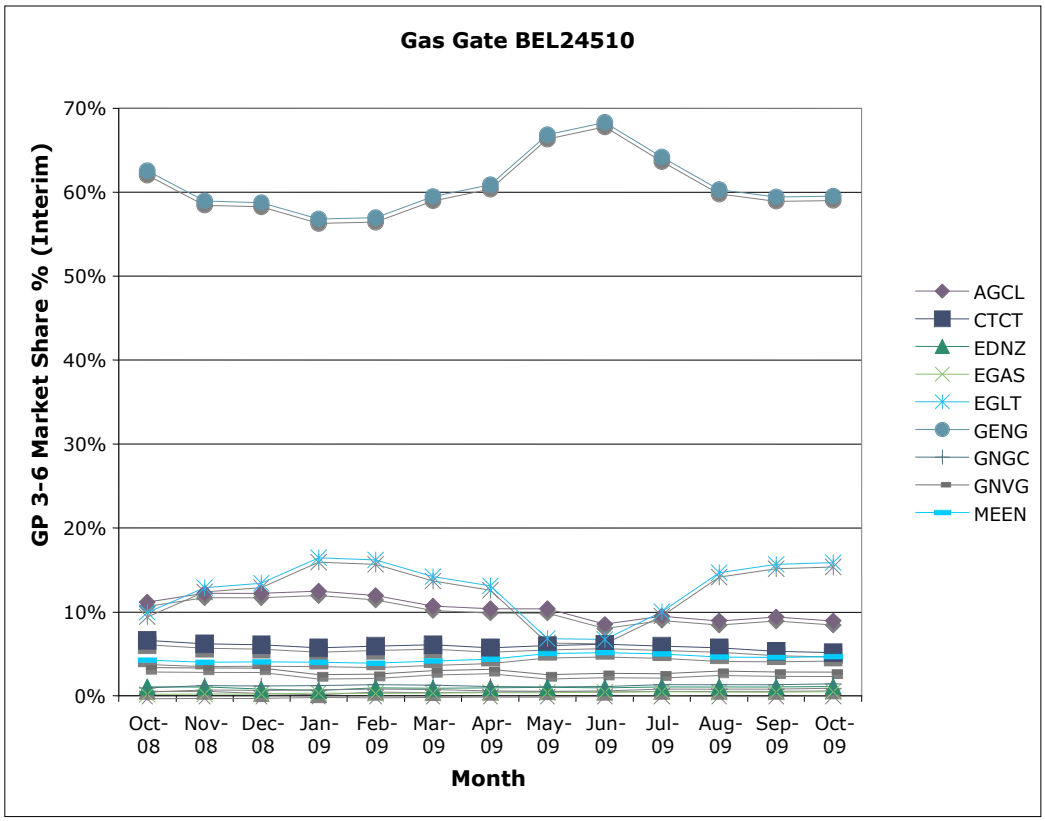
vi. the risks to Vector as the party managing the BPP should be examined, and the funding and governance arrangements reviewed, to investigate a clearing house approach to the balancing pool.

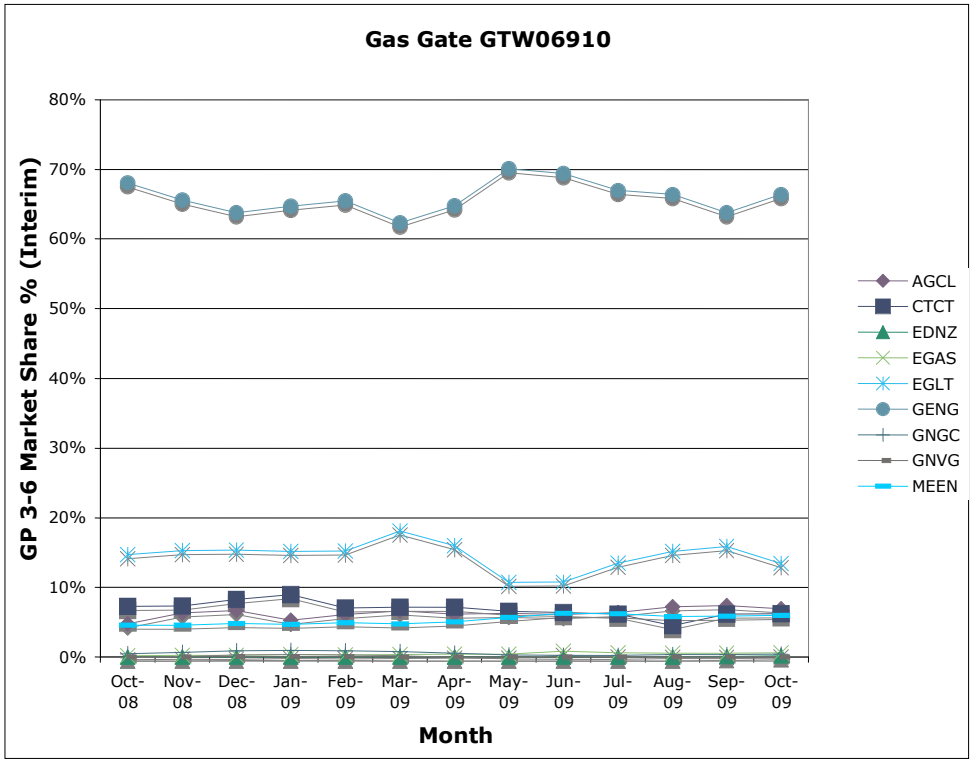
Annexure 1: Gas Gate level top down approach market share graphs (see part 3)

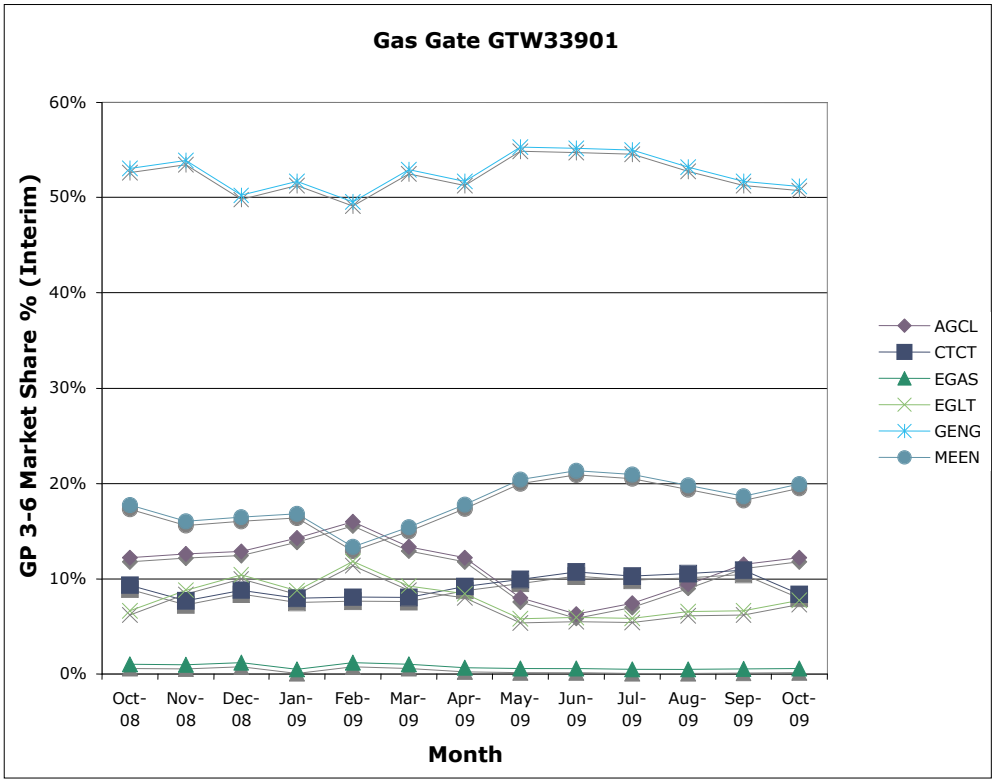
The following graphs illustrate the trend in market share of retailers at each of five gas gates over the period October 2008 to September 2009.

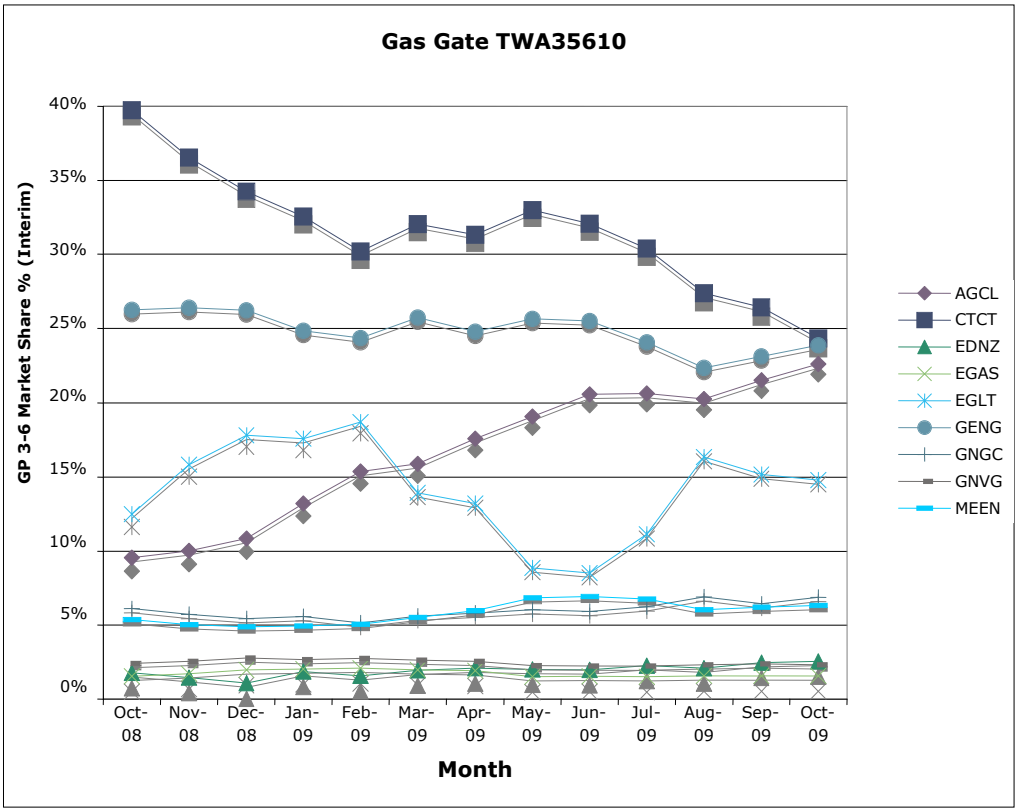
Market Share for the five gates based on interim submissions

Groups 3-6

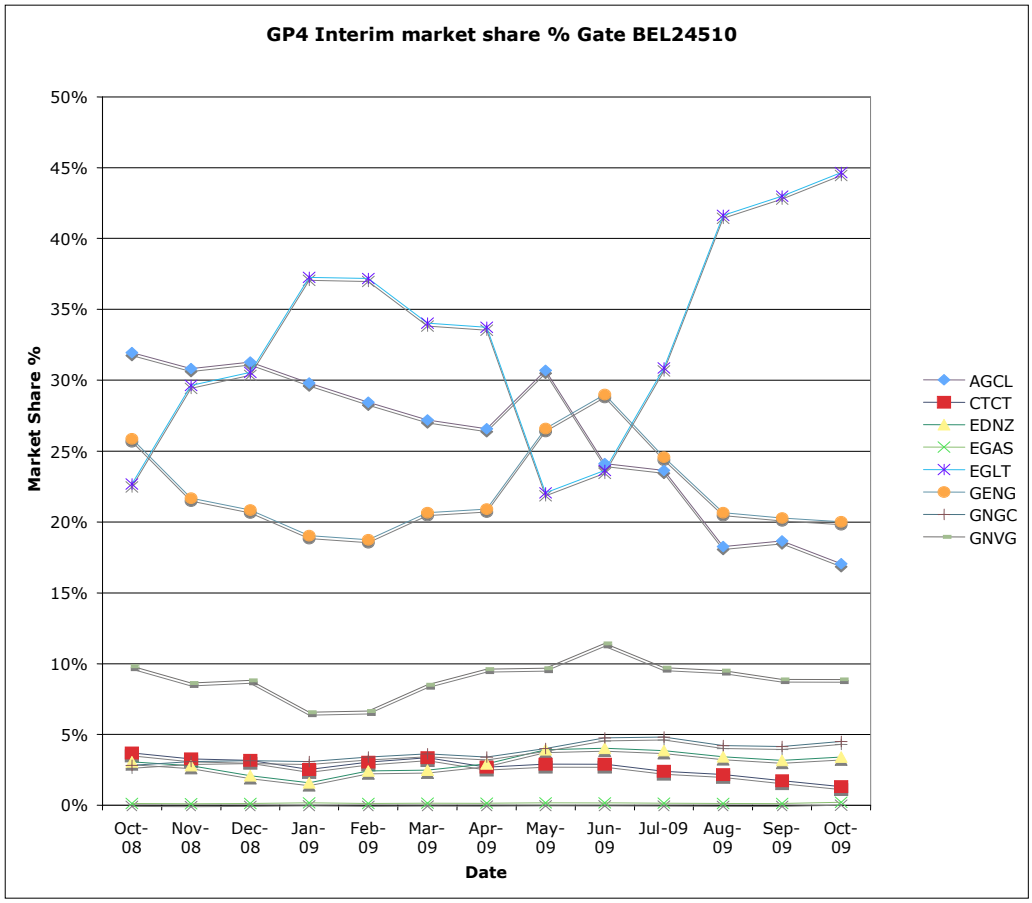


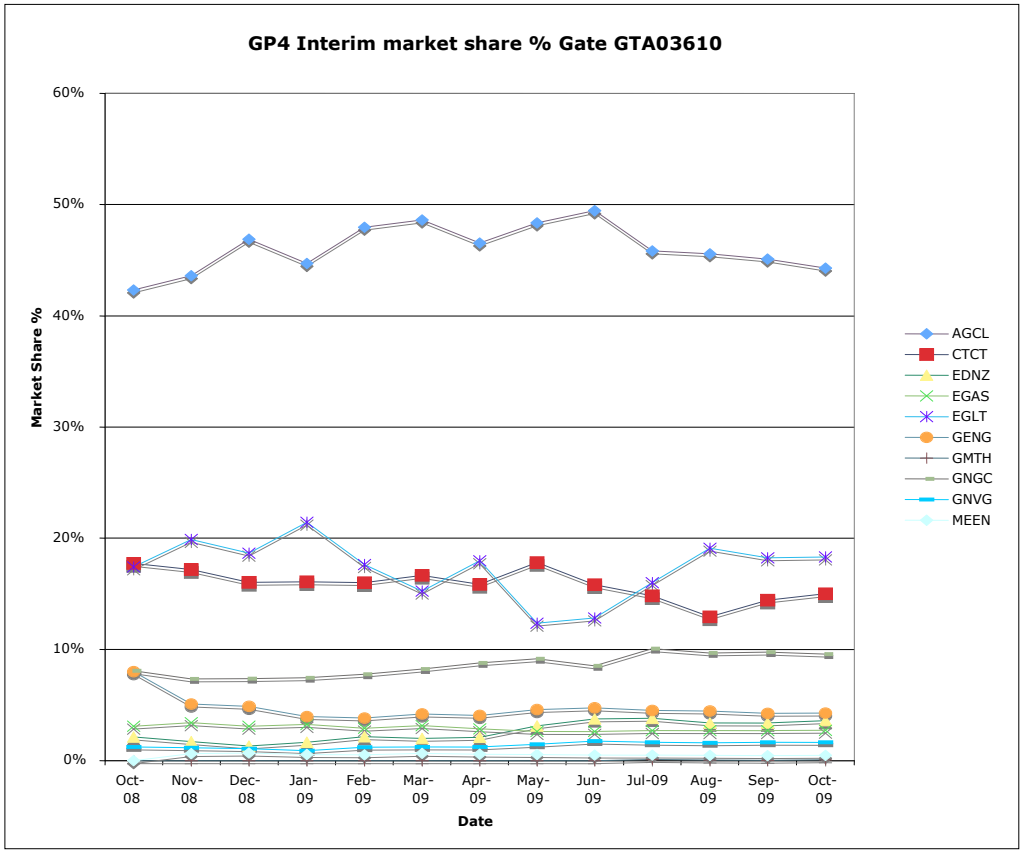

Gas Gate GTW06910
GP 3-6 Market Share % (Interim)
80%
70%
60%
50%
40%
30%
20%
10%
0%
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
AGCL
CTCT
EDNZ
EGAS
EGLT
GENG
GNGC
GNVG
MEEN


Gas Gate GTW33901
GP 3-6 Market Share % (Interim)
60%
50%
40%
30%
20%
10%
0%
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
AGCL
CTCT
EGAS
EGLT
GENG
MEEN


Gas Gate TWA35610
GP 3-6 Market Share % (Interim)
40%
35%
30%
25%
20%
15%
10%
5%
0%
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
AGCL
CTCT
EDNZ
EGAS
EGLT
GENG
GNGC
GNVG
MEEN

Group 4


GP4 Interim market share % Gate BEL24510
Market Share %
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Date
AGCL
CTCT
EDNZ
EGAS
EGLT
GENG
GNGC
GNVG


GP4 Interim market share % Gate GTA03610
Market Share %
60%
50%
40%
30%
20%
10%
0%
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
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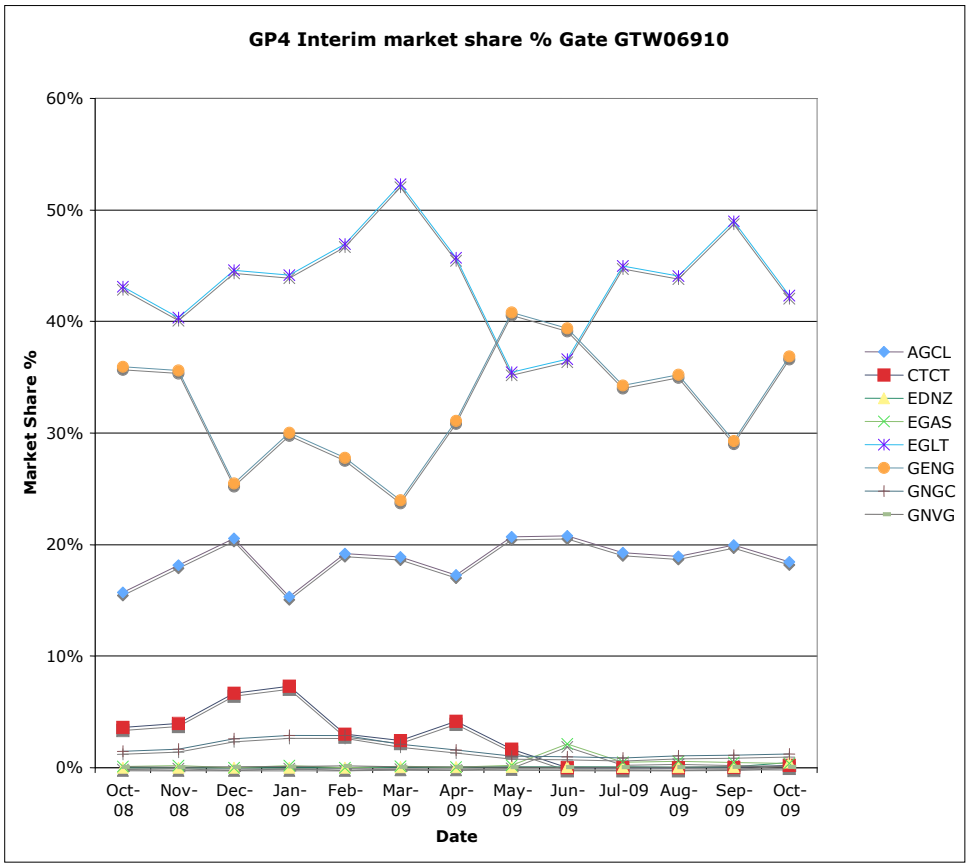
EGLT
GENG
GMTH
GNGC
GNVG
MEEN


GP4 Interim market share % Gate GTW06910
60%
50%
40%
30%
20%
10%
0%
Market Share %
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
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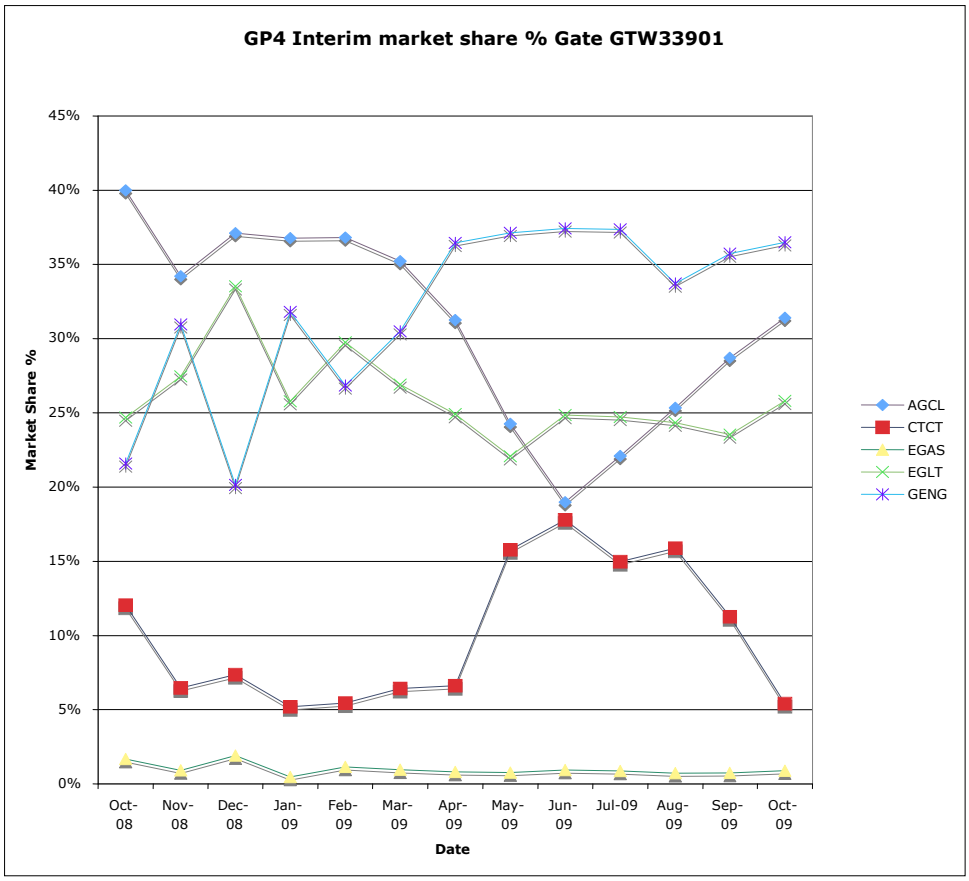
Oct-09
Date
AGCL
CTCT
EDNZ
EGAS
EGLT
GENG
GNGC
GNVG


GP4 Interim market share % Gate GTW33901
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Market Share %
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
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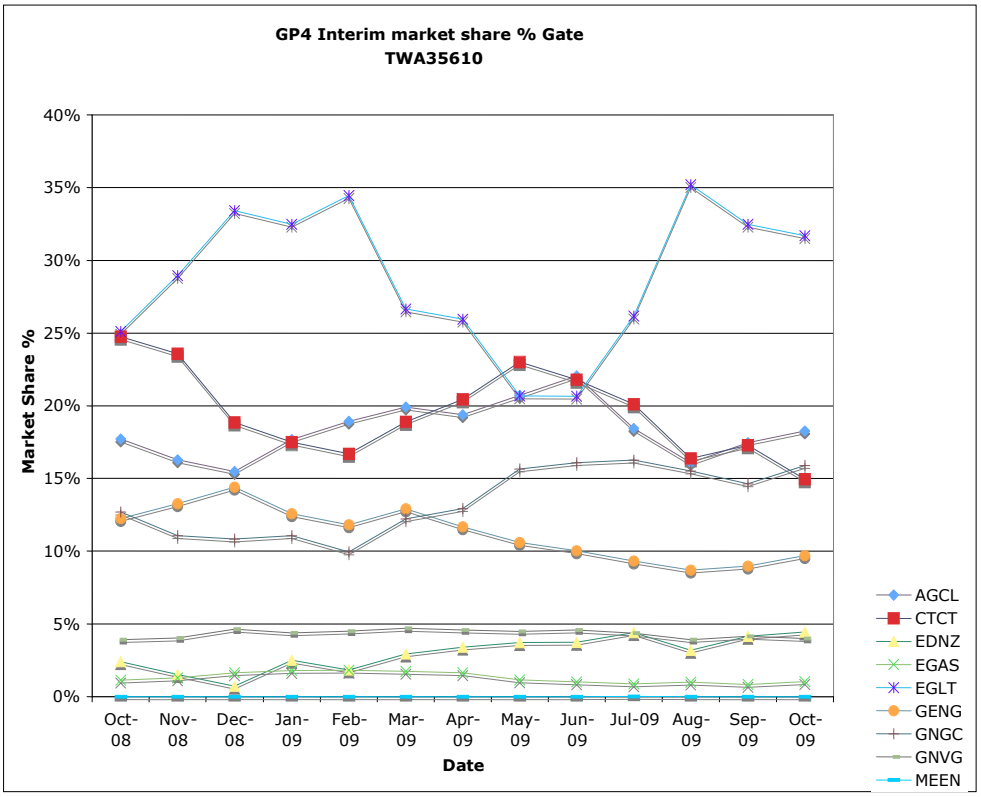
Oct-09
Date
AGCL
CTCT
EGAS
EGLT
GENG


GP4 Interim market share % Gate
TWA35610
40%
35%
30%
25%
20%
15%
10%
5%
0%
Market Share %
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
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Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Date
AGCL
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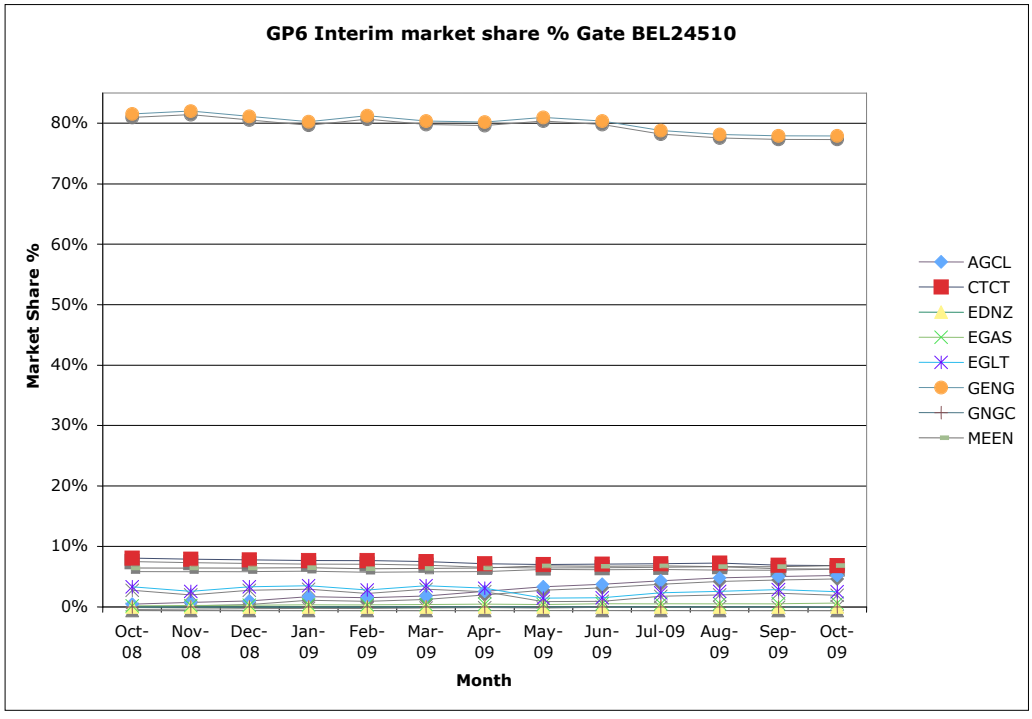
GENG
GNGC
GNVG
MEEN

Group 6


GP6 Interim market share % Gate BEL24510
80%
70%
60%
50%
40%
30%
20%
10%
0%
Market Share %
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
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Month
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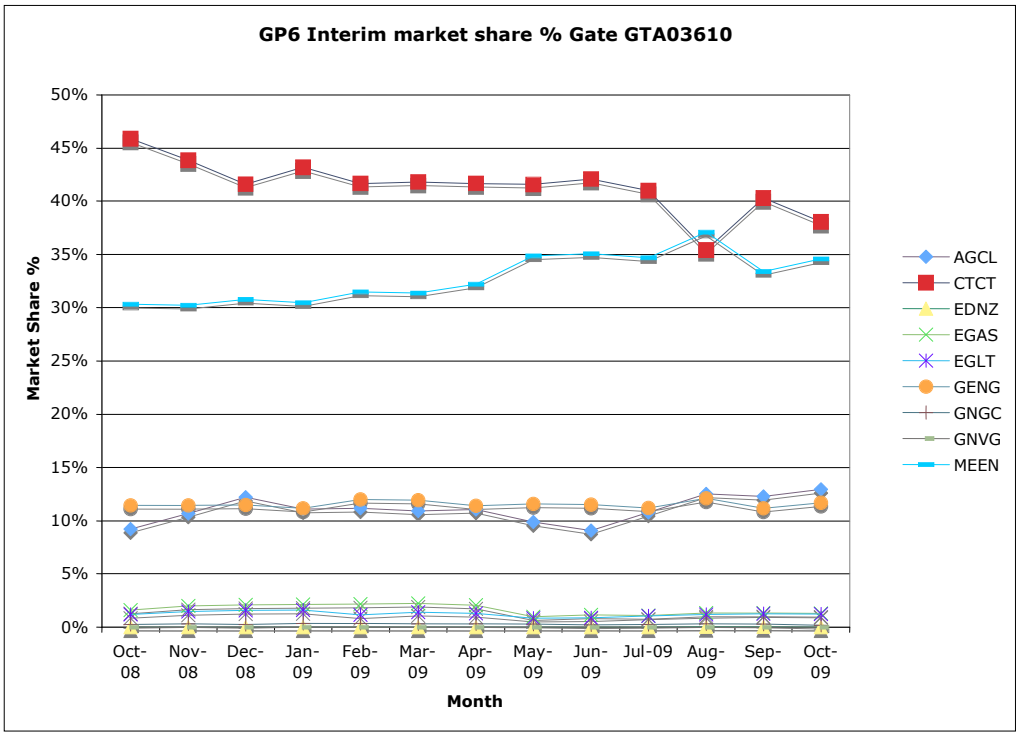
GENG
GNGC
MEEN


GP6 Interim market share % Gate GTA03610
Market Share %
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
AGCL
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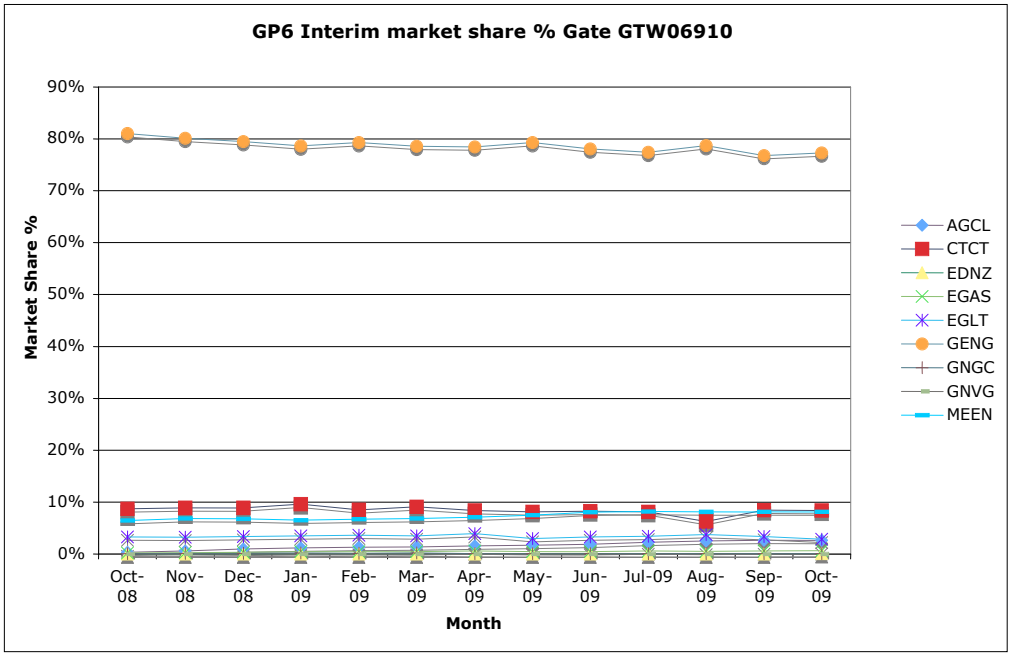
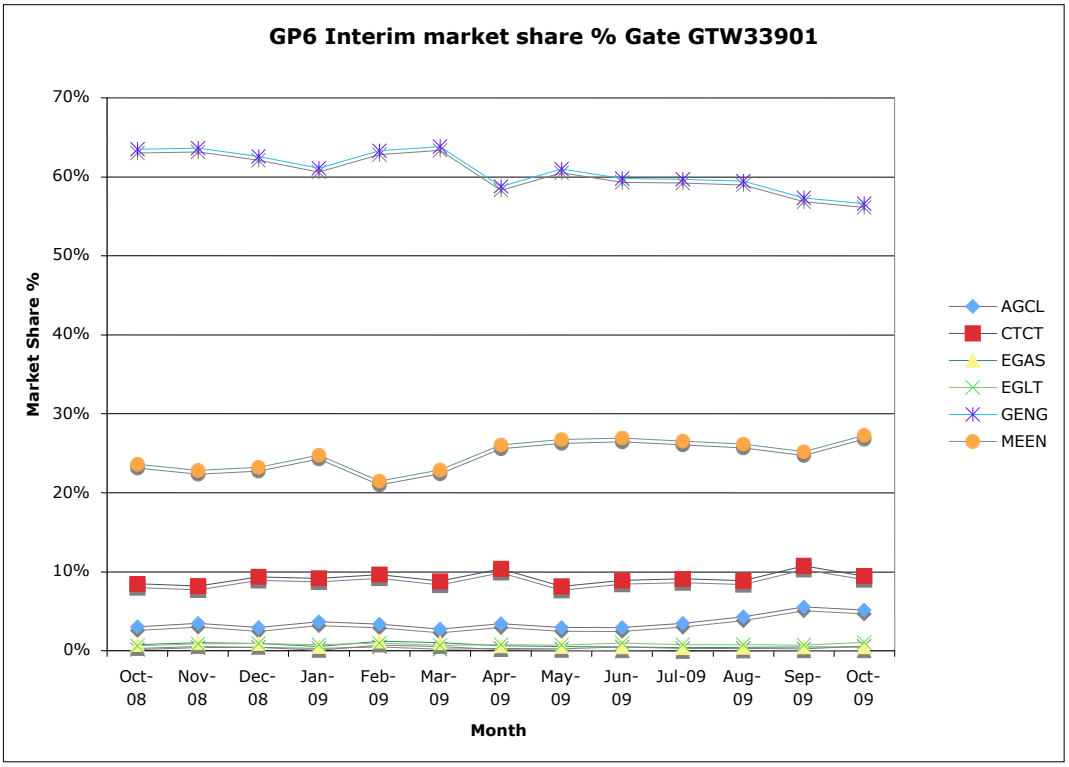
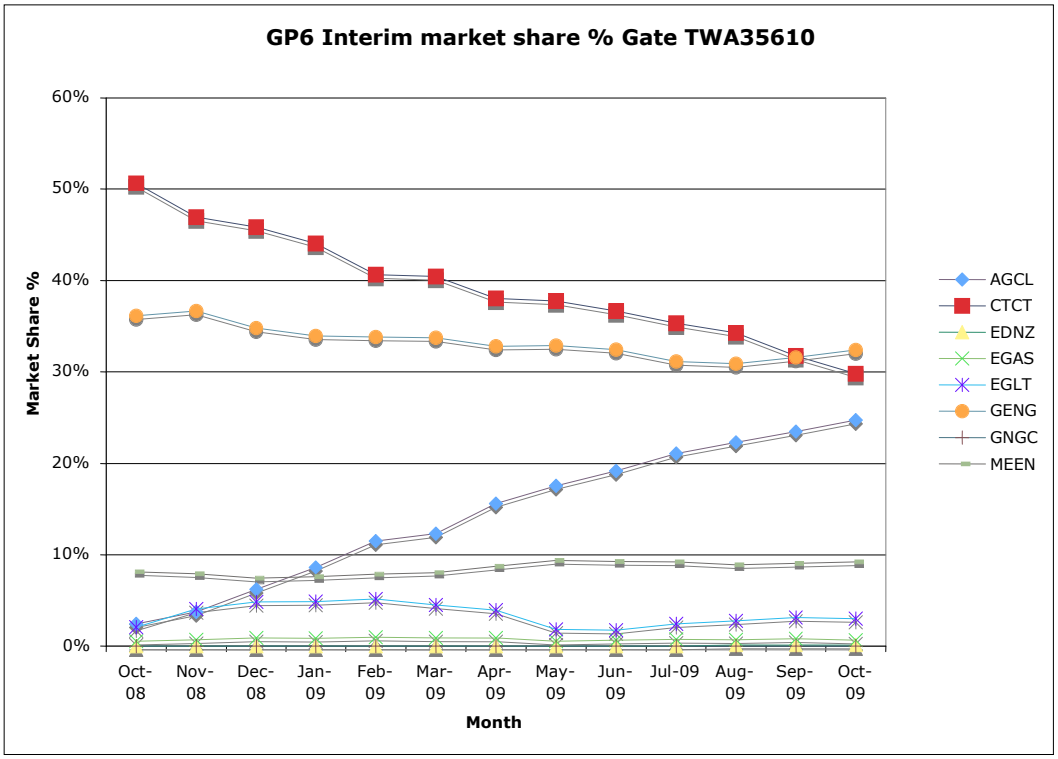
GENG
GNGC
GNVG
MEEN


GP6 Interim market share % Gate GTW06910
Market Share %
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
AGCL
CTCT
EDNZ
EGAS
EGLT
GENG
GNGC
GNVG
MEEN


GP6 Interim market share % Gate GTW33901
70%
60%
50%
40%
30%
20%
10%
0%
Market Share %
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
AGCL
CTCT
EGAS
EGLT
GENG
MEEN


GP6 Interim market share % Gate TWA35610
60%
50%
40%
30%
20%
10%
0%
Market Share %
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
AGCL
CTCT
EDNZ
EGAS
EGLT
GENG
GNGC
MEEN

Annexure 2: Questionnaire Responses

Factors Influencing Accuracy

Meter Reading

Participant	INFLUENCE - scale of 1 to 10	Comment
EDNZ	9.5	The more historic estimates provided and the later in the month the readings occur the more accurate submissions will be.
CTCT	8	Believes frequency, timing and availability of meter reading to have the single biggest influence on allocation accuracy. Monthly readings are only useful if they are close to month end but not so close that the associated actual consumption is not captured in the initial submission due to incomplete billing or reconciliation process timing (in Contact's case run twice weekly).
GENG	8	
GNVG	9	
GNGC	3	Read all customer meters on monthly basis. Only affect will be if meter breakdown or access issue.
MEEN	9	

Switching

Participant	INFLUENCE - scale of 1 to 10	Comment
EDNZ	3	With the new switching rules in place, the timing of switches is no longer such a significant issue.
CTCT	2	While back dated or late switches can have an impact on allocation accuracy. These events are usually one off events in specific gas gates
GENG	3	
GNVG	2	
GNGC	1	This has been an issue in past allocations undertaken prior to the introduction of the Gas Switching Registry but is no longer an issue.
MEEN	2	

Availability of SADSVs

Participant	INFLUENCE - scale of 1 to 10	Comment
EDNZ	7	Believes fairness and accuracy would improve if all retailers used the same SADSVs for each allocation submission. If the same SADSVs are applied by all retailers, when allocation occurs all retailers will receive a share of UFG proportional to their customers' actual consumption. If different retailers apply different SADSVs there will be instances where one retailer's consumption is overstated due to high SADSVs and one understated due to low SADSVs and UFG may not be fairly shared between them.
CTCT	3	Analysis of using estimated SADSVs for the initial submission (same month, previous year) indicates it marginally improves submission accuracy. The electricity approach further improves outcomes, i.e. BD4 submissions and central processing followed by BD13 submissions mean that actual SADSVs are used for the BD13 process without having to wait several months for the benefit to feed in.
GENG	4	
GNVG	5	
GNGC	10	This is the factor that is almost solely impacting the variation between OnGas initial and final allocation results
MEEN	8	

Other

Participant	INFLUENCE - scale of 1 to 10	Comment
CTCT Lowering the cut-over threshold between AG4 and AG6	3	Believes that lowering the cross over from AG4 to AG6 will improve accuracy, but it comes at a cost of additional monthly meter reads.
CTCT Increased seasonality built into underlying data used for forward estimates	5	Analysis of using a daily average based on 3 years of historical previous read-read consumption adjusted by historic SADSVs shows that it improves accuracy.
CTCT Provision of dynamic scaling factor reflecting non-TOU consumption trend	5	Forward estimates could be improved if retailers were provided with regional scale factors reflecting non-TOU usage compared to previous year(s), to enable submissions to reflect abnormally cold or warm weather impacting materially on consumption (e.g. May 2008)
GENG		Control to ensure all ICPs that a retailer is responsible for hav submitted volumes.

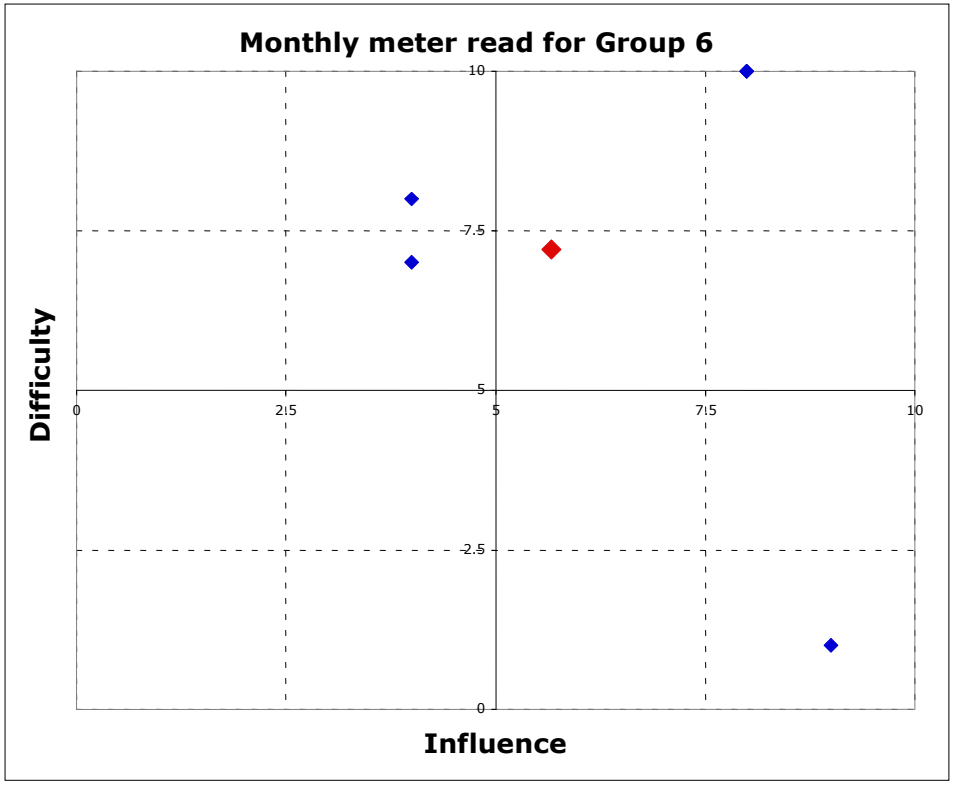
Participant	INFLUENCE - scale of 1 to 10	Comment
GNVG forward estimate methodology	7	
GNGC		
MEEN		

Suggested changes to current approach

In each of the graphs that follow, the individual pairs of responses are in blue and the average of the plotted points is in red. This is the average of pairs of responses. A single response, such as that by GNCG in the table below, is not included in the average in the graph.

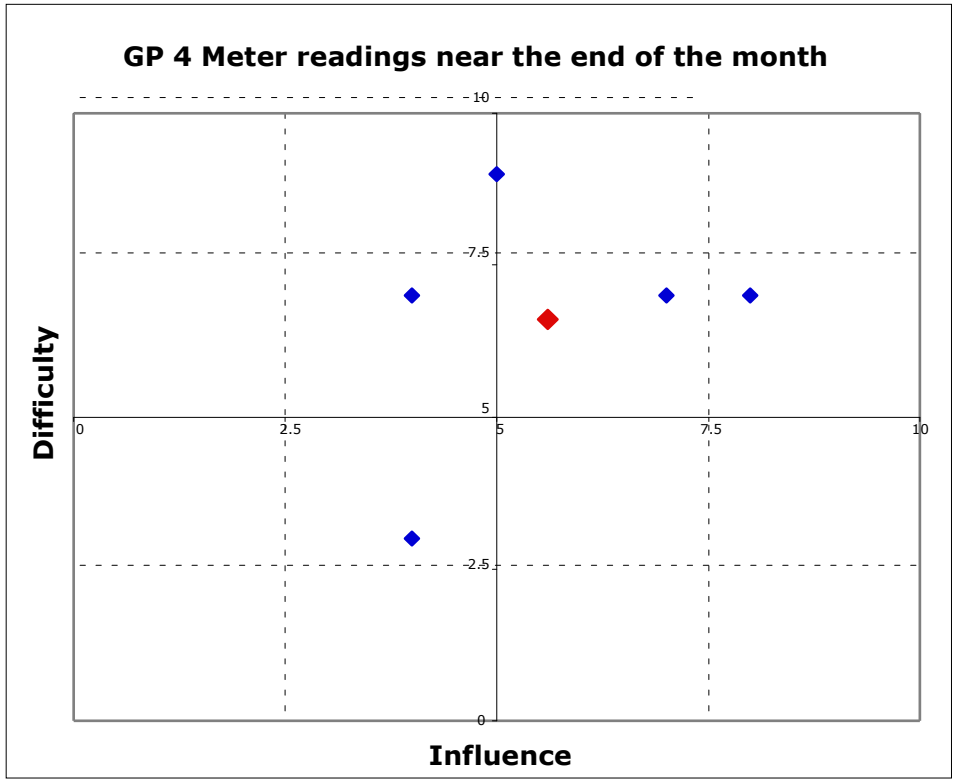
Monthly meter reading for group 6

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	4	8	All of group 6 supplies are scheduled to be read each month, although don't achieve a 100% read rate as there are sometimes access issues. There would be no change to our own processes if the reading requirements for group 6 changed. However, many larger retailers do not attempt to read all of their group 6 customers each month as it would be difficult and costly for them.
CTCT	8	10	Unacceptably high cost for mass market retailers in the absence of remote meter reading.
GENG	8	10	Would find it hard to justify financially a move to monthly reads for group 6 customers.
GNVG	1(Nova) 4 Industry	1(Nova) 7 Industry	Already do this. Even though read meters monthly, the reads are spread throughout the month so still have the issue of forward estimate error. This could be eliminated by requiring all meter reads to be at the end of the month but that is likely to be cost prohibitive. In terms of responding to this at a generic industry level, for those companies that read meters bi monthly some improvement in accuracy would be expected to be seen but it is not a silver bullet as there is residual forward estimate error (although across a shorter period of time). The costs of moving to monthly reads is simply double the cost of meter reading, so if that is $2/read then there is an additional $24/year per customer.
GNGC	1		Already read monthly.
MEEN	9	1	


Monthly meter read for Group 6
Difficulty
Influence
10
7.5
5
2.5
0
0
2.5
5
7.5
10

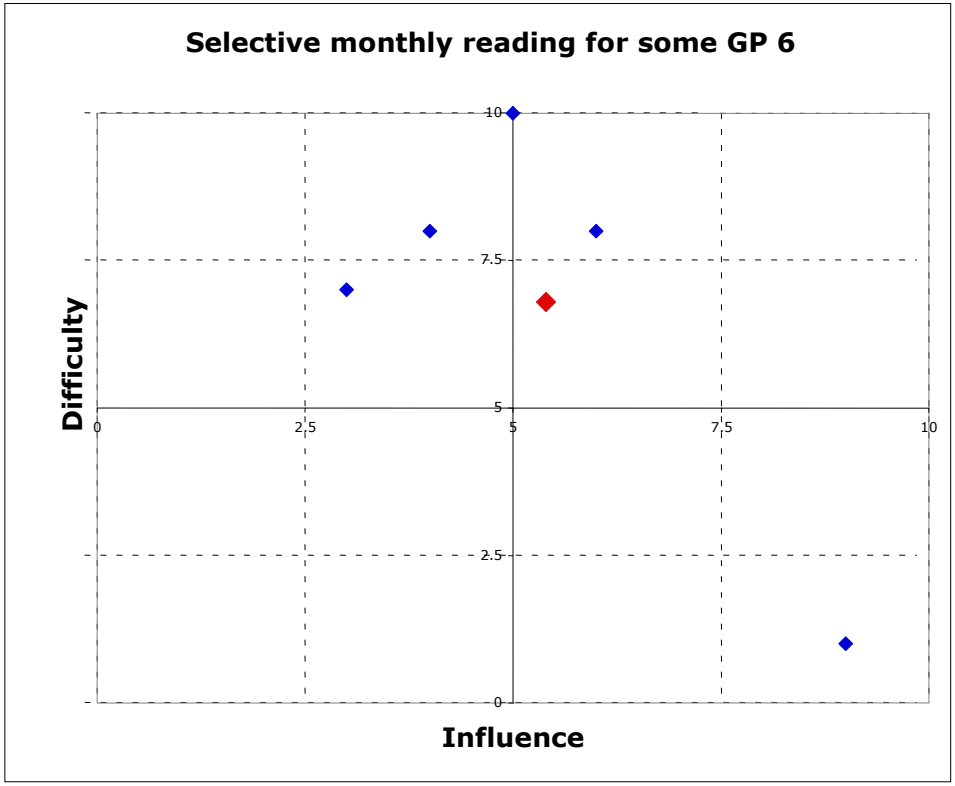
Adjusting the timing of group 4 meter reading to be close to the end of the month

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	5	9	Have special commercial reading routes which are read at the end of the month. As we grow and for other larger retailers it can be impractical to read all group 4 customers at the end of the month. Meter reading companies prefer to spread their workload throughout the month and it may not be practical or possible to bring in extra readers to cover month end. Scheduling group 4's at the end of the month may result in a meter reader having to make multiple trips to read meters which are geographically close to one another.
CTCT	4	3	The timing of these reads must still ensure they are available for submission. For Contact it means scheduling reads before the last few business days.
GENG	8	7	
GNVG	1(Nova) 4 Industry	1(Nova) 7 Industry	For sites greater than 200GJ/annum, meter reading practice is what it was under the old reconciliation code which is to read those sites monthly within 4 days of month end. Already do that for some group 4 sites. From Nova's perspective influence will be minimal as already do it, and from an industry perspective, similar to above. There would naturally be some improvement in performance – call it a 5 but no silver bullet and costs could be relatively high as meter read rounds would be disturbed so meter reading costs could be higher (particularly for those that read bi monthly) due to reductions in economies of scale. Re the selective monthly meter reading for Group 6 sites – this would be problematic for those that don't meter read if there are some gates that this is required and some that it is not. This means that you have a variety of meter reading practices in different locations, which creates logistical issues.
GNGC	1		OnGas read all meters towards the end of the month i.e. earliest read is 3 days prior to month end.
MEEN	7	7	


GP 4 Meter readings near the end of the month
Difficulty
Influence
10
7.5
5
2.5
0
0
2.5
5
7.5
10

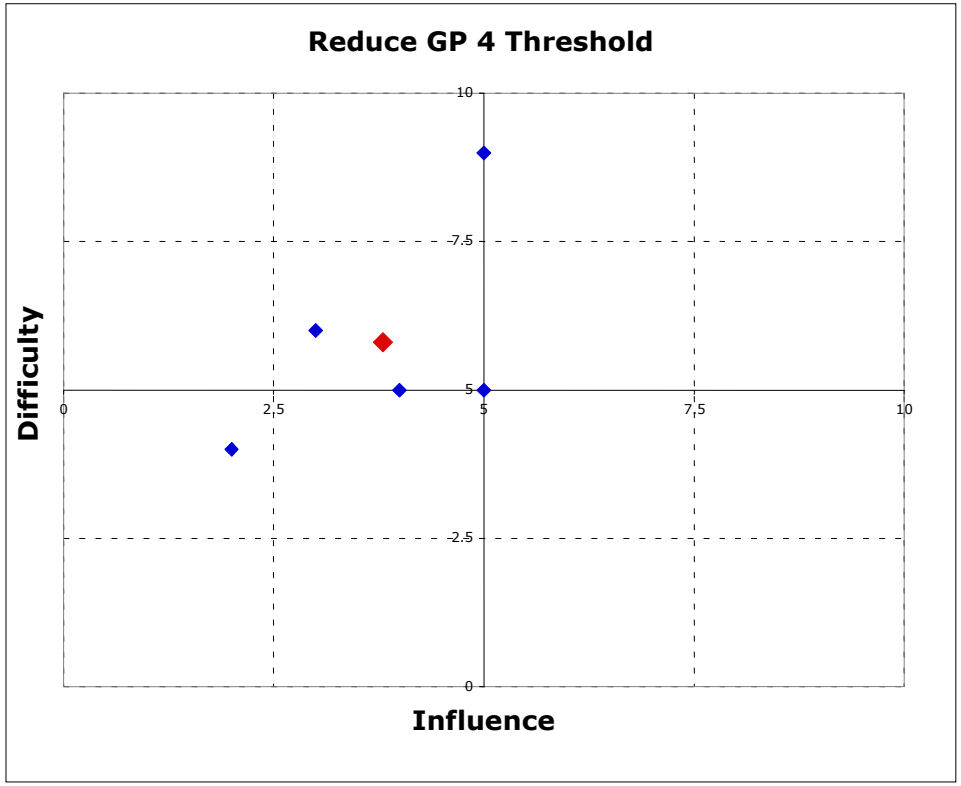
Selective monthly meter reading of group 6 where consumer mix warrants this

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	3	7	Believe that customers would need to be moved to a separate group, or it would be too difficult to identify and monitor readings for these selected customers.
CTCT	4	8	Logistically this is difficult to monitor and maintain especially where a participant has less than 100 ICPs at a gas gate.
GENG	5	10	
GNVG	1 Nova 6 Industry	1 Nova 8 Industry	
GNGC	1		Already read monthly.
MEEN	9	1	


Selective monthly reading for some GP 6
Difficulty
Influence
10
7.5
5
2.5
0
0
2.5
5
7.5
10

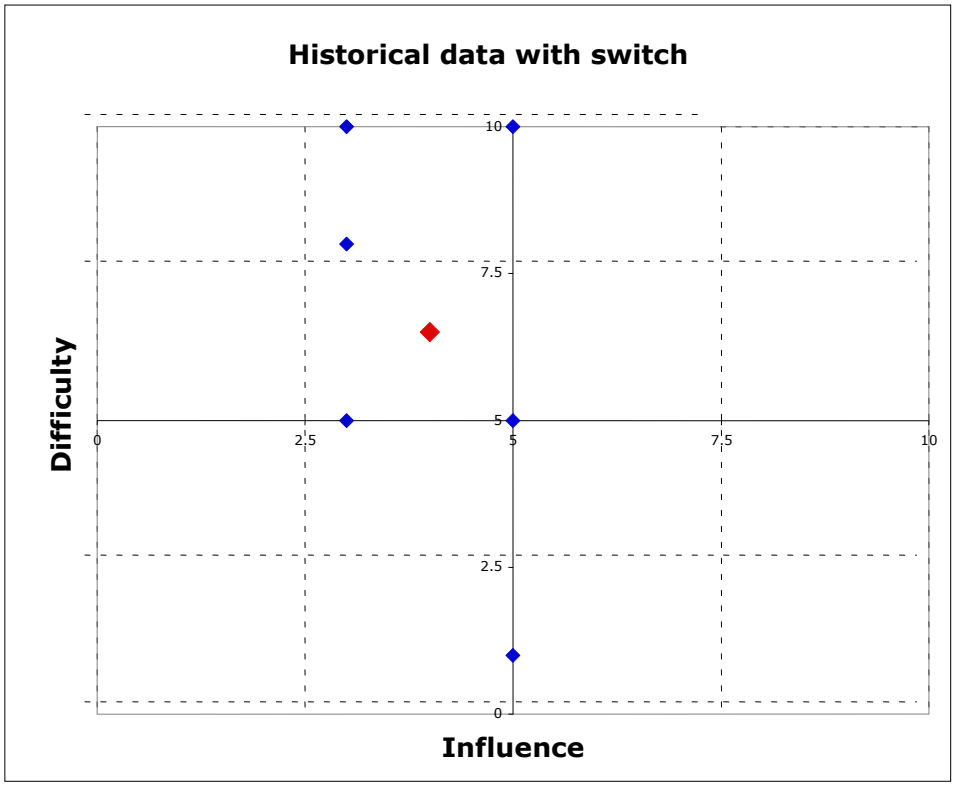
Reduce volume threshold for group 4

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	3	6	Reducing the volume threshold for group 4 is likely to improve accuracy, but the volume threshold is already less than 0.7 GJ per day for an ICP. If the threshold is lowered further each individual ICP would have little influence on overall accuracy. There would be no increase in the amount of historic estimates for our own data as we already attempt to read all supplies monthly.
CTCT	2	4	
GENG	5	5	
GNVG	4	5	
GNGC	1		OnGas already read monthly
MEEN	5	9	


Reduce GP 4 Threshold
Difficulty
Influence
10
7.5
5
2.5
0
0
2.5
5
7.5
10

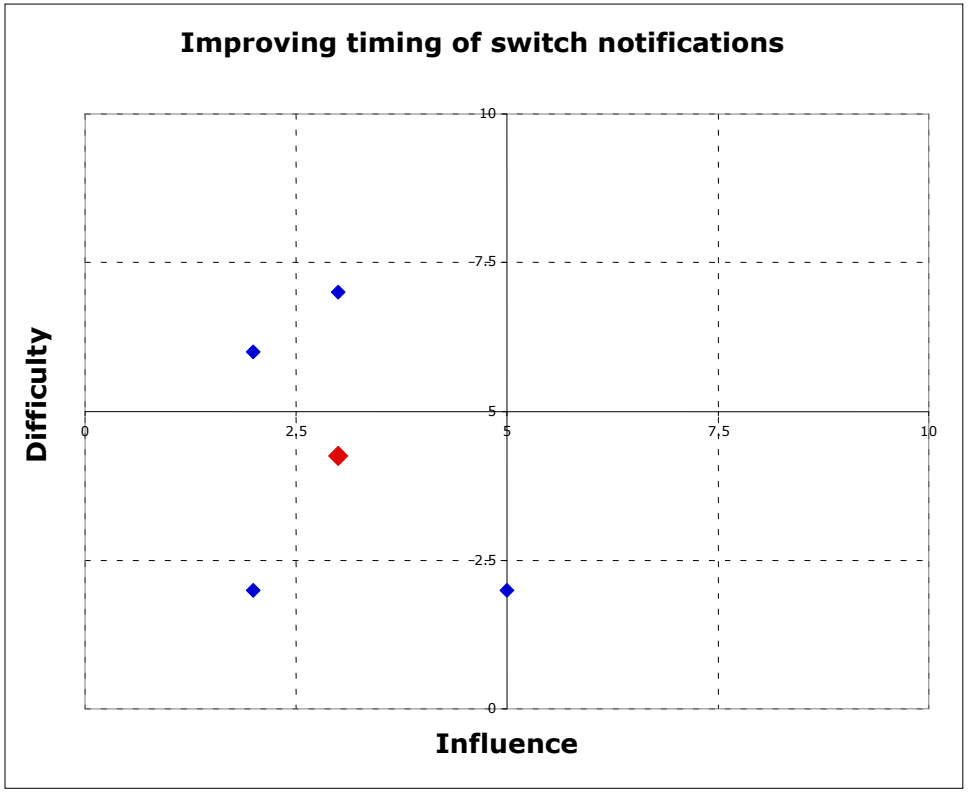
Provision of historical consumption data with switch

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	5	10	It would be difficult to design a file format to provide a full consumption history at the time of the switch. If an annual figure was provided, the gaining retailer would need to confirm whether it was based on estimated or actual readings and how reliable it was, and understand how the consumption was spread throughout the year. Do have an estimated annual load available in our billing system which is updated when a read is entered and billed, and we could provide it to other retailers. In some cases have requested consumption history from the previous retailers to our customers to help us to produce forward estimates, which has been helpful.
CTCT	3	8	Problematic if monthly consumption required, historic reads could have been obtained any time in month for AG4 and any time in month and bi-monthly for AG6, hence monthly consumption would at best be estimated. This would likely require significant changes to participants' reconciliation systems to make use of.
GENG	3	10	The rules currently allow for the provision of historical read data (rule 67.4) at the time of the switch. For the infrequent times it has been requested, it has been handled manually as an exception. To enforce for all switches would require system development and modification.
GNVG	5	5	Would improve accuracy of forward estimates for new customers. Some technical issues related to automation.
GNGC	3	5	Already read monthly, but in instances of meter failure or access issues this may be useful when estimating customer consumption for the month. Data is readily available to provide as long as data format for switch is predetermined.
MEEN	5	1	Consumption history is already included during switching as part of the TN file. One of the fields in the TN file is for 'Annualised consumption,


Historical data with switch
Difficulty
Influence
10
7.5
5
2.5
0
0
2.5
5
7.5
10

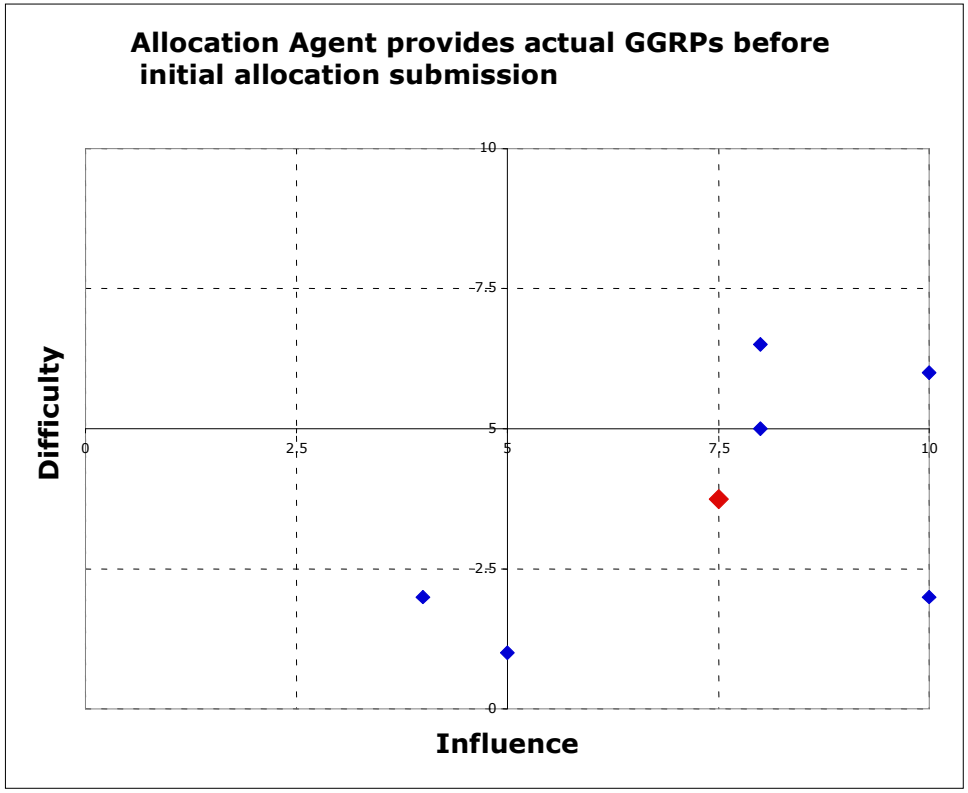
Improving the timing of switch notifications

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	2	6	Switching has improved with the new rules and is not such a significant issue for us now.
CTCT			Not clear what is meant here, speeding up switches decreases switch quality and does nothing for submission accuracy
GENG	3	7	
GNVG	2	2	
GNGC	1		
MEEN	5	2	


Improving timing of switch notifications
Difficulty
Influence
10
7,5
5
2,5
0
0
2,5
5
7,5
10

Allocation agent provides actual GGRPs before initial allocation submissions for groups 4 and 6

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	8	5-8	It would be useful to have actual SADSVs at the time of the initial allocation. This would ensure that initial and final submissions would match more closely as consumption would be correctly apportioned between the current and previous months. However, the degree of difficulty would depend on how the deadlines for the GAS050, 040 and other allocation reports changed. We often receive TOU reads late and it would be difficult for us to submit the GAS050 earlier. Once we received the SADSVs we would need to load them and regenerate our allocation data overnight before we could create the GAS040.
CTCT	4	2	
GENG	10	6	It is not so much the timing of the delivery of the SADSVs as their accuracy. The SADSV is reliant on the injection and submission figures and if one/some of these are out then the SADSV is inaccurate and it remains so until the next wash up for the consumption month – further incorrectly influencing subsequent submissions.
GNVG	5	1	
GNGC	10	2	This SADSV used in the initial allocation is the main factor resulting in OnGas variance of >15% between initial and final allocations at a gate. The only issue would be timing and would require a change to current initial allocation due times as mentioned in this document (TOU data to be submitted as per current deadline and then non TOU data to be provided within set time after publication of GGRPs)
MEEN	8	5	


Allocation Agent provides actual GGRPs before initial allocation submission
Difficulty
Influence
10
7,5
5
2,5
0
0
2,5
5
7,5
10

Other

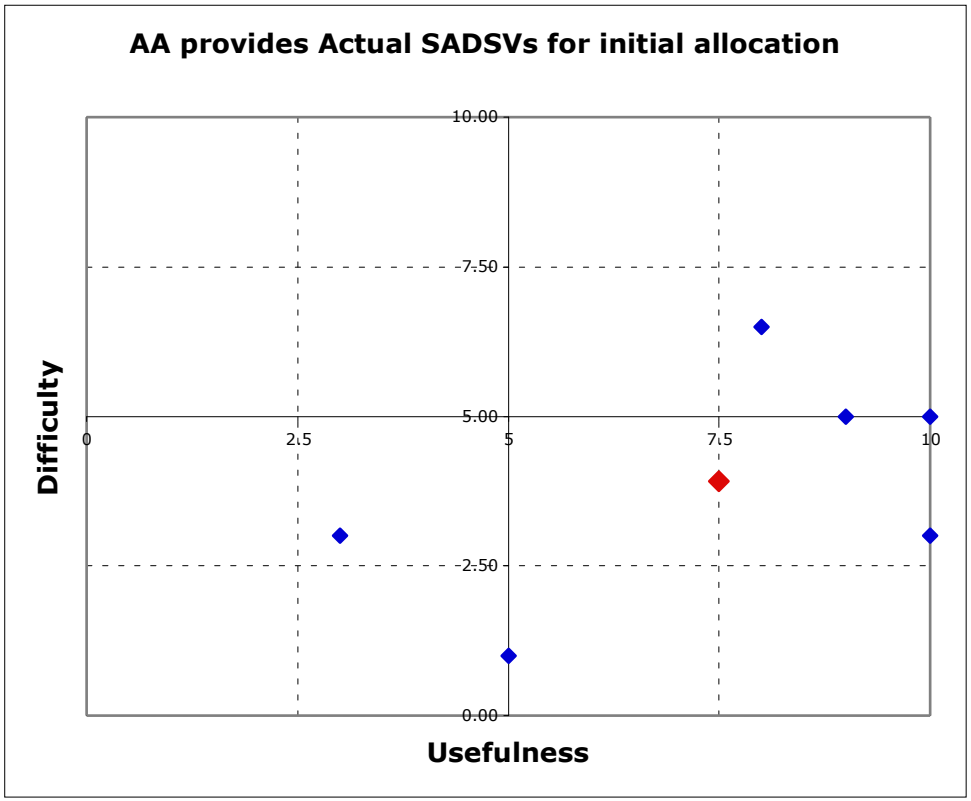
Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	-	-	-
CTCT Regulate FE methodology	8	10	If all participants were to comply with a single methodology and read frequency then no party can be considered to be adversely impacted by submission accuracy This would entail material changes to participant system to implement
CTCT Lower Thresholds for Gas Allocation Groups 1, 2, 4	4	7	Should lead to improved SADSV data and also additional reads will reduce the seasonal impact from a participants poor performing estimation methodology
CTCT			The analysis undertaken in relation to the D+ 1 (top down allocation of volumes for AG3-6 using market share) has the potential to provide results as accurate, if not more accurate than the current bottom up / ICP level methodologies currently employed by participants. A materially more accurate month end initial allocation would be achieved using a top down approach for initial allocations – i.e. Retailers submit AG1/2 only for initial allocations. AG3-6 for each retailer is determined by (Gas Gate total less AG1/2 aggregate for all retailers x annual UFG factor) allocated to each retailer based on last interim allocation market share of non-AG1/2, then add back for each retailer actual AG1/2 volumes. SADSVs would also be an output and used for interim submissions which would include AG1-6, and similarly for final allocations. Would possibly need to adjust market share for movements in ICPs between TOU and non-TOU (AG1/2 to/from AG4). These options should not be discounted from this review.
GENG	7	6	Correct SADSVs found to be in error immediately rather than waiting for the next wash up of the consumption month

Participant	INFLUENCE - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
GNVG			Even if read every site monthly, there is generally an element of forward estimation required unless meter reads are done at month end as opposed to spread across the month. It is this Forward estimate element that causes errors than the lack of seasonal profile, or switching activity. The most important aspect is the proximity of the last meter read to the end of the reconciliation period.
GNGC			
MEEN			The use of the SADSVs in calculating the historic estimates varies from retailer to retailer - this should not be happening, the rules are clear on how historic estimates should be profiled.

Possible changes to the current approach

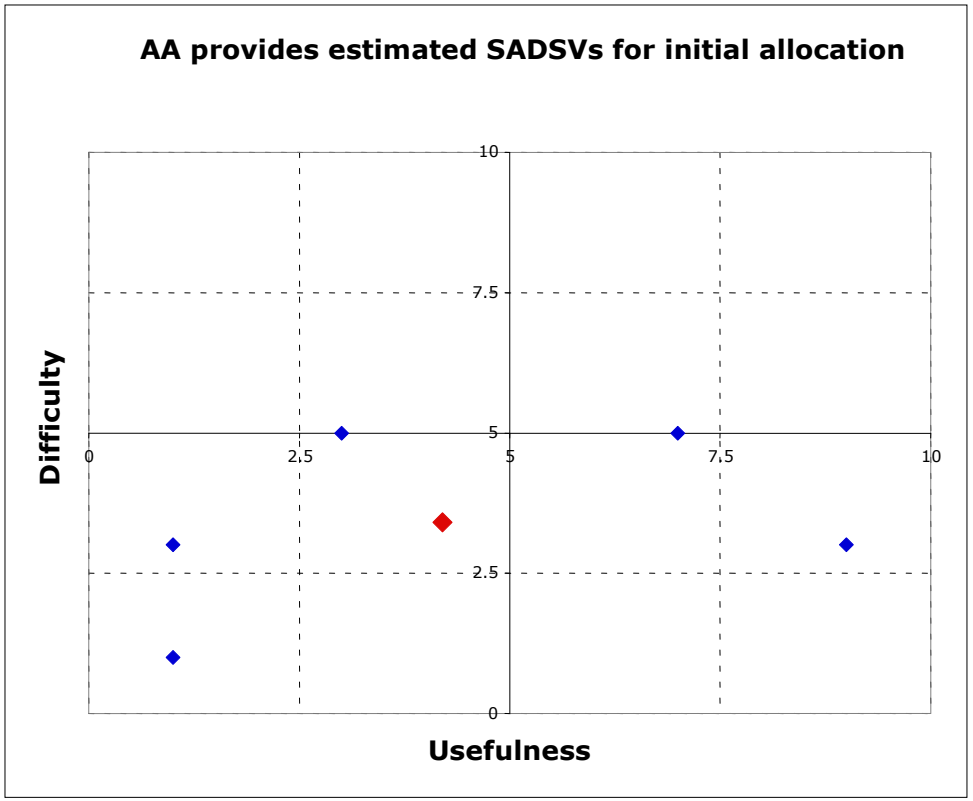
Allocation agent provides actual SADSVs in sufficient time for retailers to use in their initial allocation submissions for groups 4 and 6

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY scale of 1 to 10	Comment
EDNZ	8	5-8	It would be useful to have actual SADSVs at the time of the initial allocation. This would ensure that initial and final submissions would match more closely as consumption would be correctly apportioned between the current and previous months. However, the degree of difficulty would depend on how the deadlines for the GAS050, 040 and other allocation reports changed. We often receive TOU reads late and it would be difficult for us to submit the GAS050 earlier. Once we received the SADSVs we would need to load them and regenerate our allocation data overnight before we could create the GAS040.
CTCT	3	3	
GENG	10	5	
GNVG	5	1	
GNGC	10	3	Timing only
MEEN	9	5	SADSVs are available for all gas gates as we are currently aware. What incidences are there of this happening?


AA provides Actual SADSVs for initial allocation
10.00
7.50
5.00
2.50
0.00
0
2.5
5
7.5
10
Difficulty
Usefulness

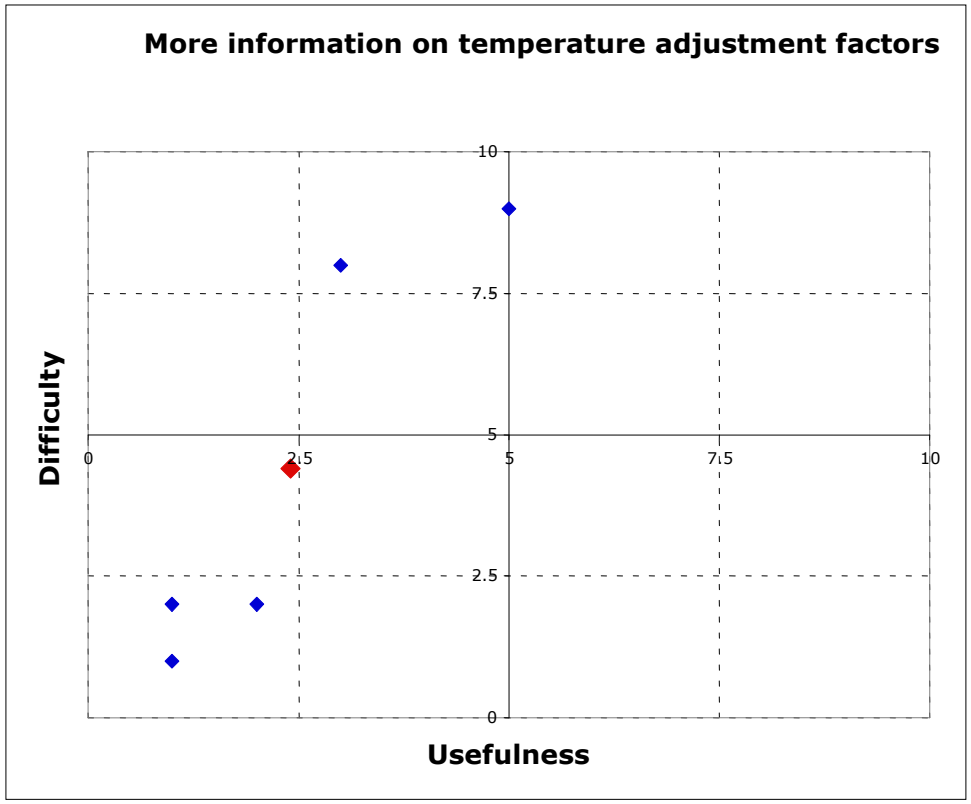
Allocation agent provides estimated SADSVs in sufficient time for retailers to use in their initial allocation submissions for groups 4 and 6

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	7	5	If the same SADSVs are applied by all retailers, when allocation occurs all retailers will receive a share of UFG proportional to their actual data, even if they are not the same shape as the final SADSVs. We assume that estimated SADSVs would be provided to retailers earlier than actual ones so there would be less difficulty for retailers but more for the allocation agent who would have to calculate them.
CTCT	1	3	As retailers can already do this themselves from historic SADSVs
GENG	3	5	The supply of estimated SADSVs would be of limited value, and could potentially cause worse estimations than that which can produce now. This is through the introduction of another estimated figure into an estimation routine. Further I would imagine that as being supplied by the allocation agent it is going to derived from submissions so there will be the possibility of spreading the impact of participants' errors across all submissions.
GNVG	1	1	This would be useful and would eliminate the need to estimate SADSVs at all but will make time frames tighter at month end or extend the reconciliation timeframes out.
GNGC	2		This still introduces estimations into the process. Don't see how this can improve on current.
MEEN	9	3	


AA provides estimated SADSVs for initial allocation
Difficulty
Usefulness
0
2.5
5
7.5
10
0
2.5
5
7.5
10

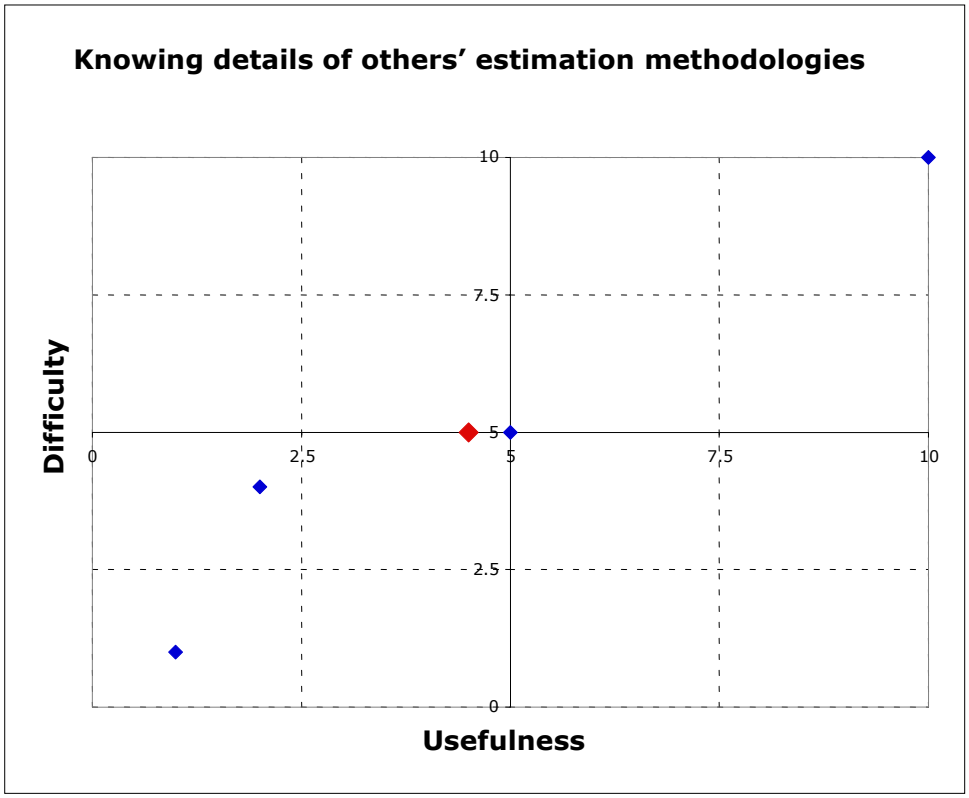
More information on temperature adjustment factors (degree days) for gas gates is published by Gas Industry Co or the allocation agent

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	5	9	While temperature data would have some value to help retailers refine their own estimated SADSVs, it is likely that it would be received too late to be useful unless deadlines for GAS040 submission were extended. We would need to analyse the data, and use it to revise out SADSVs, load the revised SADSVs and regenerate the data overnight before we could report. It would not address the problem of inconsistency between different retailers' SADSVs.
CTCT	3	8	May over complicate without providing material benefit. While temperature is a significant factor in group 4 to 6 gas consumption, it is strictly heating degree-days that is important. It would be difficult to try and apply temperature as a direct scaling factor in estimation.
GENG	2	2	We would find it hard to accept additional fees for temperature data. It is already gathered in our business for other uses, so for all intent and purposes we would be paying for something that we currently have for free.
GNVG	1	1	This information is readily available and is up to retailers to get it they want it.
GNGC	2		
MEEN	1	2	


More information on temperature adjustment factors
Difficulty
Usefulness
10
7.5
5
2.5
0
0
2.5
5
7.5
10

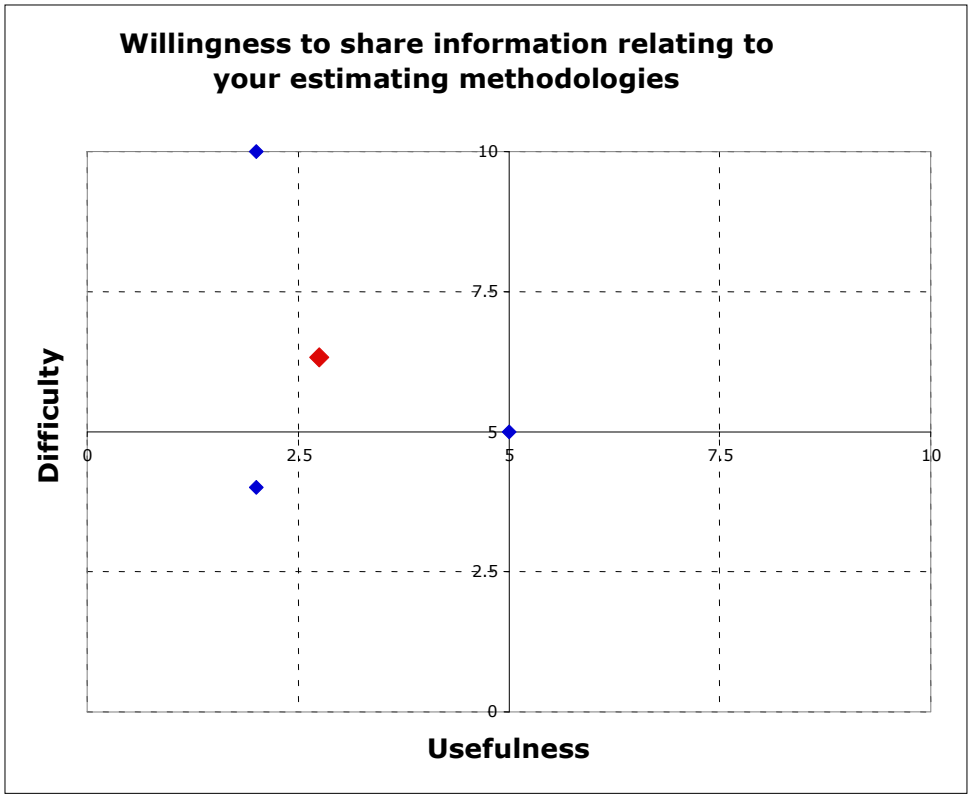
Knowing details of others' estimation methodologies

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY scale of 1 to 10	Comment
EDNZ	2	4	Would be willing to share information, but it will not improve consistency of SADSVs between all retailers.
CTCT	10	Irrelevant	If (all things being equal such as meter read frequency) it is giving materially more accurate initial submission data than other retailers
GENG	5	5	
GNVG	10	10	Retailers may be or have already invested in processes and systems and developed their own solutions which they regard as intellectual property for themselves. Forced information sharing undermines IP rights and leads to no development and/or improvement at all. Having access to others IP would be great which means we don't have to develop our own. Likely that anyone would develop any IP as they bear the costs and share with their competitors.
GNGC	2		This still introduces estimations into the process. Don't see how this can improve on current.
MEEN	1	1	


Knowing details of others' estimation methodologies
Difficulty
Usefulness
10
7.5
5
2.5
0
0
2,5
5
7,5
10

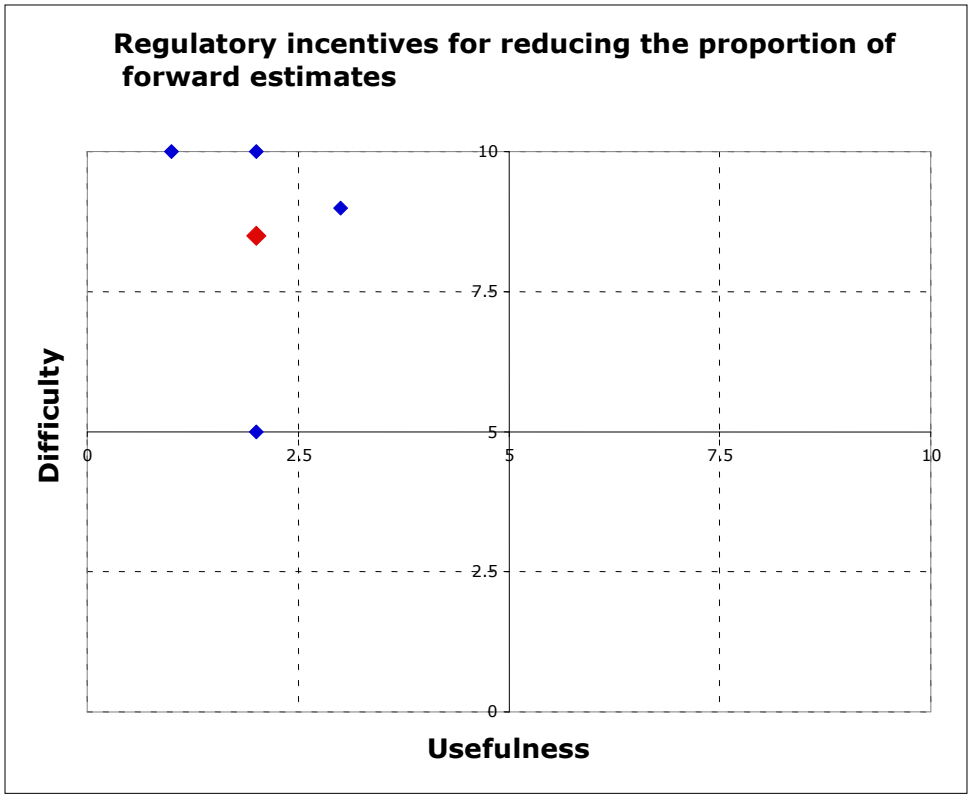
Willingness to share information relating to your estimating methodologies

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	2	4	Would be willing to share information, but it will not improve consistency of SADSVs between all retailers.
CTCT	yes	1	
GENG	5	5	
GNVG	-	-	
GNGC	2		This still introduces estimations into the process. Don't see how this can improve on current.
MEEN	2	10	


Willingness to share information relating to your estimating methodologies
Difficulty
Usefulness
10
7.5
5
2.5
0
0
2.5
5
7.5
10

Regulatory incentives for reducing the proportion of forward estimates in initial allocation submissions are increased

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	3	9	There are already regulatory incentives in place in terms of minimum meter reading requirements and acceptable differences between initial and final allocations. Further regulation around proportions of forward estimates will create problems for meter reading, as it is impractical for all retailers to read more meters late in the month. Retailers with a small number of customers on a gas gate could easily breach the requirements, e.g. where they have two domestic customers on a gate and unable to obtain a read for one due to an access issue.
CTCT	1	Irrelevant	Unhelpful as already made changes to improve initial submission accuracy and there is only so much that is practicable and economic.
GENG	2	5	There are already regulatory incentives in place to influence the accuracy of submissions (Initial vs. Final 15% tolerance, allocation of UFG). I don't see that measuring the proportion FE's contained in the initial submission is going to improve the accuracy of the estimation routine. It may give an indication as to the level of estimation in the submission - if you can remove the influence on all the actual factors that drive the amount of FEs. A more valuable indicator would be one that measures the ICPs that have been included in the submission matches the ICPs the retailer is responsible for (i.e. ICP days in electricity reconciliation).
GNVG	1	10	May have significant cost implications and restricts incentives to innovate
GNGC	2		Already minimising forward estimates by using meter reads at the end of the month, each month (unless meter failure or access issue).
MEEN	2	10	


Regulatory incentives for reducing the proportion of forward estimates
Difficulty
Usefulness
10
7.5
5
2.5
0
0
2.5
5
7.5
10

Other

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
EDNZ	-	-	-
CTCT Regulate FE methodology	8	10	Depending on what is regulated as system changes may be quite expensive
CTCT			The fundamental issue is the disconnect between upstream arrangements and downstream processes which puts too much emphasis on initial submission accuracy and allocation results (after allocation of unpredictable UFG). Improving initial submission accuracy does not improve initial allocation accuracy on its own as all allocations are distorted by the UFG allocation methodology, and in particular the initial allocation. A top down approach (D+1 plus month end top down) would materially improve initial allocations and management of balancing and nominations risks. Resolution of excess UFG issues together with a fairer UFG allocation methodology would also materially improve the gas market and would take the heat out of the UFG allocation methodology.
GENG			
GNVG	10	4	Better to recognise that washups are a fact of life and we should set up industry arrangements to cater for them without having to recover losses caused by other inaccuracies through a compliance process
GNVG			It should be simpler to provide for washups of costs based on revised data. The Initial Allocation is revised and is largely corrected at the 4 month washup with minor corrections at the final washup. Most of the value chain associated with gas supply is affected by washups except for allocation of balancing charges. It would be far simpler to allow those costs to be washed up. Retailers can then make their own assessment of the need for accurate initial allocation submissions as they will bear the full costs of inaccuracy through the washup process.

Participant	USEFULNESS - scale of 1 to 10	DIFFICULTY - scale of 1 to 10	Comment
GNVG			It should be recognised that there are tradeoffs between costs and accuracy in regulating forward estimates. And by costs we mean costs for end use consumers. Regulating to restrict estimation processes will impose higher meter reading costs on retailers that will be passed through to the consumer. We regard such outcomes as inefficient as industry arrangements should be able to cater for inaccuracy of initial submissions through a comprehensive washup process.
GNGC			This survey has been completed relating to impact on OnGas initial allocations only and what would help improve OnGas initial allocation submissions to NZX. OnGas processes already include many of the suggested improvements therefore I have rated it low for usefulness as it will not improve OnGas allocations going forward. We are aware that the issues affecting other retailers are likely to be significantly different from our response.

Annexure 3: Question regarding more information on temperature adjustment factors

Question: Should more information be provided to assist retailers in submitting accurate consumption information, for example, temperature data for the consumption period (or degree days as mentioned below)?

Degree Days

The analysis of the distribution of breaches indicated the proportion of breaches over or under the threshold was related to the season and that temperature was a significant determinant of the error. Therefore, an examination of possible temperature related adjustments was initiated to determine if there was a possibility of improving forecasting through the use of "degree days".

Heating Degree Days

"Heating degree days", or "HDD", are a measure of how much (in degrees), and for how long (in days), outside air temperature was lower than a specific "base temperature" (or "balance point").

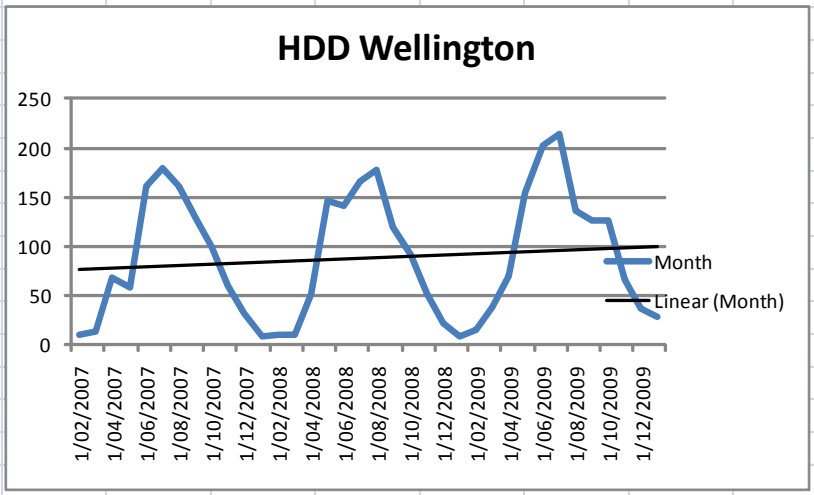
An example:

> Day 1, the outside air temperature was 16C throughout the entire day. The base temperature is (17C). Base temperature minus the outside temperature = 17C – 16C = 1 degree
>
> 1 degree * 1 day = 1 heating degree day on July 1st
>
> If, on day 2, the outside temperature was 2 degrees below the base temperature, we'd have:
>
> 2 degrees * 1 day = 2 heating degree days on July 2nd
>
> Day 3 - the outside air temperature was 17C, the same as the base temperature (i.e. 0 degrees below the base temperature).
>
> 0 degrees * 1 day = 0 heating degree days on July 3nd

These are simply summed over a period of time to give the heating degree days, this number can then be compared to the same period of time in a previous year to give an indication of the comparative energy requirements.

The table and graph below show how Wellington's temperature has varied over the last 3 years and possibly illustrates why the retailers were under-estimating for Winter 2009. In July 07 and 08 the degree days were fairly similar 180 and 166 respectively, but in August 09 jumped to 215 indicating a much colder period.

Description:	Celsius-based heating degree days for a base temperature of 15.5C	
Source:	www.degreedays.net (using temperature data from www.wunderground.com)	
Accuracy:	No problems detected	
Station:	Airport: Wellington, NZ (174.80E,41.33S)	
Station ID:	NZWN	
	Heating Degree Days	
Month starting	Month	Annual
1/02/2007	10	
1/03/2007	13	
1/04/2007	68	
1/05/2007	58	
1/06/2007	161	
1/07/2007	180	
1/08/2007	162	
1/09/2007	129	
1/10/2007	99	
1/11/2007	60	
1/12/2007	31	971
1/01/2008	8	
1/02/2008	10	
1/03/2008	11	
1/04/2008	51	
1/05/2008	147	
1/06/2008	141	
1/07/2008	166	
1/08/2008	178	
1/09/2008	120	
1/10/2008	91	
1/11/2008	52	
1/12/2008	22	997
1/01/2009	8	
1/02/2009	15	
1/03/2009	39	
1/04/2009	70	
1/05/2009	155	
1/06/2009	202	
1/07/2009	215	
1/08/2009	136	
1/09/2009	127	
1/10/2009	127	
1/11/2009	66	
1/12/2009	37	1197
1/01/2010	28	



If retailers used the previous years' seasonally adjusted daily volumes as a guide to the August 09 volumes they may have underestimated.

These figures might be used to derive a temperature sensitivity index for the volumes in each month or at least signal when the use of previous SADSVs would be inadequate.

Annexure 4: Breach threshold analysis for individual retailers

The following charts show the effect on the number of breaches and breach value for individual retailers.