



Review of Gas Distribution Businesses Unaccounted for Gas

Prepared for

Essential Services Commission

*5 December 2022
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1. EXECUTIVE SUMMARY

The Commission completed its Stage 1 process and on 26 October 2022 published its draft decisions on the proposed UAFG for the period 1 July 2023 to 30 June 2028. The Commission sought submissions from stakeholders and by the closing date 25 November 2022, the Commission had received 12 submissions.

Zincara has reviewed the submissions and make the following comments:

Transitional Benchmarks and Arrangements

Most submissions were broadly supportive of rolling over the current UAFG benchmarks for six months and align the UAFG period with that of the Access Arrangement. However, some distributors disagreed with the six months extension.

The National Energy Legislation Amendment Act 2020(Vic) (Act) was enacted to change the timing of Victorian gas distribution access arrangement period from calendar years to financial years. The AER's decision arising from the change was to extend the 2022 calendar year prices to 30 June 2023 (i.e. six months extension) so that the next Access Arrangement period can commence in the next financial year (i.e. 2024)

Consistent with other jurisdictions, we recommend alignment of the UAFG period with the Access Arrangement period. We also recommend extending the current UAFG period by six months similar to that of the Access Arrangement period.

Updating Benchmarks

There was general support on using the reveal cost approach and the three years of settled data to set the UAFG benchmarks for the 2023-2028 regulatory years. Our comments on specific issues are:

The distributors have embarked on a low pressure mains replacement program for over 20 years and some are near completion. We consider any further action to aggressively drive down fugitive gas emission (such as to reduce the benchmarks by 1% from current levels) should be reviewed as part of the future of the gas networks and not as part of the setting of UAFG.

The introduction of 10% hydrogen blend only changes the capacity of the network by about 2% and as such will not affect the distributors current operating arrangement or higher pressures in the network which may cause leaks.

Metering accuracy is a factor that contributes to UAFG. It does not replace the fugitive gas emission.

Recommended UAFG

The 2017-2019 settled data for AusNet's UAFG is too high and as such, we recommend that the current UAFG be carried for the next regulatory period.

Following our review of the corrected data from AGIG, we recommend that the UAFG for AGN and Multinet be revised for the corrected data. The recommended UAFG benchmarks for the next regulatory period are shown in the table below.

Table 1-1: Recommended Benchmarks for DTS Networks for 1 July 2023 - 30 June 2028

Distributor	Class B	Class A
AGN (Victoria)	4.06%	0.3%
AGN (Albury)	4.06%	0.1%
AusNet Services	4.60%	0.3%
Multinet	5.49%	0.3%

Table 1-2: Recommended Benchmarks for Non-DTS Networks for 1 July 2023 - 30 June 2028

Distributor	Class B
AGN	2.0%
AusNet Services	4.9%
Multinet	2.0%

2. INTRODUCTION

2.1 BACKGROUND

The Essential Services Commission (Commission) divided into two stages its process to set the Unaccounted for Gas (UAFG) benchmarks for the period 2023-2027 for the gas distributors. The Commission had completed stage 1 and are currently in stage 2.

Stage 1

The Commission calculated 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 the proposed UAFG benchmarks, the Commission published the draft decision paper.

Stage 2

The Commission publicly consulted the stakeholders on the proposed benchmarks. The Commission will use the submissions to inform it and to finalise the benchmarks in its Final Decision.

The Commission has engaged Zincara P/L (Zincara) to assist it in this process. This report is for Stage 2 of the process. For further information on Zincara's initial recommendation, please refer to Zincara's Stage 1 report dated 22 September 2022.

2.2 CONTEXT

The Commission completed its Stage 1 process and on 26 October 2022 published its draft decisions on the proposed UAFG for the period 1 July 2023 to 30 June 2028. A summary¹ of the Commission's draft decisions is as follows:

- Extend and maintain all current benchmarks for the 2018 to 2022 regulatory period by an additional six months for the transitional period 1 January 2023 to 30 June 2023.
- Make minor drafting amendments to the Gas Distribution System Code of Practice (GDSCoP):
 - a. Add the definition of regulatory year for the change from calendar year to financial year;
 - b. Include the UAFG benchmarks for the six-month transitional period; and
 - c. Carry out administrative amendments to UAFG benchmarks to improve clarity.
- Continue to apply its 2017 UAFG methodology to calculating the benchmarks for the 1 July 2023 to 30 June 2028 regulatory period. This involves using the revealed cost approach with three years average settled data for calculating the Class B

¹ Review of Unaccounted for Gas Benchmarks Draft Decision 26 October 2022

UAFG benchmarks for the Declared Transmission System (DTS) and the Non-Declared Transmission System (Non-DTS). The Commission said the application of this methodology is on the proviso that the UAFG data is settled and represents an efficient level of service.

The Commission proposed the following benchmarks for the regulatory period 1 July 2023 to 30 June 2028.

Table 2-1: UAFG Benchmarks for the DTS networks

Distributor	Class A	Class B
Australian Gas Networks (Victoria)	0.3%	4.0%
Australian Gas Networks (Albury)	0.1%	4.0%
AusNet Services	0.3%	4.6%
Multinet	0.3%	5.4%

Table 2-2: UAFG Benchmarks for the Non-DTS networks

Distributor	Combined Class A and Class B
Australian Gas Networks	2.0%
AusNet Services	4.9%
Multinet	2.0%

The Commission sought stakeholders' responses for its draft decision which closed on 25 November 2022. Several stakeholders have responded to the draft decision.

Zincara has reviewed the stakeholders' submissions. This report therefore details our consideration on the issues raised in the stakeholders' submissions and our final recommendations to the Commission on the benchmarks.

3. STAKEHOLDERS SUBMISSION

3.1 INTRODUCTION

The Commission posed three questions for stakeholders in its draft decision:

- **Transitional benchmarks and arrangement:** Do stakeholders consider rolling over the current UAFG benchmarks for the six months transitional period to be appropriate? If not, what benchmarks should we consider and why? Are there any alternative approaches or framework we could consider that may work better to manage the transitional period? Are there any issues the Commission may have missed?
- **Updated benchmarks:** Are there any other matters the Commission should consider with respect to the proposed UAFG benchmarks for the gas distributors' next regulatory period based on the methodology?
- **Drafting amendments:** Do stakeholders have any concerns with the proposed code drafting?

11 stakeholders have responded to the Commission by the closing date 25 November 2022. For details of the stakeholders submission, please refer to the Commission's website.

3.2 TRANSITIONAL BENCHMARKS AND ARRANGEMENT

Submissions received were broadly supportive of rolling over the current UAFG benchmarks for six months. However, distributors such as Australian Gas Infrastructure Group (AGIG) disagreed² with the extension and the need to change the UAFG benchmarks from calendar year to financial year (regulatory year) to align with the Victorian distribution network Access Arrangement period. AGIG said that the changing to regulatory year will cause significant operational changes and cost which will outweigh any potential benefits. If the Commission decides on the change to regulatory year, AGIG would prefer the next period be 5.5 years with the new benchmarks.

We understand that rolling over the current UAFG benchmarks for six months is to enable the regulatory period administered by the Commission to align with that of the Victorian gas distribution access arrangement periods administered by the Australian Energy Regulator (AER).

On 20 October 2020, the National Energy Legislation Amendment Act 2020(Vic) (Act) was enacted to change the timing of Victorian gas distribution access arrangement period from calendar years to financial years. The AER's decision arising from the change was to extend the 2022 calendar year prices to 30 June 2023 (i.e. six months extension) so that the next Access Arrangement period can commence in the next financial year (i.e. 2024).

We consider that it would be prudent to change the UAFG calendar year period to the regulatory period so that it aligns with the Access Arrangement period. In every other jurisdiction, the review of UAFG benchmarks by the AER has been carried out at the same time as the Access Arrangement review. Victoria is unique in that the Commission reviews the UAFG benchmarks, but the AER reviews the Access Arrangement. Notwithstanding the

² AGIG Submission dated 25 November.

separation of the two parties' responsibility, traditionally, the UAFG review has always been conducted at the same time as the Access Arrangement review. This means that the UAFG benchmarks and the Access Arrangement tariffs apply for the same period.

On the matter of significant operational changes, it is unclear why there is a need for the changes. Historically, there is a long time before the UAFG is settled (e.g. AGN latest settled data is 2018, AusNet is 2019 and Multinet is 2018). This is with the current operational procedure in place. We do not expect that changing to regulatory year will result in a change in behavior by the industry participants as such we do not anticipate there is a need for significant operational changes.

Regarding making the next period 5.5 years and as such the new benchmarks to apply for that period, we refer to the Order in Council (Order) made on 30 September 2021. We understand that the Order is to extend the Access Arrangement period for 2018 – 2022 by six months (i.e. 5.5 years) and not to change the next Access Arrangement period 2023-2028 by six months. We believe the intent of the Order should also be applied to UAFG. This means extending the current UAFG period from 2018-2022 by six months and the existing benchmarks be applied for the six months period.

3.3 UPDATING BENCHMARKS

There is general support for the Commission to use the reveal cost approach and the three years of settled data to determine the UAFG benchmarks for 2023-2028. However, there were specific issues brought up by stakeholders and our comments on these issues are detailed below.

3.3.1 Leak Management

Some stakeholders have articulated that the UAFG should be consistent with the climate policy of the State Government. The submissions call for the Commission to impose downward trends on the distributors to drive down fugitive emissions (leaks). Mr. John Godfrey, in his submission, proposed a series of benchmarks from 2023 to 2030 to show fugitive gas could be driven down.

Our comments below are mainly related to the DTS system.

The distributors have for over 20 years embarked on a low pressure mains replacement program to replace the old cast iron and unprotected steel pipes with polyethylene pipes. The most efficient method of replacing these pipes is to insert new pipes into the old pipes. To ensure that the networks have sufficient capacity to supply the customers, the old low pressure networks were upgraded to high pressures as part of the mains replacement program. Utilising high pressure networks is not a new practice. Networks built in the last forty to fifty years already operate under high pressure.

The result of the replacement program is to ensure the ongoing safety of the community and to reduce the amount of natural gas being emitted into the atmosphere through leaks. The replacement program has been carried out over such a long period to avoid a bow wave of costs in a short period which would result in a significant impact on customers' tariffs. This extended period also enables the distributors to resource the work adequately and efficiently and to minimize disruption to the community.

Both AGN and AusNet have almost completed their mains replacement program and Multinet will complete its program in early 2030s. Therefore, leaks from the low pressure networks are now not a significant contributor to the leaks in the system and will be eliminated when all the low pressure networks are replaced. One of the major causes of leaks these days is third party damage in high pressure gas mains. The distributors have teams that respond to any third party damage to reduce the risk to public safety. However,

these leaks do emit natural gas at a higher rate than similar damage in low pressure gas mains. These leaks are now a major contributor to fugitive gas emission.

In addition to the response teams, the distributors are also participants with the “Before You Dig” Australia program. “Before You Dig” Australia is an organization that provides free pre-excavation referral service for the Australian community. This free service is to mitigate against third parties such as contractors and builders damaging the gas mains.

Furthermore, the distributors also carry out leakage surveys to identify any leaks in the system to ensure that the number of leaks in the system is kept to a minimum.

If the Commission was to introduce a glide path into the UAFG benchmarks, it could result in a major cost to the distributors which will pass through to a significant tariff increase to the consumers. Also, the current UAFG mechanism provides an incentive for the distributor to ensure that the UAFG is on or below the benchmarks to avoid a cost penalty.

Zincara considers that any action to aggressively reduce fugitive gas to address climate change should be considered as part of the future of the gas networks and cost consideration should be part of the Access Arrangement review.

We therefore do not consider that the setting of UAFG for the period 2023-2028 is the forum for changes to UAFG to address climate change.

3.3.2 UAFG Trend

Red Energy and Lumo Energy expressed concern about the UAFG trend from AusNet and Multinet not being taken into account. Energy Australia commented that the mains replacement for AGN and AusNet are nearing completion and the proposed benchmarks have not made allowance for a reduction in UAFG as a result of the completion of the program.

In our report on Stage 1 (dated 20220922), we showed the UAFG performance for Class B customers of the three distributors. The graphs (Figures 4.1 to 4.3) are for the period 2014-2019 and we noted in our report that AGN’s and Multinet’s data for 2019 were unsettled data. This could give the impression that Multinet’s UAFG was showing a declining trend for the period 2017 to 2019. 2019 has unsettled data and should not be considered when evaluating Multinet’s UAFG performance. When we review Multinet’s UAFG for 2014 to 2018, we note that the graph is fluctuating and does not have a clear trend line.

As shown in Figure 2, the AusNet’s graph does not show a downward trend. If anything, the UAFG is relatively constant.

The graphs of only settled data for the three distributors are shown in the figures below.

Figure 1: Class B AGN Actual v Benchmarks

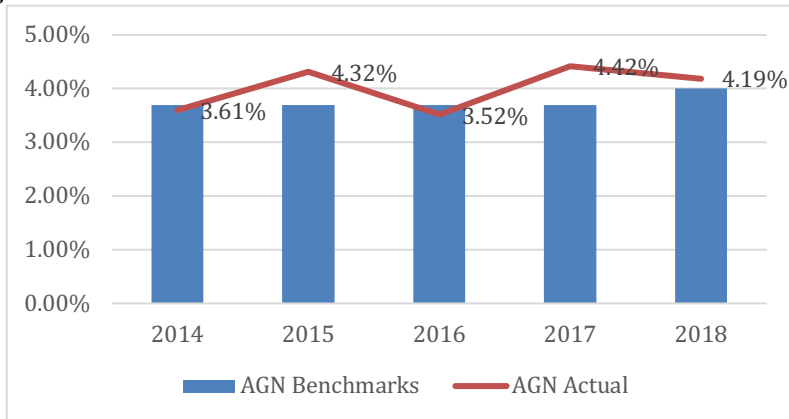


Figure 2: Class B AusNet Actual v Benchmarks

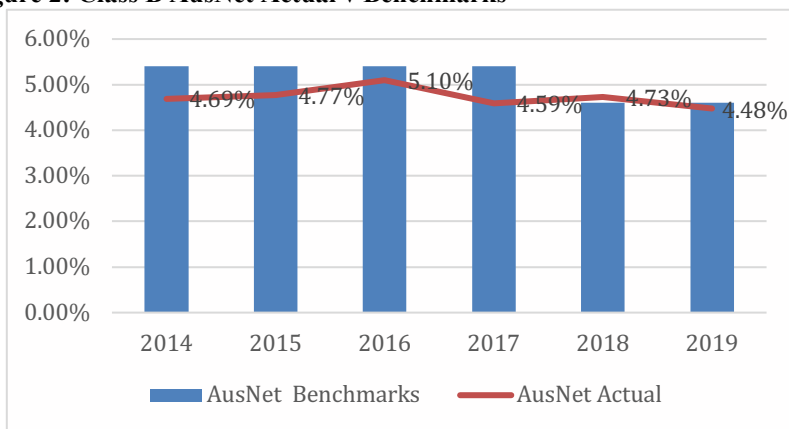
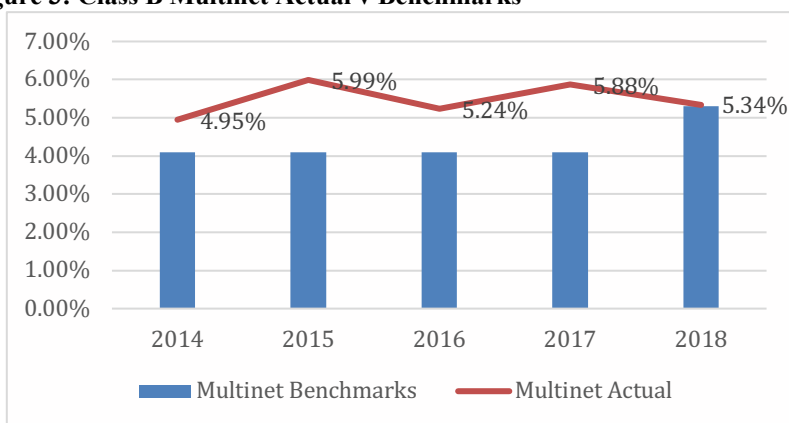


Figure 3: Class B Multinet Actual v Benchmarks



In response to Energy Australia's comment on UAFG not benefiting from the completion of distributors' mains replacement program, we would like to reiterate that the low pressure mains replacement program commenced due to concerns for community safety. UAFG benefited through reduction in fugitive gas emission from the low pressure networks. However, replacing the low pressure networks with high pressure networks have also resulted in an increase in other contributors to UAFG.

For example, the gas pressure into a house operates at a relatively low pressure (nominally 1.1kpa). The gas pressure in the high pressure network supplying the house is significantly higher (nominally 450kpa). As high pressure is reduced at the consumer's meter to supply the premise, there is a significant change in the gas temperature. As customers are billed at a standard temperature, the difference between the standard temperature and the actual temperature is a discrepancy that contributes to UAFG. As the high pressure networks expand through the replacement of the low pressure networks, the temperature effect of UAFG increases. This is one of the factors that reduces the improvement in UAFG from the low pressure replacement program.

Another factor is the increase in high pressure leaks through third party damage as discussed in section 3.3.1.

We therefore consider that whilst there are significant benefits in removing the low pressure networks, replacing these mains in high pressure could result in an increase in some other contributors to UAFG.

3.3.3 Introduction of hydrogen and zonal heating value

AGL said that the introduction of a hydrogen blend will have an impact on measuring the wholesale volume of gas sold and billing for customers. It indicated that a 10% hydrogen blend would equate to a 25% increase in gas volume for the same energy and the Commission will need to address this matter in the future. Darebin Climate Action Now also expressed concern that the introduction of a hydrogen blend will require higher pressures to operate the network and as such lead to higher gas leaks. This will lead to higher UAFG.

We are aware that there are trials in NSW and SA on the introduction of 10% hydrogen blend in the gas networks. There are also similar trials overseas on the utilisation of hydrogen blends. AGIG in its submission³ to the AER Access Arrangement Review said that a 10% hydrogen blend is equivalent to a 2% reduction in the network capacity. AGIG also said that for a 10% hydrogen blend, the change in gas properties is not significant enough to change its proactive and reactive leak management operations. Frontier Economics in its report⁴ indicated similar results that a 10% hydrogen blend would displace 3.7% of natural gas.

We consider that the small change in network capacity is well within the operating range of network pressures and does not lead to higher pressures. We, therefore, do not expect that there will be higher leaks as a result of the introduction of 10% hydrogen blend.

AEMO had introduced zonal heating values at the request⁵ of the Minister of Energy, Environment and Climate Change as Victoria transitions to 10% hydrogen blend. AEMO said⁶ that it is targeting early 2024 for the implementation date for the introduction of zonal

³ AGN (Victoria & Albury)-Attachment 9.10-AGIG Network Adaptation Strategy-Renewable Gas-July 2022 pg16 & 18.

⁴ Frontier Economics: Indicative Analysis of Blending Hydrogen in Gas Networks 11 May 2020 pg 26

⁵ Letter from Minister of Energy, Environment and Climate Change to the Chief Executive, AEMO dated 22/11/2021

⁶ AEMO Update on Gas Heating Values – Letter to DELWP 12092022 (above letter from the Minister is an attachment to this letter)

heating values. This is in line with AGIG's introduction of 10% hydrogen in the Murray Valley towns. It is, however, not clear whether the implementation of the program in 2024 will also include all Victorian networks and not just for the Murray Valley towns. In any case, as most of the Victorian gas is sourced from Bass Strait, it is not expected that the zonal heating value will have a significant impact on the Victorian heating value and as such UAFG in the next five years.

3.3.4 AusNet Non-PTS network

AusNet disagreed with the Commission's draft decision to continue the non-DTS UAFG benchmark in AusNet's networks at 4.9%. The non-DTS networks are in Ararat, Stawell and Horsham. AusNet said that its non-DTS networks have never met the proposed benchmark and is unlikely to ever meet it. AusNet indicated that it had carried out its 2018 strategy including:

- Installing town gas meters;
- Replacing inaccurate custody transfer meters;
- Isolating the losses in the non-DTS transmission pipeline owned by Gas Pipelines Victoria; and
- Carried out field audits of meters for tariff D customers.

In addition, AusNet also said that it is continuing with its annual leakage survey and repair, monitoring gas pressures and reconciliation of metering data as per its 2018 strategy. AusNet indicated that the majority of its UAFG is attributed to the significant presence of ageing low pressure networks and said:⁷

"These mains will be replaced over the next 5 years, but we do not expect that to bring down our UAFG to the benchmark".

AusNet provided its leakage survey results for 2018 and 2020. In all three towns of Ararat, Stawell and Horsham, the number of leaks showed an increase as shown in the table below.

Table 3-1: AusNet's Leakage Survey Results

Non-DTS Network	Approx km	Leakage Survey - Number of Leaks	
		2018	2020
Ararat	70.8	11	26
Stawell	60	21	45
Horsham	126.2	52	79
Total	260	84	150
Leaks per km		0.32	0.58

Source: AusNet's submission dated 25 November 2022

AusNet also offered its view on how the current UAFG benchmark of 4.9% had been derived. It believed that the current benchmark had been derived from historical data from 2006 to 2010 and extrapolated disregarding the extremely high numbers in the period 2012-2016.

The current benchmark of 4.9% was published in the published by the Commission in 2017 and accepted by AusNet at that time. We, therefore, do not intend to comment on the derivation of the 4.9%.

⁷ AusNet's submission dated 25 November 2022

To determine the benchmark UAFG for the next regulatory period, we considered the latest three years of settled data (i.e. 2017-2019).

Table 3-2: AusNet’s Settled UAFG for non-DTS networks

	2017	2018	2019	Average
UAFG settled data	7.3%	5.5%	6.3%	6.4%

Source: AusNet’s submission dated 25 November 2022

As shown in the table above, all three years settled data and the average of the three years (6.4%) are significantly higher than the current benchmark of 4.9%. We, therefore, do not consider it reasonable for us to recommend the average as the benchmark for the next regulatory period.

AusNet said that it had carried out the actions as proposed in its 2018 Strategy. There are no timelines on when the actions were carried out which means the benefits of the actions taken could be achieved after 2019.

AusNet said that the major contributor to the UAFG for the non-DTS network is the leaks. In addition, AusNet would have been aware that its low pressure networks was deteriorating even before 2017 and Table 3-1 showed that it continues to deteriorate in 2020. AusNet took the decision to not replace the network till the next five years which could account for the high UAFG in the period 2017-2019.

Given that it is unclear when the benefits of AusNet’s 2018 strategy may flow and that AusNet is only now proposing to address the main cause of UAFG for these networks by replacing the low pressure gas mains, we recommend that the Commission continue its current benchmark of 4.9% for the next regulatory period.

3.3.5 Metering Accuracy

Energy Australia expressed concern that UAFG from telemetry and metering errors are now replacing fugitive gas emissions with the completion of the low pressure mains replacement program. Energy Australia further questioned why most of the UAFG could be attributed to telemetry losses and metering error especially when metering accuracy is 2% in favour of the distributors. It quoted Part B of Schedule 1 of Gas Distribution System Code of Practice (GDSCoP) which states that the maximum allowable variance in quantity from the agreed true quantity for a gas meter shall be:

- Not more than 2 percent in favour of the distributor.
- Not more than 3 percent in favour of the customers.

Telemetry refers to the wireless transmission of data from a remote site to a base station. For example, a large customer will have metering equipment to record the amount of gas used by the customer. This information is then remotely sent to base or telemetered to base. Large customers with gas demand over 250 GJ/annum have their data telemetered to AEMO. It is unclear why telemetry will contribute to UAFG.

Metering error is the difference between the observed value of the measurement and the true value of the measurement. In any measurement, we do not know the true value but only the observed value within a range of accuracy. The GDSCoP set the accuracy limit for any meters that are operating in a customer’s premise. The metering accuracy has a slight bias in favour of the customers. Measurement of volumes is therefore one of the

contributors of UAFG but it has always been there and does not replace the component of UAFG related to fugitive gas.

3.3.6 Correction of UAFG Data

AGIG advised that there has been an error in the first data sheets that they had provided to the Commission for the DTS networks. These data sheets are for AGN and Multinet. It had subsequently provided updated data sheets and had requested that the Commission updated the benchmark UAFG to reflect the error. The tables below show the difference between the original version and the corrected version for 2016-2018. The data from these years are the latest settled data for the respective distributors.

Table 3-3: AGN DTS Class B UAFG data

	2016	2017	2018	Three Year Average
Original	3.52%	4.42%	4.19%	4.04%
Corrected	3.52%	4.47%	4.19%	4.06%
Change		+0.05%		0.02%

Table 3-4: Multinet DTS Class B UAFG data

	2016	2017	2018	Three Year Average
Original	5.22%	5.84%	5.35%	5.47%
Corrected	5.24%	5.88%	5.34%	5.49%
Change	+0.02%	+0.03%	-0.01%	0.02%

We have checked the energy injected into the system and energy withdrawn and that they are the same in both the original and corrected spreadsheets. AGIG had made an error in calculating the percentages of Class B UAFG. We therefore recommend revising the UAFG benchmarks to the corrected percentages as shown in the table below.

Table 3-5: AGN and MGN Revised UAFG Benchmarks for the DTS Networks

	Class A	Class B
AGN (Victoria)	0.3%	4.06%
AGN (Albury)	0.1%	4.06%
Multinet	0.3%	5.49%

3.4 DRAFTING AMENDMENTS

Our observation is that there is a general agreement on the drafting amendments.

4. SUMMARY

In the section above, we have commented on the issues raised by the stakeholders. A summary of our comments is provided below.

4.1 TRANSITIONAL BENCHMARKS AND ARRANGEMENTS

Submissions were generally supportive of rolling over the current UAFG benchmarks for six months and align the UAFG period with that of the Access Arrangement. However some distributors disagreed with the six months extension.

The National Energy Legislation Amendment Act 2020(Vic) (Act) was enacted to change the timing of Victorian gas distribution access arrangement period from calendar years to financial years. The AER's decision arising from the change was to extend the 2022 calendar year prices to 30 June 2023 (i.e. six months extension) so that the next Access Arrangement period can commence in the next financial year (i.e. 2024)

Consistent with other jurisdictions, we recommend aligning the UAFG period with the Access Arrangement period. We also recommend extending the current UAFG period by six months similar to that of the Access Arrangement period.

4.2 UPDATING BENCHMARK

There was general support on using the reveal cost approach and the three years of settled data to set the UAFG benchmarks for the 2023-2028 regulatory years. Our comments on specific issues are:

The distributors have embarked on a low pressure mains replacement program for over 20 years and are near completion. We consider any further action to aggressively drive down fugitive gas emission (such as the suggestion to reduce the benchmarks by 1% from the current levels) should be reviewed as part of the wider context on the future of the gas networks and not as part of the setting of UAFG.

The introduction of 10% hydrogen blend only changes the capacity of the network by about 2% and as such will not affect the distributors current operating arrangement or higher pressures in the network which may cause leaks.

Metering accuracy is a factor that contributes to UAFG. It does not replace the fugitive gas emission.

4.3 RECOMMENDED UAFG

The 2017-2019 settled data for AusNet's UAFG is too high and as such, we recommend that the current UAFG be carried for the next regulatory period.

Following our review of the corrected data from AGIG, we recommend that the UAFG for AGN and Multinet be revised for the corrected data. The recommended UAFG benchmarks for the next regulatory period are shown in the table below.

Table 4-1: Recommended Benchmarks for DTS Networks for 1 July 2023 - 30 June 2028

Distributor	Class B	Class A
AGN (Victoria)	4.06%	0.3%
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Distributor	Class B
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