

Final Audit Report:

Event audit to identify sources of UFG in respect of Greater Hamilton gas gate for March 2009 - February 2010

**Audit commissioned by Gas Industry Co under rule 66 of the Gas
(Downstream Reconciliation) Rules 2008**

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1 Background

1.1 Circumstances giving rise to the event audit

The annual UFG factors were calculated for the 2010/11 gas year by the Allocation Agent, and it was found that for a number of gas gates the annual UFG factor is outside the previous cap of 1.035 and floor of 0.985 used during the transition years of 2008/09 and 2009/10.

The Greater Hamilton gas gate was chosen by Gas Industry Co for an event audit as its annual UFG factor is among the highest of all gas gates (at 1.0465). It is also among the largest gas gates, both in terms of GJs and active ICPs, and is the 3rd largest contributor of UFG after Greater Auckland and TawaA.

Rule 46.3.1 shows that the annual UFG factor is determined by dividing the sum of the actual daily energy quantities injected for 12 months by the sum of the best available consumption information for all allocation groups for those 12 months.

The months included in the annual UFG factor calculation are the 12 months up to and including February of the previous gas year. For the 2010/11 gas year, the months are Mar 2009 – Feb 2010 inclusive.

The sum of energy injected at the gas gate was 1464.0 TJs for this period. The sum of best consumption information was 1398.9 TJs over the same period. The difference that this audit is investigating is a loss of 65.1 TJs.

1.2 Auditor

GIC commissioned Tetenburg & Associates Ltd to carry out this event audit on 9 November 2010.

Tom Tetenburg is the auditor responsible for this audit. No other persons were used to perform this audit.

1.3 Objective

The objective of this event audit was to investigate the possible cause(s) of excessive UFG at the Greater Hamilton gas gate (GTH11301) for the consumption periods of March 2009 - February 2010, which impacted on the AUFG calculations to be used for the following gas year.

1.4 Methodology and scope

ICPs examined

The number of ICPs at Greater Hamilton gas gate is approximately 28,000 (with meters).

In order to make the audit achievable, it was decided to limit the number of ICPs to be examined individually, to those in Allocation Groups 1 – 4 (the registry shows 305 ICPs in these groups). Aggregated data for Allocation Groups 5 & 6 was also examined.

This approach meant that retailers were not asked to provide individual ICP information for an excessively large number of ICPs, which would have been cost-prohibitive and time-consuming to gather.

Scope of the investigation

As anticipated under the Terms of Reference, the following matters were investigated as part of this event audit:

- material under-submission of estimated consumption for non-TOU sites;
- metering set-up errors in billing/reconciliation systems;
- metering equipment malfunctions and/or inaccuracies at gate metering or medium-large commercial sites;
- medium-large commercial sites not being billed;
- medium-large commercial sites incorrectly flagged as de-energised or decommissioned.

These matters were investigated using the following approach:

- gathering data from allocation participants (meter owners, retailers, distribution and transmission system owners) as well as from the gas registry and the allocation system and cross-checking so as to identify any discrepancies. For example, variations between:
 - metering parameters in meter owners' systems and the corresponding parameters in retailers' systems;
 - meter size and measured consumption, where low usage on a large meter can signal a billing factor problem or a metering failure;
 - aggregate as-billed volumes for a retailer compared with submission quantities.
- Wherever possible, in respect of TOU-metered sites, access historical information for the period prior to the Rules coming into force and identify sites that exhibit significant volume changes relative to current-day consumption. Investigate any differences that exist;

- Where considered necessary, arrange site visits where analysis indicates potential anomalies that warrant site investigation to confirm metering set-up and/or malfunction.

1.5 Information provided by retailers

Tetenburg & Associates were appointed as auditor on 9 November 2010.

An information request was sent to retailers on 12 November 2010. Data was sought for the period Jan 2009 – Sep2010 inclusive.

The last retailer to respond (Genesis) sent their information on 21 December 2010, however it is noted that Genesis have the largest number of ICPs at this gas gate.

While I do not consider that any retailers failed to comply with their obligations under rule 69 to provide information to the auditor, there was a complication regarding obtaining data for EGas, who went into voluntary liquidation just prior to the audit. I believe that sufficient information has been gathered to satisfy the requirements of this audit for the EGas ICPs.

1.6 Draft audit report comments

A draft audit report was circulated by GIC on 21 February 2011 to industry participants for comment, in accordance with Rule 70.

Responses were received from EnergyDirect, Genesis, Contact, OnGas and Vector Transmission.

OnGas comments are attached in Appendix A.

The comments received were considered in accordance with Rule 71.1, and as a result I have made some changes to the audit report.

2 Findings

2.1 TOU – telemetry error

During the data-gathering stage of the audit, OnGas declared a self breach to the Market Administrator regarding under-submission for a TOU site.

This site had been recording half-hourly totals at the request of the customer, and from 1 Dec 2008 this site was changed from manual monthly download to interrogation via telemetry. The hourly telemetry interrogation only gathered the second half hourly total, so the volumes reported to the Allocation Agent were approximately half of the real usage.

Revised data for this ICP has been received, and includes an additional 17.1 TJs during Mar 2009 – Feb 2010 (which is approximately 26% of the 65.1 TJs being investigated). This leaves 48 TJs unaccounted for. The revised annual UFG factor would be 1.0339.

2.2 Under-submission of allocation data compared to As Billed data

Unaccounted-for gas can be defined as the difference between the amount of gas purchased and the amount of gas sold through a measured gas distribution system. This difference is commonly described as a percentage of gas purchased.

The sum of a retailer's monthly submissions should tend to the sum of their gas sales, when compared over a long period. Also, as the forward and historical estimates get replaced by more accurate data over time, the final allocation submissions should be closer to the sales.

The accuracy of the submission data is important as it forms the basis of the AUFG factor calculations.

The following table shows the Allocation Group differences in GJs and as a % between the best submission data (final or interim – see notes below the table) and the As Billed data, across all parties, for the 12 months of March 2009 to February 2010 inclusive.

Table 1. Comparison of Best Submission Data and As Billed Data

	GJs	Best Sub as at 1 Jul 10 (See Note 1)	Best Sub as at 1 Feb 11 (See Note 2)	As Billed	Diff Sub as at 1 Jul 10	Diff%
AGCL	All Grp 4	6,819	6,002	5,864	956	16.3%
AGCL	All Grp 6	19,946	20,882	21,687	- 1,741	- 8.0%
CTCT	All Grp 4	7,501	7,675	7,941	- 439	- 5.5%
CTCT	All Grp 6	16,371	17,275	17,988	- 1,617	- 9.0%
EDNZ	All Grp 4	466	465	467	- 1	- 0.2%
EGLT	All Grp 2	15,447	15,447	15,447	0	0.0%
EGLT	All Grp 4	100,747	99,957	99,671	1,076	1.1%
EGLT	All Grp 6	21,307	21,751	21,079	228	1.1%
GEND	All Grp 2	20,277	20,277	20,247	30	0.1%
GENG	All Grp 4	71,846	73,310	71,833	12	0.0%
GENG	All Grp 6	603,902	602,177	608,825	- 4,923	- 0.8%
GNGC	All Grp 1	193,227	196,649	193,228	- 1	0.0%
GNGC	All Grp 2	135,041	135,041	135,040	1	0.0%
GNGC	All Grp 4	67,348	67,348	67,738	- 390	- 0.6%
GNGC	All Grp 6	2,066	2,066	2,070	- 4	- 0.2%
GNVG	All Grp 2	55,609	55,609	55,609	0	0.0%
GNVG	All Grp 4	5,924	6,883	6,901	- 977	- 14.2%
MEEN	All Grp 6	55,038	54,991	54,856	182	0.3%
BOPE	All Grp 6	5	5	7	- 2	- 26.9%
Total		1,398,887	1,403,810	1,406,497	- 7,610	- 0.5%
TOU-telemetry error update			- 3,422			
			1,400,388	1,406,497	- 6,109	- 0.4%
	AllGrp1,2	419,601	423,023	419,570	31	0.0%
	All Grp 4	260,652	261,640	260,415	237	0.1%
	All Grp 6	718,634	719,147	726,512	- 7,878	- 1.1%

Note 1: The column, containing best submission data as at 1 Jul 2010, has the 3 months of March 2009 to May 2009 inclusive as final allocation submission figures, and the 9 months of October 2009 to February 2010 inclusive as interim allocation submission figures, due to Rule 46.4.2 requiring the Allocation Agent to calculate and publish the AUFG factors by the 1st business day of July each year. Any subsequent changes from interim allocation submission to final allocation submission figures after 1 July will not be reflected by a change in the AUFG factors applied for the following gas year.

Note 2: The column containing best submission data as at 1 Feb 2011 has the 9 months of March 2009 to December 2009 inclusive as final allocation submission figures, and the 3 months of October 2009 to February 2010 inclusive as interim allocation submission figures. Also, OnGas did revise their

Allocation Group 1 data for the Nov2009 & Dec2009 final allocations, due to the TOU – telemetry error discussed above. This has been subtracted at the bottom of the table, so that it does not mask the overall change (or get accounted for twice). There has been an improvement in difference for the two sets of best submission data, from –7.6 TJs to –6.1 TJs.

By including an additional 7.6 TJs in the AUFG calculations, this would leave 40.4 TJs unaccounted for. The revised annual UFG factor would be 1.0284.

Note also that the Allocation Group 1 & 2, and Allocation Group 4 total data compares very closely. Most of the difference is with the Allocation Group 6 data (as you would expect).

There are larger magnitude % differences for Auckland Gas Co, Contact, and NovaGas across Allocation Groups 4 & 6, however these do decrease markedly as more final allocations are processed. For the size of load that Genesis has in Allocation Group 6, it appears that their methodology for interim submissions is very good, as even back at 1 July 2010, their difference was only 0.8%. BOP Energy allocations are for 2 months only, with a very small number of ICPs.

2.3 Registry cross-check

Of the registry's 305 ICPs in Allocation Groups 1 – 4, 23 show as inactive or have the meter removed. This leaves 282 ICPs where retailer data is expected (even if consumption is nil). A cross-check found that retailers had provided audit data for all 282 of these ICPs.

2.4 Conversion to energy (section 2.7 of NZS 5259:2004)

Rule 28.2 provides:

“Every retailer must ensure that the conversion of measured volume to volume at standard conditions and the conversion of volume at standard conditions to energy complies with NZS 5259:2004 for metering equipment installed at each consumer installation for which the retailer is the responsible retailer.”

Section 2.7 of NZS 5259:2004 Gas Measurement covers the Conversion of Measured Volume to Standard Value of Energy. Note that the maximum permissible errors (MPEs) have been changed, due to Amendment No.1, November 2009.

Gas meters only measure the gas volume at the (non-standard) conditions present at the individual gas measurement system. The retailer's billing system contains processes to convert the gas volume to standard conditions, by applying factors for pressure, temperature, altitude, and compressibility. Finally, the calorific value of the gas is applied to convert the gas volume to energy.

Any problems discovered with retailers' conversions within their billing systems would contribute to long-term UFG.

Pressure factor F_p , MPE +/- 1.1%

Metering pressures used in retailers' billing systems differ from Meter Owners' records in 27 of 259 ICPs investigated (10.4%), although most of the differences are in the order of a few kPAs. This can still equate to a few percent per ICP, however further analysis may show that the unders balance out the overs.

At one ICP, it was found that the retailer (Genesis) was using 35 kPa for the fixed factor metering pressure, when the meter owner (AMS) records showed 102 kPa. When this difference was queried, it was found that Genesis received the figure of 35 kPa from the meter owner. I suspect that the outlet pressure of the GMS was provided instead of the metering pressure. The impact on UFG for the 12 month period would be to add 110 GJs to an annual bill of 224 GJs.

We requested that the Meter Owner send a technician to this site to measure the metering pressure with a calibrated gauge, in order to confirm whose records are correct. The correct metering pressure is 102 kPa.

Temperature factor F_t , MPE +/- 1.1%

For Energy Direct, only corrector sites compensate for temperature. All other sites use 15 degrees Celsius, so the temperature correction factor is $F_t = 1.0000$. This would lead to volumes being over-allocated in summer months and under-allocated in winter months.

However, as Energy Direct only had one ICP at Hamilton for the first 8 months of the 12 months under review, the effect on UFG is minor (extra 7 GJs).

All other retailers use a profile of ground temperatures across a year, which is used to derive an average gas temperature for the billing period (between reads). Some retailers have a profile of only 12 monthly figures, whilst other retailers have a profile of 365 daily figures.

Joule-Thomson effect

Only two retailers, NovaGas and Auckland Gas Co, are applying Joule-Thomson effect in addition to their base temperature profile. As most of the ICPs have an inlet pressure of 350 kPa (as shown in the registry), and a large majority have metering pressures of 35 kPa or lower, then a pressure drop of 315 kPa would result in a theoretical temperature drop of approximately 1.6 deg C (a shift of approximately 0.5% in the temperature factor) below that of the ground temperature profile currently applied.

Adjusting the As Billed data for Allocation Groups 4 & 6 for those retailers not already applying the Joule-Thomson effect, this 0.5% would result in increased billing of 4.8 TJs.

By including an additional 4.8 TJs in the AUFG calculations, this would leave 35.6 TJs unaccounted for. The revised annual UFG factor would be 1.0249.

There is one Allocation Group 4 ICP on the registry with an inlet pressure of 1100 kPa. This ICP has a metering pressure of 2.5 kPa. The pressure drop would cause a temperature drop of approximately 5.5 deg C. It is estimated that allowing for the temp drop would have added 17 GJs over the year. This ICP was with EGas, and has now switched over to NovaGas who do apply the Joule Thomson effect.

For retailers to accurately apply the Joule-Thomson effect, the registry must contain accurate inlet pressure information. Current records show a range of inlet pressures from 6 kPa to 1700 kPa, with a majority at 350 kPa (87%).

Altitude Factor Fa, MPE = +/- 1.0%

Incorrect altitudes are used in one retailers' billing system (OnGas). This retailer believes that the height of the gas gate (set at 1 metre above sea level) was the figure they needed to adjust to/for at all of their ICPs (even though this approach was highlighted as incorrect in a previous audit report on the TawaA gas gate). However, it is the height of each individual ICP above sea level that is to be used in the corresponding Fa calculations. The gate volumes are converted for altitude (back to sea level) as part of the conversion to standard conditions and then converted to energy values.

$$Fa = 1 - ((h/8500)/Fp)$$

where h = altitude of ICP above sea level in metres,

Fp = (101.325 + metering pressure)/ 101.325 and metering pressure is in kPa (gauge)

The height h is the altitude in metres of each ICP metering installation. Adjustments for altitude are to convert the volume back to that which the volume of gas would be at sea level.

At a low pressure of, say, 2.5 kPa, Fa at 1 metre = 0.9998851.

If this ICP were at 50 metres, then Fa = 0.9942592.

The difference, 0.0056259, is 0.57% of 0.9942592, and so within the +/- 1.0% limit. At higher metering pressures, the % error is reduced.

The range of ICP heights in the registry for Greater Hamilton is from 0 to 390 metres (however the vast majority are from 30 to 50 metres).

Note that, because the heights of the ICPs are probably higher than the 1 metre used, the revised altitude factors would decrease and so the billed GJs would decrease accordingly. This would lead to a slight increase in UFG.

An estimate of the revised altitude factors and the revised consumption for the OnGas ICPs resulted in a decrease by 970 GJs over the year.

OnGas made a comment that their data has to be consistent with the altitude data being used by the meter owner, AMS, to ensure accurate energy calculations. Subsequent investigation has found that OnGas use a data service whereby AMS perform the calculations. Regardless of who does the calculations however, it is the retailer's obligation to ensure conversion complies with NZS 5259.

They also comment that it would be impractical and not cost-effective for OnGas to change its altitude data. I would suggest that, as there already appears to be a system in place for applying altitudes, and that the number of ICPs involved is relatively small, it would be fairly simple and straight forward to update to more accurate altitude information.

2.5 Gate metering

There are two gas gates supplying one network forming the Greater Hamilton region, one at Te Kowhai (HTK08301) and one at Temple View (HTV11301). The combined gas figures of these two gates form the notional gas gate of Greater Hamilton (GTH11301), for allocation.

We have received copies of the As Found and Calibration reports for the meters and correctors at these two gas gates, and are satisfied that these devices were operating accurately during the 12 months under investigation for this audit.

2.6 Meter multipliers

An examination of the monthly consumption data provided for the 282 registry ICPs did not show any sudden step changes at switches, nor were any x 10 variations arising from meter changes detected.

Comparisons of historical TOU data (pre Oct 2008) to recent TOU data did not show any significant changes (even for the site with the TOU-telemetry error, as the monthly usage pattern at this site is quite erratic).

2.7 Number of Dials

As for metering pressure comparison purposes, we again used the Meter Owner as the database of record for the number of dials to be read, and comparing with the Retailer's number of dials to be read, it was found that there were differences in 50 of 259 ICPs investigated (19.3%).

As reading one digit less could result in underbilling of a customer by a factor of ten, these ICPs were examined closely. Readings had been provided by retailers for the Jun 2009 billing period, however in most cases any leading

zeroes were not shown. In some instances, more digits were shown in the Retailers readings than the Meter Owner had recorded.

2.8 Meter capacity checks

To further refine the check of possible underbilling by a factor of ten, the hourly cubic metre capacity of the gas meter was compared to the maximum monthly throughput. This resulted in 22 possible ICPs where the throughput was down in the lower one tenth of the meter's capacity.

Although there are legitimate reasons for a site to use a lower quantity of gas through a relatively large meter, it was decided that these sites should have site visits to check for any discrepancies with the data provided for the audit.

Of the 22 sites, 6 sites were with Genesis and 16 were with EGas. Access was arranged to the meters through Genesis and NovaGas (who were picking up the EGas customers following the EGas liquidation).

2.9 Site Visits

Low Usage

At 21 of the 22 sites, meter readings were taken and checks confirmed the low usage by these customers.

These readings also confirmed that there were instances where the Retailer had the correct number of dials, and other instances where the Meter Owner had the correct number of dials. Therefore it is hard to say whose records should be used as the database of record for number of dials.

With future audits in mind, it would also be useful if Retailers could provide readings information which included any leading zeroes. It is also suggested that retailers cross check with the Meter Owner to identify and resolve any discrepancies in number of dials to be read.

At one site, SkyCity, it was found that the meter reader had been reading the wrong meter (possibly a downstream check meter). The correct meter has been located and is to be read from now on. This was an EGas customer, now switched to NovaGas, who have been informed of the meter mix-up.

Calculating back to the meter installation date of 13 Nov 2007, and using the meter reading provided by the meter owner for that date, this site has been under billed by approximately 1240 GJs over 39 months, or approximately 380 GJs over 12 months.

This meter mix-up could have been resolved a lot sooner if the issue with an incorrect meter serial number/reading had been investigated. I also noted one month in the billing history when a negative amount of GJs was invoiced. This was probably the first month that the wrong meter was read.

Inactive ICPs

Whilst in Hamilton, I also tried to check for sites which were listed as inactive or decommissioned on the registry. This proved to be a time consuming and frustrating exercise, searching for a meter that was supposed to be no longer on site. In future audits, it would be extremely useful to have on hand the old meter location, and the access details/notes from the meter-reading company. Several sites were currently undergoing major construction/development and could not be accessed.

2.10 Summary of UFG figures

The following table summarises the UFG figures and corresponding AUFG factors for the 12 months of Mar 2009 – Feb 2010 inclusive at the Greater Hamilton gas gate, including the approximate amounts from significant contributing UFG sources uncovered during this audit.

Table 2. Summary of UFG Figures

	Mar 2009 – Feb 2010 (TJs)	AUFG factor
Injected	1,464.0	
Best Sub for AUFG calcs	1,398.9	
UFG	65.1	1.0465
Less TOU-telemetry error	- 17.1	1.0339
Less AsBilled difference	- 7.6	1.0284
Less Joule Thomson effect	- 4.8	1.0249
Less incorrect Fp	- 0.1	1.0249
Less SkyCity readings mix-up	- 0.4	1.0246
Plus Altitude factor estimate	+ 1.0	1.0253
UFG left	36.1	

It should be noted that some of the AsBilled difference has already been resolved by the changes from interim to final allocations for October, November and December 2009, and that there may be further resolution when the final allocations for January and February 2010 are completed.

3 Compliance with the Rules

This section of my audit report addresses the circumstances in which there could be an issue as to compliance with the rules.

However, I note that not every instance of UFG is a material breach of the rules. For example, the rules include processes which allow for some estimation and a certain percentage of error. Over time, however, there are improvements in accuracy as a result of processes set out in the rules for revising allocations.

3.1 TOU – telemetry error

Rule 26.2 provides:

“26.2 Every allocation participant must provide the information required under these rules in a manner that is:

26.2.1 Accurate and complete; and

26.2.2 Not misleading or likely to mislead; and

26.2.3 Timely.”

OnGas provided the Allocation Agent TOU figures for allocation that were not accurate.

Although it is inevitable that there is some variation between the allocation figures for a particular month when compared with As Billed data, over a 12-month period these variations generally average out to approximately +/-1%. However, the TOU allocation amounts provided by OnGas were significantly understated. Over the 12 month period of March 2009 to February 2010, OnGas’s figures were understated by approximately 12%. This inaccuracy in allocation figures appears to breach rule 26.2.1. Accordingly, I conclude that there is a material issue as to OnGas’s compliance with this rule.

OnGas reported a self-breach to the Market Administrator on 25 November 2010.

Note that the retailer audit information, requested on 12 November 2010, was received from OnGas on 26 November 2010. The TOU data for this ICP was not amended. The auditor was notified of the OnGas self-breach by the GIC, who forwarded the revised gas usage data.

3.2 Other matters considered

As Billed Difference

As mentioned above in 2.10, some (and possibly all) of this difference may be resolved as the interim allocation submission figures are updated to final allocations.

This process is designed to progressively improve accuracy of consumption submissions (for Allocation Groups 3 through 6) as successively greater proportions of data are based on actual meter reads.

Metering pressures

Rule 28.2 (stated previously in section 2.4 above) relates to retailers converting volumes to energy using NZS 5259:2004.

Where retailers have been using a different metering pressure to that of the Meter Owner, it is not possible to assess whether rule 28.2 has been complied with until the true metering pressure for the individual ICP has been ascertained.

This may only be possible through site visits by qualified personnel with certified calibrated gauges (traceable back to national standards). However, some changes, for example from a metering pressure of 2.5 kPa to 3 kPa, do not exceed the +/- 1.1% maximum permissible error for pressure factor accuracy. Changes from 1.5 kPa to 10 kPa would exceed the limit, as would the change at the site mentioned where a retailer had 35 kPa and meter owner had 102 kPa.

The overall effect on UFG by these incorrect metering pressures may mean that the unders balance out with the overs.

Metering temperature

Where gas temperatures have been estimated to be close to ground temperature, it is not possible to assess whether rule 28.2 has been complied with until the true metering gas temperature for the individual ICP has been ascertained. This would mean monitoring the gas temperature using a certified calibrated temperature probe (traceable back to national standards) at a site over a month, and checking the temperatures recorded only when the gas is flowing.

TOU devices already gather such data and so provide a valuable cross-check to the temperature factors being applied at fixed factor sites such as those in Allocation Group 4.

Joule Thomson effect

The Joule Thomson effect is a physical effect of a gas pressure drop causing a corresponding gas temperature drop. By choosing to not compensate for this effect, some retailers are contributing towards the overall gate UFG.

The 4.8 TJ lost in this manner for one year is a significant amount. However, by applying only the ground temperature profile (already an estimate) and not combining this with an individual site temperature drop (another estimate) does not necessarily mean that the +/- 1.1% maximum permissible error for temperature factor accuracy has been exceeded.

Altitude factors

Where incorrect altitudes have been used, it is not possible to assess whether rule 28.2 has been complied with until the true height above sea level for the individual ICP has been ascertained, and the difference between altitude factors can be calculated.

Note however, that application of the correct altitude factors would result in a small decrease in billing, and consequently a small increase in UFG.

In any case, I do not consider the findings with regard to metering pressures, temperature correction, and altitude factors to be material issues or to have materially contributed to UFG at the Greater Hamilton gas gate. However, these are areas where retailers must ensure they are complying with NZS 5259:2004 for each individual ICP, and where amendments in methods used can lead to an improvement in the percentage of UFG, and improved accuracy of the billing of the end consumer.

4 Rule 75. Responsibility for audit costs

Rule 75.2 provides:

“75.2 In relation to an audit under rule 66, the following provisions apply:

75.2.1 If the auditor concludes that a material issue has been raised in relation to compliance with these rules, the allocation agent or the allocation participant to which the material issue relates must pay the costs of the auditor, and if the material issue relates to more than one person, then each person must pay the costs of the auditor in such portions that reflect their contribution to that material issue as determined by the auditor; and

75.2.2 If the auditor concludes that no material issue has been raised in relation to compliance with the rules, the costs of the auditor must be apportioned between such of the allocation agent and allocation participants, as the case may be, as the industry body determines in its sole discretion.”

The Terms of Reference for this audit require me to provide certain information in relation to the allocation of audit costs under rule 75. I provide the following information (as to whether there is a material issue or issues) in accordance with the format in the Terms of Reference:

- I have determined that the understating of TOU allocation figures (submitted to the Allocation Agent) by OnGas is a material issue as to OnGas’s compliance with rule 26.2.1. The data was not accurate, and this contributed approximately 17.1 TJs of UFG towards the AUFGE calculation. The problem could have been avoided if OnGas had taken manual meter readings each month and compared the difference with the telemetry data. I commend them for initiating a self-breach, however this was a significant contribution to the UFG and hence high AUFGE factor calculated for the following gas year, (the issue which instigated the need for this audit).
- At this point in time, the understating of TOU allocation figures by OnGas is the only material issue in relation to compliance with the rules.
- OnGas’s contribution to the material issue is therefore 100%.

5 Conclusions

The most significant issue arising from this event audit is that OnGas has been understating its TOU allocation figures, due to their TOU - telemetry problem. This equated to approximately 17.1 TJs of UFG for the period of March 2009 to February 2010 inclusive.

There is a requirement in the Rules for the difference between final allocation submissions and initial allocation submissions to be within +/- 10%. The As Billed data that was gathered as part of this audit is very close to the final and interim figures used in the AUFG calculation. The difference was 7.6 TJs or 0.5%.

There is a variety of minor metering and billing system energy conversion errors by retailers that could potentially be contributing towards the remaining UFG, however these do not appear to be significant contributors to UFG. Application of the Joule Thomson effect on top of the ground temperature profiles would provide the most improvement.

6 Recommendations

The recommendations resulting from this audit are as follows:

- It is recommended that special allocations be initiated by GIC under rule 51 (to correct for any unfairness that has resulted from the under-reporting of TOU allocation data by OnGas), where revised data will not be included in any further final allocations.
- It is recommended that the AUFG factor for Greater Hamilton, used for the gas year October 2010 – September 2011, be amended for the TOU-telemetry error of 17.1 TJs (and any refinement from interim to final allocations, at the same time) and that this amended factor be used in subsequent allocations for this gas year.
- It is recommended that retailers cross-check their information with the Meter Owner's records, particularly metering pressure.

In addition, I also suggest that the following steps be undertaken in due course:

- Retailers should always take monthly readings at TOU sites and compare the difference to the sum of the TOU daily quantities, as a double check.
- Retailers should apply Joule-Thomson effect for their fixed factor ICPs, or install correctors at large volume sites so that the actual temperature drop can be applied.
- Retailers investigate any discrepancies identified by meter readers promptly, such as incorrect meter serial number, incorrect number of digits in reading, or negative consumption.