Zincara

From strategy to action

Review of Gas Distribution Businesses Unaccounted for Gas

Prepared for

Essential Services Commission

22 Sept 2022

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1. EXECUTIVE SUMMARY

The Essential Services Commission has engaged Zincara to assist It in the setting of the Unaccounted for Gas (UAFG) benchmarks for 2023-27 for the gas distribution businesses (DB). The Commission propose to carry out the process in two stages:

- Stage 1 to calculate using the 217 UAFG methodology and publish its proposed benchmarks.
- Stage 2 to consult with stakeholders and publish its final decision.

This report is for the Stage 1 Process.

Management of UAFG

Section 2.4 of the Gas Distribution System Code of Practice (GDSCoP) states that a distributor must use reasonable endeavours to ensure that the quantity of accounted for gas is less that the benchmarks. Following request from the Commission, the DBs submitted its UAFG plans. AGN and Multinet had very similar plans with both businesses classifying the sources of UAFG into metering, fugitive gas emission and system. Both businesses also indicated that there were management oversight. We concluded that the action items in the plans would have been carried out by the gas industry and considered good industry practice.

AusNet provided its 2018 UAFG plan which classified the sources of UAFG into measurement and fugitive gas. A review of the action items showed that there are number of items which have completion dates in 2018 and 2019. There are no updates of these strategies. However, the steps outlined in the plan are consistent with good industry practice. We recommend seeking an update of the plan from AusNet.

In relation to the non-DTS network, it is noted that the settlement between AGN and its retailers and similarly with Multinet and its retailers are still be finalised. In addition, further information is required on how AusNet is managing its non-DTS networks.

UAFG benchmarks

Consistent with the Commission's 2017 Decision, the reveal cost approach was adopted in setting the UAFG benchmark. Only settled data which is the agreed to by the DBs and the retailers was used to calculate the benchmarks.

The DB's networks are either connected to the Declared Transmission System (DTS) or the Non-Declared Transmission System (Non-DTS). For the purpose of this report, DTS refers to the networks connected to the DTS and similarly Non-DTS refers to the connecting networks.

The Albury networks has always been considered as part of the AGN Victorian networks and as such, any comments regarding the AGN Victorian networks also applies to Albury.

Gas Distribution Systems Code of Practice UAFG Calculation

UAFG is the difference between the gas injected into the system and the gas withdrawn from the networks. The percentage of total UAFG is the difference divided by the gas injected into the networks.

In Victoria, the total UAFG is allocated to two customer classes:

- Class A - a large customer that has a gas demand greater than 250,000 GJ/annum

- Class B – a small to medium size customer that has a gas demand less than 250,000 GJ/annum

The UAFG for the Class A customers is a fixed percentage of the total UAFG. The UAFG for Class B is the difference between the total UAFG and the UAFG for the Class A customers. As Class A customers is always a fixed percentage, the calculation of the UAFG benchmarks is for Class B customers.

DTS Networks Class B Customers

The UAFG benchmarks can be calculated using either the most recent settled data or using a multi-year. Using the most recent data may not reflect the year-on-year variation. Using a multiyear average has the benefit of smoothing out the year-on-year variation. The table below shows the average UAFG using a multi-year approach.

Table 1-1 UAFG Average for Various Periods

	3 Years	Period	4 Years	Period	5 years	Period
AGN	4.04%	2016-18	4.11%	2015-18	4.01%	2014-18
Multinet	5.47%	2016-18	5.60%	2015-18	5.47%	2014-18
AusNet	4.60%	2017-19	4.72%	2016-18	4.73%	2015-19

Source: Zincara's calculation

Zincara recommends using a three-year approach. Using a three-year approach already means that the data used goes back to 2016 for AGN and Multinet and 2017 for AusNet. This data is already five to six years old. Using data for the four- and five-year periods or even longer periods would mean using data that is even more very dated. This is undesirable since the distributors' infrastructure and gas demand changes over time. Therefore, using such old data means that the results would no longer be relevant today.

Non-DTS Networks Class B Customers

For the Non-DTS, the data provided by the AGN showed that the last settled data was in 2015 and for Multinet, the last settled data was in 2013. AusNet's last settled data was in 2019. We consider that the AGN and Multinet data are too old to be used for setting the forecast UAFG benchmarks. We therefore recommend that the Commission adopt its 2017-22 benchmarks for both businesses.

AusNet's actual data is significantly higher than the benchmarks and as such, we do not recommend using settled data to forecast the UAFG benchmarks. We recommend seeking further information from AusNet on the significant differences. In the meantime, we recommend that the Commission adopt its benchmarks for 2017-22 for the forecast period. The table below shows the differences between the actual and the forecast.

Table 1-2 AusNet Non-DTS UAFG Comparison

	2016	2017	2018	2019
Benchmark	5.1%	4.9%	4.9%	4.9%
Actual	14.0%	7.26%	7.40%	6.94%

Source: GDSC Version 14.0 January 2021 and GDSC 2014 for benchmarks
Actual Data provided by AusNet

Forecast Efficiency Factor

There are multiple factors that contribute to UAFG. They can be grouped into the following areas:

- Fugitive gas emission;
- Metering accuracy;
- Heating Value; and
- Data quality.

The extent of contribution from these factors are not easily quantifiable and as such do not lend themselves be included in an efficiency factor. Zincara therefore considers that there should not be an efficiency factor.

Notwithstanding the difficulty in estimating an efficiency component, Zincara recommends that the Commission seek from the distributors how they have been managing UAFG efficiently which is a requirement of the GDSC.

Changes from Calendar Year to Financial Year

The Victorian Government has changed the gas Access Arrangement (AA) period from calendar year to financial year. To facilitate this change, the current AA period was amended by six months from I January to 30 June 2023. It is therefore prudent to also change the UAFG period from calendar year to financial year.

A comparison of the recommended benchmarks against an extension of the current benchmarks for six months to facilitate the change showed that the only Multinet is affected by the extension. The table below shows the difference between the current benchmarks and the recommended benchmarks.

Table 1-3 Comparison between current and recommended benchmarks

Company	Class B Benchmarks		Class A Benchmarks	
	2018-22 (Current)	2023-28 (Recommended)	2018-22 (Current)	2023-28 (Recommended)
AGN (Victoria)	0.040	0.040	0.003	0.003
AGN (Albury)	0.040	0.040	0.001	0.001
Multinet	0.053	0.054	0.003	0.003
AusNet	0.046	0.046	0.003	0.003

Source: Zincara's data from GDSC and calculations

Another issue is the reconciliation process as defined in the Gas Distribution System Code of Practice which defines the settlement period in calendar year. To be consistent, the reconciliation process will have to be amended to financial year which may also have an impact on the AEMO internal processes.

A further issue is the average volume weighted market price which is a component for determining the financial payment between the distributor and the retailer. How the average market price is determined needs to be examined to see if there is a financial implication for this change and the extension of the current benchmarks for six months.

2. INTRODUCTION

2.1 BACKGROUND

The Essential Services Commission (Commission) has commenced its process to set the Unaccounted for Gas (UAFG) benchmarks for the period 2023-2028 for the gas distribution businesses (distributors). The Commission has divided the process into two Stages.

Stage 1

The Commission proposes to calculate the UAFG benchmarks using the methodology from the Commission's 2017 Final Decision. The methodology uses a revealed cost approach taking a multi-year average. After calculating its proposed UAFG benchmarks, the Commission will publish its draft decision paper.

Stage 2

The Commission proposes to consult the relevant stakeholders on its proposed benchmark and analyse all submissions received from the stakeholders. The Commission will then finalise its benchmarks in its Final Decision.

The Commission has therefore engaged Zincara P/L (Zincara) to assist it in this process. This report is for Stage 1 of the process.

2.2 SCOPE

In assisting the Commission to set the benchmark UAFG, Zincara has considered the following:

- Distributors' management of UAFG.
- How many years of data to be used for the calculation.
- What are the years of data that should be adopted
- Any efficiency that should be proposed.
- Change of UAFG benchmarks from calendar year to financial year.

2.3 GAS DISTRIBUTION SYSTEM CODE OF PRACTICE

In Victoria, the Commission determines the UAFG for a five-year Access Arrangement period for the networks connected to the Declared Transmission System (DTS) and the networks connected to the Non-Declared Transmission System (Non-DTS). These annual benchmarks are set out in the Gas Distribution System Code of Practice (GDSCoP).

For the purpose of this report, Zincara will refer to the networks as DTS and Non-DTS. The latest UAFG benchmarks for the DTS are shown in the table below.

Table 2-1 UAFG benchmarks for the DTS

Company	Class B Benchmarks					Class A Benchmarks 2018-2022
	2018	2019	2020	2021	2022	
AGN (Victoria)	0.040	0.040	0.040	0.040	0.040	0.003
AGN (Albury)	0.040	0.040	0.040	0.040	0.040	0.001
Multinet	0.053	0.053	0.053	0.053	0.053	0.003
AusNet	0.046	0.046	0.046	0.046	0.046	0.003

Source: GDSCoP Version 15.0 March 2022

Note:

- Class A refers to customers with an annual consumption > 250,000 GJ/pa
- Class B refers to customers with an annual consumption < 250,000 GJ/pa

UAFG benchmarks for the Non-DTS are shown in the table below.

Table 2-2 UAFG benchmarks for the Non-DTS

	2018	2019	2020	2021	2022
AGN	0.020	0.020	0.020	0.020	0.020
Multinet	0.020	0.020	0.020	0.020	0.020
AusNet	0.049	0.049	0.049	0.049	0.049

Source: GDSCoP Version 15.0 March 2022

2.4 APPROACH

As part of the Stage 1, Zincara's approach is as follows:

- Assist the Commission in formulating the data and information required.
- Review and analyse the data provided by the distributors.
- Assess the effects of the historical data and its impact on the actual UAFG.
- Evaluate the data's relevance for the forecast UAFG.
- Recommend the UAFG for the forecast period 2023-27
- Determine if there is any efficiency gain that can be included in the next period.

Zincara has only carried out a desktop review on the material provided by distributors and has assumed that the data provided is accurate. Zincara has not verified the accuracy or veracity of the data.

It should be noted that any discussion on AGN includes the Albury Networks.

3. DISTRIBUTORS' UAFG MANAGEMENT

3.1 INTRODUCTION

Section 2.4 of the GDSCoP states:

"A distributor must use reasonable endeavours to ensure that the quantity of unaccounted for gas in its distribution system for any year as a percentage of the aggregate quantity of gas received by the distributor at transfer points into its distribution system in that year is less than the unaccounted for gas benchmark set out against its name in Schedule 1, Part C to the Distribution System Code. "

In response to the above requirement, the distributors submitted their UAFG management plans.

3.2 AUSTRALIAN GAS NETWORK (AGN)

In its submission[1], AGN said that it places significant emphasis on the analysis and mitigation of UAFG in recognition of the safety, cost, and environmental impacts. UAFG is reported to both senior management and Board levels. UAFG reports are compiled monthly and the analysis of these reports is used to set the UAFG strategy.

AGN classified the sources of UAFG into the following:

1. Measurement – error in physical measuring and/or calculating gas;
2. Fugitive gas emissions – physical losses of gas (e.g leaks) and;
3. Systems – error in UAFG reconciliation modelling, as well as errors within systems that store and process measurement data.

3.2.1 Measurement

AGN listed 17 activities that it carries out in this category. The key activities include:

- Liaising with APA annually on the maintenance and replacement of APA's custody transfer meters (CTM), which are the injection points into the networks, to ensure their ongoing accuracy.
- Ensure that meters on customers' sites are accurate through its ongoing time expired meter replacement program and replacement of faulty meters.
- Carry out checks on the temperature and pressure corrections on its industrial customers and ensure that the residential customers are supplied at the appropriate pressure to avoid any incorrect pressure and temperate correction factors.
- Monitor AEMO's implementation of heating value zones in Victoria and the impact on UAFG.
- Ensure that theft of gas is minimised by regular checks on industrial customers and monitoring the gas consumption of residential customers.

[1] AGN Submission Report New UAFG Benchmarks September 2022 Final Update

3.2.2 Fugitive losses

AGN said that most of the gas losses are in its distribution system and not in the transmission system. The key activities include:

- Complete its low-pressure mains replacement program by replacing 297 kms of gas mains in the current Access Arrangement period.
- Carry out leakage surveys on a regular basis.
- Monitor the networks through its Supervisory Control and Data Acquisition (SCADA) system to ensure that the network is operating at the lowest pressure required thus reducing the quantity of gas leaks.
- Reduce third party damage through participating in the Energy Safe Victoria (ESV) led Gas Asset Damage mitigation project.

3.2.3 Systems

AGN ensures that customers are billed correctly by making sure that the correction factors that are applied to customers' bills are correct. It monitors the metering data by making sure that there is consistency between its asset management system (Maximo) and the billing system (Customer Care and Billing).

3.2.4 Non-DTS

AGN said that it relied on AEMO to reach settlement. AEMO liaises with Jemena, the pipeline owner for the shipper's data which is used to facilitate the wash-up and settlement. This is done on a five year basis. AEMO advised that it has collected the latest shipper data for the 2016-21 period on 11 August 2022. AGN has provided AEMO with Class B withdrawal data and is awaiting further advice from AEMO.

3.3 MULTINET

Multinet and AGN are jointly owned by Australian Gas Infrastructure Group (AGIG). Multinet's submission[2] is similar to that of AGN. It has categorised similar sources of UAFG: Metering, Fugitive Gas and Systems and the actions for each of the sources are also comparable. Multinet has still to complete its replacement of its low pressure networks.

In addition, Multinet said that it monitors its UAFG monthly. It has developed several internal models to track UAFG utilising AEMO reports and internal basic meter data. Multinet monitors injection on a weekly basis to be able to highlight any anomalies.

3.3.1 Non-DTS

Multinet said that it had not reached agreement with retailers since 2014. As Australian Energy Market Operator (AEMO) had provided assistance to AGN for its non-DTS networks, Multinet is also seeking assistance from AEMO in order to proceed with settlement.

[2] MGN Submission Report New UAFG Benchmarks Sept 2022 Final

3.4 AUSNET SERVICES (AUSNET)

AusNet provided its 2018 plan[3] which outlines its strategy for managing UAFG. AusNet's document list a number of action items and dates. These dates range from September 2018 to December 2019. It is unknow if these items are completed.

The plan classified the sources of UAFG into measurement and fugitive emissions.

3.4.1 Measurement

Ausnet had listed a number of items and recommendations that it is carrying out or proposes to carry out. The key action items include:

- Monitoring, reporting and key performance indicators (KPI). UAFG performance is monitored by a UAFG taskforce that also develops strategies. The Asset Management Committee receives annual reports on UAFG performance.
- Custody transfer meters accuracy. The age and accuracy of custody transfer meters are reviewed and replaced by APA as necessary. AusNet also proposes to install town gas meters in Ararat, Stawell and Horsham.
- Heating Value. Heating value of the gas injected into the AusNet networks is monitored for consistency.
- Pressure correction factors. As AusNet has only limited visibility how AEMO has applied pressure correction factors for industrial customers, AusNet propose to engage with AEMO on establishing a process for receiving periodic usage data for I&C customers.

3.4.2 Fugitive gas emissions

Fugitive gas emission covers leaks from the networks. The key actions items include:

- Pipeline losses. The ongoing mains replacement program on its low-pressure networks will reduce the number of leaks in the network. AusNet prioritises areas considered to be high risk and high benefit.
- Leakage survey. AusNet proposes to extend its leakage survey to regional areas. It also proposes to analyse the leak repairs in a number of towns to understand the economics of using leakage survey and repair to manage UAFG.
- Supervisory control and Data Acquisition (SCADA) monitoring and control. The pressure in the network is monitored by SCADA system to ensure that the pressure in the network is at its optimal level to supply customers but also at a level that reduces the amount of gas leaking.

[3] UAFG Strategy- Issue 4

3.4.3 Non DTS

AusNet proposes to install town meters in Ararat, Stawell and Horsham. It is not known if these meters are installed and if there are any other investigations into the UAFG for Non-DTS areas.

3.5 CONCLUSION

The submissions provided by AGN and Multinet are very similar with both businesses identifying the same three components of UAFG and similar action items. We consider that the action items are those that would be carried out by the gas industry and would be considered good industry practice.

AusNet has only provided its 2018 plan with no update on its status. It grouped the sources of UAFG into two categories; measurement and fugitive gas. The action items of these two categories are essentially the same as that of AGN and Multinet. As the 2018 plan has similar coverage to AGN and Multinet, we consider the plan includes actions that you would expect as good industry practice. However, we recommend seeking an update from AusNet on its 2018 plan.

It is noted that the settlement of the Non-DTS networks for AGN and Multinet were very outdated and further information on how AusNet is managing its non-DTS UAFG is also required.

4. UAFG ANALYSIS

4.1 INTRODUCTION

Unaccounted for Gas (UAFG) for a distribution system is the difference between the metered gas that has been injected into the distribution system and the metered gas withdrawn by the customers over a specified period (12 months in the Victorian context). UAFG is expressed as a percentage of the metered quantity of gas entering the distribution network.

In Victoria, the total UAFG is allocated to two customer classes:

- Class A - a large customer that has a gas demand greater than 250,000 GJ/annum
- Class B – a small to medium size customer that has a gas demand less than 250,000 GJ/annum

Class A UAFG is a fixed percentage of the total UAFG. The percentage is predetermined by the Commission. The Class B UAFG is therefore the difference between the total UAFG and the Class A UAFG.

4.2 REVEAL COST APPROACH

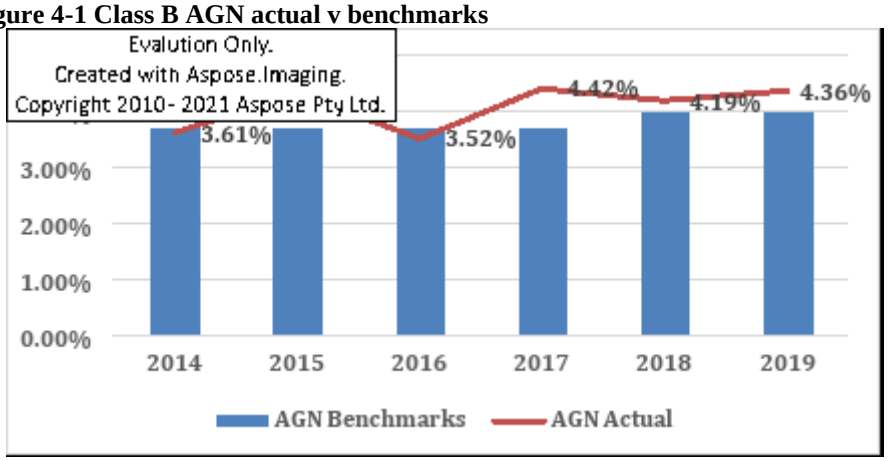
The revealed cost approach is based on the distributors' past performance as the basis for calculating the forecast UAFG. The advantage of such an approach is that the forecast UAFG benchmarks uses the actual performance of the distributors. Consistent with its 2017 Final Decision, the Commission has decided to adopt this approach for the current review.

Another aspect of this approach is whether to use settled or include unsettled data. Settled data is the data that has been agreed upon by all parties for a network. The agreement is between a distributor and a number of retailers and forms the basis for any financial transaction. Unsettled data is the data that is still being finalised and as such has not been agreed upon by all the parties. The Commission has also decided to only use settled data.

4.2.1 DTS Networks

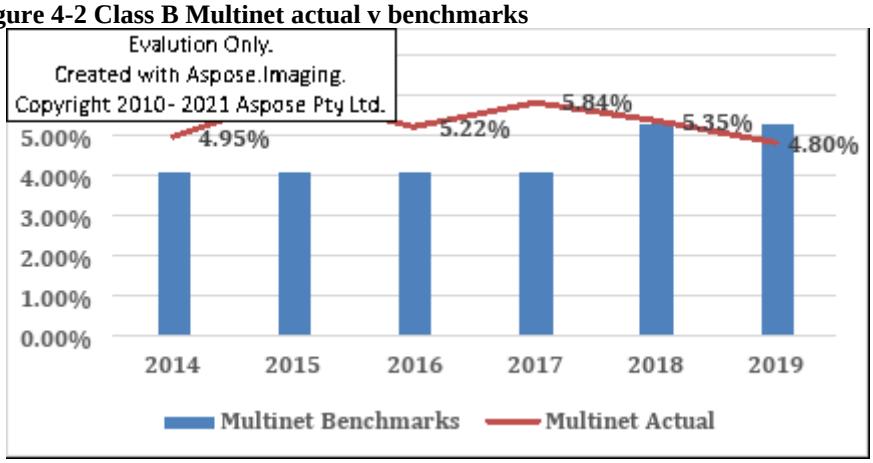
The chart below shows the actual UAFG for Class B for each distributor when compared to the benchmarks. The Albury UAFG is the same as Australian Gas Networks (AGN) UAFG and for the purpose of this report, any discussion regarding AGN includes Albury. The 2019 data for AGN and Multinet are unsettled data but shown on the charts for the purpose of illustrating how the businesses are performing relative to the benchmarks.

Figure 4-1 Class B AGN actual v benchmarks



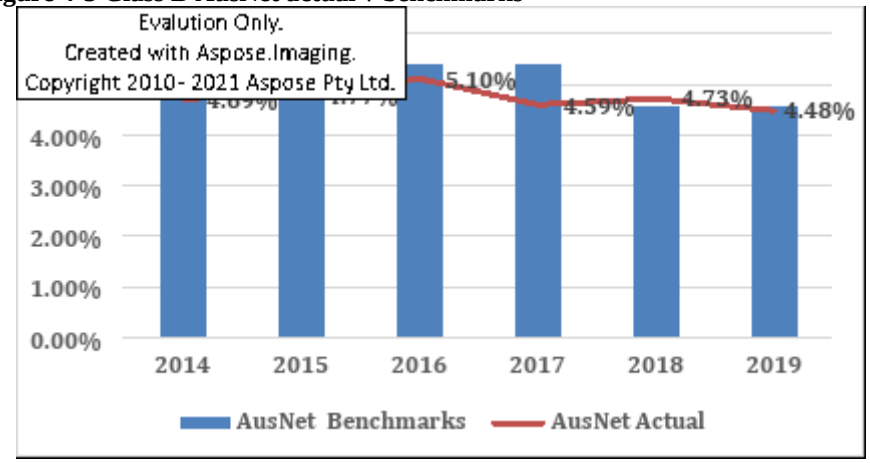
Source: Derived from data provided by AGN
Note: 2019 actual is unsettled data

Figure 4-2 Class B Multinet actual v benchmarks



Source: Derived from data provided by Multinet
Note: 2019 actual is unsettled data

Figure 4-3 Class B AusNet actual v benchmarks



Source: Derived from data provided by AusNet

From the charts above, AGN has performed relatively close to the current benchmarks but had fluctuated relative to the previous period's benchmarks. Multinet's performance is relatively consistent with the current benchmarks but had exceeded the benchmarks in the previous period's benchmarks. AusNet has performed well both in the current period and in the previous period with performance below or on the benchmarks. These results, therefore, give reasonable confidence that using the actual data to calculate the forecast benchmarks will not vary significantly from the current benchmarks.

The UAFG benchmarks can be calculated using the most recent settled data or using a multi-year average. Using the most recent data (ie 2018 for AGN and Multinet, 2019 for AusNet) will not reflect the year-on-year variation as can be seen from the chart above.

Using a multiyear average has the benefit of smoothing out the year-on-year variation. However, the question remains what is the most practical period for the multi-year average?

Given that the settled data is only to 2018 for AGN and Multinet and 2019 for AusNet, using a period that extends to more than five years would be using data which is very dated. The average using a multi-year approach for three to five years is shown in the table below.

Table 4-1 UAFG Average for Various Periods

	3 Years	Period	4 Years	Period	5 years	Period
AGN	4.04%	2016-18	4.11%	2015-18	4.01%	2014-18
Multinet	5.47%	2016-18	5.60%	2015-18	5.47%	2014-18
AusNet	4.60%	2017-19	4.72%	2016-18	4.73%	2015-19

Source: Zincara's calculation

Zincara considers that a three-year period is the most practical option. The three-year option already uses data that goes back to 2016 or 2017 which is already five to six years old. Any data beyond that has the same effect as being too dated with the distributors' infrastructure and gas demand not the same as today.

4.3 NON DTS NETWORKS

For the Non DTS, the data provided by the AGN showed that the last settled data was in 2015 and for Multinet, the last settled data was in 2013. In relation to AusNet, the last settled data was in 2019. The table compares the AusNet's actual UAFG with the Commission's benchmarks.

Table 4-2 AusNet Non-DTS UAFG Comparison

	2016	2017	2018	2019
Benchmark	5.1%	4.9%	4.9%	4.9%
Actual	14.0%	7.26%	7.40%	6.94%

Source: GDSCoP Version 15.0 March 2022 and GDSC 2014 for benchmarks
Actual Data provided by AusNet

From the table above, AusNet's actual UAFG for the Class B customers is considerably higher than that of the Commission's benchmarks. Unless there are reasons given to why there is such a difference, Zincara cannot recommend accepting the actual data as a reasonable estimate for the forecast benchmarks.

In addition, the settled data provided by AGN and Multinet is too old to have any meaningful use. Zincara therefore recommends that the current benchmarks for the Non-DTS be adopted for the forecast period.

4.4 CONCLUSION

For the DTS, Zincara considers that a three-year period of settled data be the most appropriate period. The average UAFG for the recommended three-year period are shown in the table below.

Table 4-3: Recommended UAFG and the Related Period.

	3 Years	Period
AGN	4.04%	2016-18
Multinet	5.47%	2016-18
AusNet	4.60%	2017-19

Source: Zincara's calculation

AGN and Multinet had advised that they expect that their 2019 data will be settled between them and the retailers in the current review period. We recommend that the average for these businesses be updated to incorporate the latest data when the settlement is completed.

For the non-DTS, Zincara considers that the settled data provided by AGN and Multinet are too old to be meaningfully used to determine the forecast UAFG benchmarks. In addition, the actual data provided by AusNet is considerably higher than that of the Commission's current benchmarks for the period 2018-2022. Unless there are good reasons given for the differences, Zincara cannot recommend accepting the actual data as a reasonable estimate for the forecast benchmarks. Zincara therefore recommends that the current benchmarks for the three distributors for the Non-DTS be adopted for the forecast period.

5. FORECAST EFFICIENCY FACTOR

5.1 INTRODUCTION

This section discusses whether any efficiency factors should be proposed for the forecast period.

As mentioned in the previous section, UAFG is the difference between the metered gas that has been injected into the distribution system and the metered gas withdrawn by the customers. UAFG is expressed as a percentage of the metered quantity of gas entering the distribution networks.

In Victoria the total UAFG is allocated to two customer classes:

- Class A - large customer with gas demand greater than 250,000 GJ/annum
- Class B – a small to medium size customer with a gas demand less than 250,000 GJ/annum.

The Class A and Class B UAFG are part of the UAFG mechanism that incentivises the distributors to reduce the UAFG from the benchmarks. If the annual UAFG for a distributor exceeds the benchmark, the distributor must pay the retailer for gas above the benchmark. Conversely, if the quantity of UAFG is less than the benchmark, the retailer must pay the distributor for the amount of gas below the benchmark.

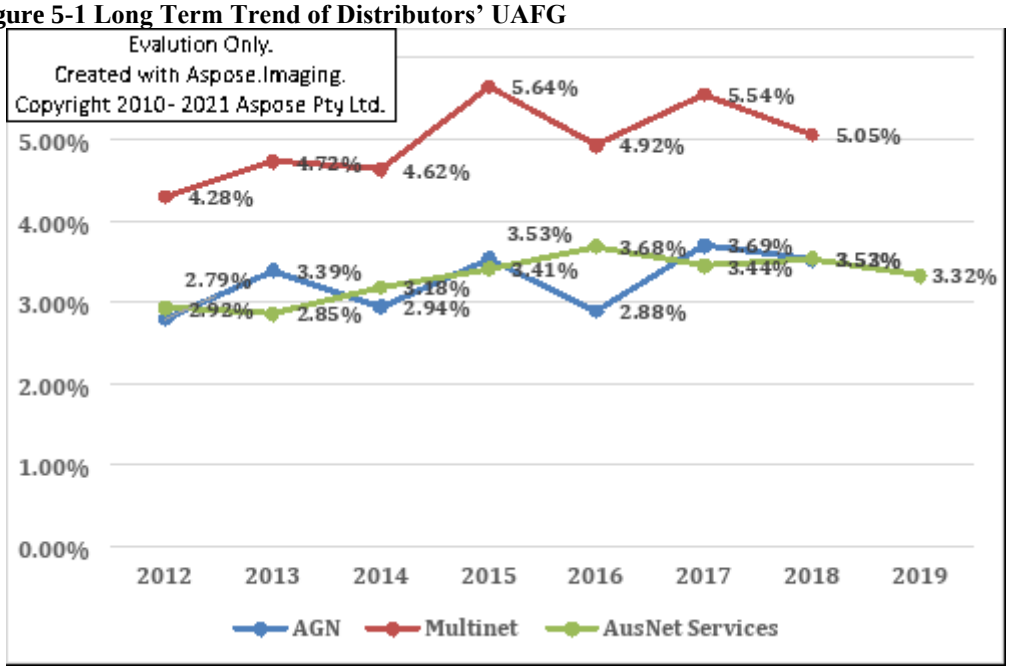
This allocation of Class A and Class B UAFG causes a distortion to how a network UAFG is performing. This is due to the changing gas demand for the Class A and Class B customers. A clearer picture of the performance is when the UAFG is at an aggregate level.

The discussion below is of the UAFG at the aggregated level.

5.2 DISTRIBUTORS' LONG TERM TREND

The long-term trend for the total UAFG is shown in the figure below. The graph for AusNet shows its 2019 settled data and both AGN and Multinet only show up to 2018 as that is the final year when the data is settled.

Figure 5-1 Long Term Trend of Distributors' UAFG



Source: Zincara's calculation from distributors' data

The figure shows that the UAFG for each business shows a fluctuating trend with a marginal increase in spite of each business' UAFG management especially the significant low-pressure replacement program that each business had embarked on.

5.3 FACTORS THAT CONTRIBUTE TO UAFG

Section 3 of this report showed that the distributors have categorised the sources of UAFG to metering, fugitive emission and in the case of AGN and Multinet, systems. We have classified the multiple factors that contribute to UAFG differently but cover the same categories as the DBs,

These factors can be consolidated into the following areas:

- Fugitive gas emission
- Metering errors
- Heating value
- Data Quality

5.3.1 Fugitive Gas Emission

The main source of fugitive gas for a distribution network is leaks. These leaks can occur in the following:

- distribution mains and services;
- above ground installations such as in the meter sets at consumers' premises; and

- other losses such as third party damage on the network and fractured mains.

The main contributor for leaks is the cast iron and unprotected steel mains in the low-pressure networks. As such, each distributor has been replacing its low-pressure network for over the past 20 years. In the 2022 Access Arrangement (AA) submissions to the AER, the businesses have advised the following:

- AGN has completed its replacement of the low-pressure network in the current AA period 2018-2022.
- Multinet will continue to replace its low-pressure network in the next AA period and anticipates completing its program in the subsequent AA period.
- AusNet will also continue to replace its low-pressure network at the rate that will ensure that the leakage rate remains at the same rate as is in the current AA period.

Given the extensive program for over twenty years, there has not been a quantifiable improvement of the UAFG. This is due to the key drivers for the mains replacement program are safety and reliability and not so much UAFG.

It is also worth noting that in the 1990's, British Gas, South California Gas and the Gas Research Institute (USA) attempted to quantify the level of leakage in a gas distribution network. They concluded that distribution losses cannot be uniquely measured but it does form a component of UAFG due to the technology, maintenance practices, replacement philosophy etc. This means that it is not possible to quantify the reduction in the quantity of gas due to leaks from the mains replacement program.

5.3.2 Metering Errors

Metering errors is also a key contributor in UAFG. In Victoria, the GDSCoP specifies the maximum allowable error limit for the meters. Part B of Schedule 1 of the GDSCoP states that the maximum allowable variance in quantity from the agreed true quantity for a gas meter shall be:

- (a) not more that 2 percent in favour of the distributor;
- (b) not more that 3 percent in favour of the customer.

In addition, there is a further allowance of ±1% for equipment for large customers to correct the large customers' volume measurement to standard conditions. The large customers' consumptions have a significant impact on the overall UAFG if the customers have not been metered accurately.

These measurement accuracies do contribute to UAFG but it is difficult to quantify the extent without extensive investigation and at best it is an estimate.

5.3.3 Heating Value

Another key factor that contributes to UAFG is the heating value which converts the volume of gas to energy units. The heating value is declared by AEMO but with multiple sources of

gas injected into the distribution networks, the heating value at different sources could have an impact on the overall energy value which is used to determine the UAFG.

Like the other factors, it is also not possible to quantify the heating value uncertainty with a degree of accuracy.

5.3.4 Data Quality

Data quality is also known as accounting error. Residential and small commercial meters are read at different times of the day and different days of the week. This means that the total demand for this customer class at any time has an error due to the metering reading lag.

This data quality issue also has an impact on the UAFG.

5.4 CONCLUSION

The long-term trend of the distributors' UAFG fluctuates and marginally increases. This is despite the fact that the distributors have been embarking on a low pressure mains replacement program. The factors that contribute to UAFG are not easily quantifiable and as such do not lend itself to forecasting an efficiency factor. Zincara therefore considers that there should not be an efficiency factor.

Notwithstanding the difficulty in estimating an efficiency component, Zincara recommends that the Commission seek from the distributors how they have been managing UAFG efficiently which is a requirement of the GDSCoP.

6. RECOMMENDATION

From the discussion above on the DTS, Zincara recommends that the Commission adopt the average from a three-year period for its forecast benchmark. We also recommend that only settled data be used.

In relation to Class A benchmarks, the benchmarks have been set with the assumptions that the large customers have better metering and are also supplied from the high-pressure mains which have less leaks. Zincara recommends continuation of the Class A benchmarks.

Zincara also recommends that due to the complexity of estimating an efficiency factor, the Commission does not include an efficiency factor.

The table below shows Zincara's recommendation.

Table 6-1 Recommended Benchmarks for DTS

Company	Class B Benchmarks					Class A Benchmarks 2023-2028
	2023	2024	2025	2026	2027	
AGN (Victoria)	0.040	0.040	0.040	0.040	0.040	0.003
AGN (Albury)	0.040	0.040	0.040	0.040	0.040	0.001
Multinet	0.055	0.055	0.055	0.055	0.053	0.003
AusNet	0.046	0.046	0.046	0.046	0.046	0.003

The data provided for the Non-DTS cannot be meaningfully used for the calculation of the forecast benchmarks. As such, Zincara recommends continuation of the 2018-2022 benchmarks.

Table 6-2 Recommended Benchmarks for Non-DTS for Class B

	2023	2024	2025	2026	2027
AGN	0.020	0.020	0.020	0.020	0.020
Multinet	0.020	0.020	0.020	0.020	0.020
AusNet	0.049	0.049	0.049	0.049	0.049

Note: the above recommendations are set in calendar years as per the current GDSCoP. Zincara's comments on the changes from calendar years to financial years are covered in the next section.

7. CHANGE OF UAFG PERIOD FROM CALENDAR YEAR TO FINANCIAL YEAR BASIS

7.1 INTRODUCTION

The Victorian Government has determined to change the timing of the Access Arrangement (AA) period from a calendar year AA period to a financial year basis. This means that all AA for gas distribution businesses in Australia that the AER regulates will have financial year based regulatory years. The next AA period for the DBs will commence on 1 July 2023.

To facilitate this change, the current AA period was amended by six months from I January to 30 June 2023.

The change has an impact on the UAFG benchmark period. Currently the UAFG benchmark period is on a calendar year basis and the above change will mean that the UAFG benchmark period is out of sync with the AA period. It would seem prudent to also amend the UAFG period to be consistent with the AA period.

7.2 IMPACT ON PROPOSED CHANGE

A comparison of the current DTS benchmarks and the recommended DTS benchmarks is shown in the table below.

Table 7-1 Comparison between current and recommended benchmarks

Company	Class B Benchmarks		Class A Benchmarks	
	2018-22 (Current)	2023-28 (Recommended)	2018-22 (Current)	2023-28 (Recommended)
AGN (Victoria)	0.040	0.040	0.003	0.003
AGN (Albury)	0.040	0.040	0.001	0.001
Multinet	0.053	0.054	0.003	0.003
AusNet	0.046	0.046	0.003	0.003

Source: Zincara's data from GDSCoP and calculations

The table shows that if the current Class B benchmarks were to be extended for six months, it would only have an impact on Multinet where the recommended benchmarks has slightly increased. The above might change slightly once AGN and Multinet have settled data for 2019.

It is not possible to estimate the financial impact on Multinet as the data for 2022 is still be complied and the price of gas to be used is also unknown.

There is no impact on the non-DTS benchmarks as Zincara is not recommending changes to the current benchmarks.

Another issue that needs further investigation is the reconciliation process. Schedule I Part C of the GDSC sets out the process for the reconciliation amount. The process specifies that the quantity of gas withdrawn at the connection points and the amount of gas withdrawn by the distributor for retailers are for the previous calendar year. To be consistent, the reconciliation process will have to be amended to financial year which may have an impact on the AEMO internal processes.

As a separate issue is the average volume weighted market price which is a component for determining the financial payment between the distributor and retailer. How the average market price is determined needs to be examined to see if there is a financial implication for this change and the extension of the current benchmarks for six months.

Zincara has only focused on the operational issues but there could be other issues such as amendment to the GDSCoP or drafting the enabling legislation or industry consultation.