ESSENTIAL SERVICES COMMISSION

Review of Unaccounted for Gas Benchmarks

Draft Decision

26 October 2022

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Executive Summary

Unaccounted for Gas (UAFG) describes the difference between the measured quantity of gas entering the gas distribution system and the gas delivered to customers. In Victoria, UAFG is managed via a benchmark process as set out in the Gas Distribution System Code of Practice (GDSCoP).[1]

If UAFG is managed appropriately, the discrepancy between the total gas that is supplied into the system and what customers consume is reduced. There are several known causes that contribute to UAFG, which include fugitive emissions (system leakage), metering errors, variations in the heating value of gas, data quality, and theft. However, it is complex to determine the extent that each of these known causes individually contribute to UAFG levels.

The GDSCoP requires gas distributors to use reasonable endeavours to ensure that the quantity of UAFG in their distribution system, as a percentage of the aggregate gas received by the distributor for any year, is less than the applicable benchmark.[2] Retailers are required to purchase sufficient gas to cover customer consumption and actual UAFG. There is also an annual reconciliation between gas distributors and retailers to settle respective financial obligations to each other, based on whether actual UAFG is over or under the benchmark. The reconciliation works as follows:

- If actual UAFG is greater than the benchmark, the gas distributor must compensate the retailers.
- If actual UAFG is less than the benchmark, the retailers must compensate the gas distributor.

The current UAFG benchmarks will expire on 31 December 2022. We propose to extend them for a six-month bridging period to 30 June 2023. This is to align with the timing of the Australian Energy Regulator's Victorian gas distribution access arrangement review period, which has changed from calendar years to financial years.[3] After this transitional period, we propose updated UAFG benchmarks, as outlined in this paper, to apply for the next regulatory period from 1 July 2023 to 30 June 2028.

In our 2017 UAFG review, we substantively consulted on and reviewed the methodology used to settle UAFG benchmarks in Victoria. In that review, we decided to continue with the same

[1] Gas Distribution System Code of Practice, clause 2.4.

[2] ibid.

[3] The change from calendar to financial years took effect pursuant to the National Energy Legislation Amendment Act 2020, Part 1, section 1(b).

methodology used in previous periods.[4] This methodology was the 'revealed cost' methodology, which sets benchmarks based on past performance as a good indicator of future performance. For our current review, we propose to continue applying the same methodology as in previous years, which involves:

- applying a **revealed cost** approach
- using a **multi-year average** of UAFG historical performance by distributors, and
- using **settled data** reached between distributors and retailers.

This draft decision proposes the UAFG benchmarks that apply to gas distributors as set out in the following box.

Summary of draft decisions

1. 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.
2. Make minor drafting amendments to the GDSCoP to address:
    a. the UAFG benchmarks six-month transitional period.
    b. added the definition of *regulatory year* for the change from calendar year to financial year. This is to align with the National Energy Legislation Amendment Act 2020 and harmonise with the Australian Energy Regulator's Gas Access Arrangement review process framework.
    c. consequential and administrative amendments to UAFG benchmarks, to improve clarity.
3. Continue to apply our 2017 UAFG methodology in calculating the benchmarks, for the 1 July 2023 to 30 June 2028 forward regulatory period. This involves the revealed cost approach with three-year average settled data. This is then used to calculate the class B UAFG benchmarks for the Declared Transmission System (DTS). The same applies to the combined class A and class B benchmarks for the Non-Declared Transmission System (Non-DTS), provided the UAFG data is settled and represents efficient levels of UAFG.

[4] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p iii.

4. For the Declared Transmission System (DTS) networks, due to a relatively neutral performance trend, we propose the following UAFG benchmarks for the 1 July 2023 to 30 June 2028 forward regulatory period:

Distributor	Class A 1 July 2023 – 30 June 2028	Class B 1 July 2023 – 30 June 2028
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%

5. For the Non-Declared Transmission System (Non-DTS) networks, we propose the following UAFG benchmarks for the 1 July 2023 to 30 June 2028 forward regulatory period:

Distributor	Combined Class A and Class B 1 July 2023 – 30 June 2028
Australian Gas Networks	2.0%
AusNet Services	4.9%
Multinet	2.0%

Introduction

In Victoria, the Gas Distribution System Code of Practice we administer sets the benchmarks for Unaccounted for Gas (UAFG).[5] The UAFG benchmarks apply on a calendar year basis but are set for five years. The current set of benchmarks will expire on 31 December 2022.

This paper outlines our approach to the draft decision. It seeks to consult on the UAFG benchmarks we are proposing to set for gas distributors' next regulatory period from 1 July 2023 to 30 June 2028. It also proposes a six-month bridging period to transition and align with the National Energy Legislation Amendment Act 2020, which amended the regulatory period from calendar to financial years.

What is Unaccounted for Gas (UAFG)?

UAFG is the difference between the measured quantity of gas entering the gas distribution system and the gas delivered to customers.

There are several known causes that contribute to UAFG in any gas distribution system.

Based on information submitted by Victorian gas distributors to us for this review and in previous reviews, there are up to 17 different components that contribute to UAFG.[6] These are broadly itemised into five categories of causes for UAFG:

- fugitive emissions (system leakage)
- metering errors
- heating value
- data quality, and
- theft.

However, it is difficult to determine the extent that each of these known causes individually contribute to UAFG levels. In particular, the measurement of gas necessarily requires several assumptions to account for the physical environment compared to the ideal environment used for conversion calculations.

The extent to which distributors have control over how much UAFG occurs also varies. For example, fugitive emissions are largely within the control of distributors, as some system leaks can

[5] Gas Distribution System Code of Practice, schedule 1, part C.

[6] Review of Unaccounted for Gas Benchmarks – Methodology, Prepared for Essential Services Commission by Zincara Pty Ltd, July 2017, p. 9; Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, Sept 2022, p. 11.

be identified and reduced through distributors' asset management and mains replacement programs. However, we note that even new gas distribution systems or pipes will contribute some level of UAFG, but we recognise that new technology and improved business practices can reduce UAFG levels.[7]

Other factors, such as the influence of gas heating values is outside the control of distributors, as distributors do not source the gas that is supplied into their networks.[8]

Appendix A provides further details on the causes of UAFG.

The purpose and method for setting UAFG benchmarks

Purpose of UAFG benchmarks

The commission currently sets UAFG benchmarks, which are set out in Schedule 1, Part C of the Gas Distribution System Code of Practice (GDSCoP).

The benchmarks provide a basis to help distributors and retailers process, account for and reconcile UAFG and to settle respective financial obligations to each other. As retailers enter gas contracts with suppliers the retailers must purchase enough gas to account for the UAFG that is not directly billed to customers. Therefore, retailers use the UAFG benchmark as a basis to gauge the total amount of gas to purchase from suppliers.

Because residential customer gas meters are manually checked, there is a difference in the actual UAFG in a year compared to the benchmark amount. Clauses 2.4(c)-(e) of the GDSCoP set out a process for distributors and retailers to reconcile the financial difference between the bulk gas initially purchased including the UAFG benchmark amount and the actual UAFG that is measured.

The commission last set benchmarks in 2017, to apply from 1 January 2018 to 31 December 2022.

Methodology used to set UAFG benchmarks

In 2017, we substantively reviewed the appropriateness of the methodology for calculating UAFG benchmarks. We considered the following three different methodologies:

- revealed cost
- bottom up

[7] Review of Unaccounted for Gas Benchmarks – Methodology, Prepared for Essential Services Commission by Zincara Pty Ltd, July 2017, p. 9; Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, Sept 2022, p. 11.

[8] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p. 5.

- external comparison.

The 2017 review concluded that the revealed cost method, using a multi-year average of settled data resulted in the most reliable and efficient approach to setting UAFG benchmarks.[9]

We note that this methodology has been consistently applied to setting the UAFG benchmarks since 2013. We consider there are benefits in continuing to apply this methodology, as it enables a consistent assessment of distributors' historical performance without the potential ambiguities that come from a change in methodology. Therefore, we propose to continue applying the revealed cost method in calculating the 2023 – 2028 UAFG benchmarks.

Appendix B provides further information on the methodologies we considered in 2017. Further detail can also be found in our 2017 decision available on our website.[10]

Categorising UAFG benchmarks

As previously discussed, UAFG is highly dependent on a range of factors, which are also influenced by the type of distribution network and the equipment of different end-use customers. Therefore, we have set different UAFG benchmarks that vary between distribution business, types of gas network, and different classes of customers.

The Victorian gas networks

We set benchmarks that apply to Victorian gas networks that connect to two different types of transmission systems in Victoria:

- The **Declared Transmission System (DTS)**, which is the main transmission network in Victoria. It provides gas in bulk to gas distributors who then subsequently supply Victorian gas customers.
- The **non-Declared Transmission Systems (non-DTS)** distribution system are smaller bespoke gas networks which sit outside the DTS. Non-DTS typically focus on a small geographic region where gas distributors serve the related customers. We consider specific benchmarks are required for the non-DTS as UAFG varies in these networks due to:
  - metering issues
  - smaller network size (compared to the DTS)

[9] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p. 18.

[10] 'Unaccounted for gas benchmarks review 2017', Essential Services Commission, accessed 11 October 2022, https://www.esc.vic.gov.au/electricity-and-gas/tariffs-and-benchmarks/unaccounted-gas-benchmarks/unaccounted-gas-benchmarks-review-2017#tabs-container2.

– insufficient gas quantity or flow during customer build up
– new connection commissioning (e.g. gas purging).[11]

Customer classifications used in UAFG benchmarking

The measurement of UAFG also depends on the metering equipment of an end customer. In Victoria, we apply two different UAFG benchmarks to distributors to account for different types of customers:

- **Class A benchmarks** – these benchmarks refer to customers who consume 250 Terajoules (TJ) or more per year and are typically serviced by high pressure mains (generally commercial and industrial customers).

  Customers to whom class A benchmarks refer to are typically large businesses with more complex facilities, which means these include more sophisticated equipment and more accurate meters installed at customer sites.

- **Class B benchmarks** – these benchmarks refer to customers connected to the high, medium or low-pressure mains that consume less than 250 TJ per year (generally residential and small business customers).

  We note there are significantly more residential and small business customers in Victoria, which the class B benchmarks refer to, compared to those customers referred to for class A benchmarks. The accuracy of meters installed at residential properties are also less accurate than commercial and industrial quality meters, which contribute to differences in UAFG.

[11] AGN, Multinet and Ausnet 2017 UAFG review submissions.

Draft decision approach

This chapter sets out our approach to the draft decision, which is structured in two parts. Firstly, we propose to apply the current UAFG benchmarks for an additional six months, as a transitional arrangement to align with recent legislative changes. Secondly, we propose new UAFG benchmarks to apply for the new forward regulatory period that applies from 1 July 2023 to 30 June 2028.

Our proposed methodology

In 2017, our approach to determining a methodology and calculating the UAFG benchmarks was substantively reviewed, with stakeholders generally supporting the final methodology.[12] We propose to continue with the same methodology as applied in 2017 and to apply it to calculate the proposed UAFG benchmarks. The non-Declared Transmission System (non-DTS) will apply the same approach, provided the UAFG data is settled and represents efficient levels of UAFG.

Our methodology applies the revealed cost methodology, and we have used three years of settled data to determine draft UAFG benchmarks for the regulatory period of 1 July 2023 to 30 June 2028. A three-year average was used to calculate the UAFG benchmarks, in order to account for any variations and fluctuations in year-to-year UAFG levels.

To inform the setting of new UAFG benchmarks, we requested updated data from distributors on UAFG performance, and a summary of actions and strategies distributors undertook to manage UAFG. We requested both settled and unsettled data to inform our proposed benchmarks.[13] We also considered the distributors' actions and strategies used in recent years to manage their UAFG performance to inform setting our benchmarks.

For DTS networks we propose to retain two separate benchmarks (class A and class B), in accordance with the 2017 methodology which most stakeholders previously supported.[14]

Class A benchmarks apply to large industrial and commercial customers with more sophisticated equipment and better metering accuracy for measuring their gas consumption (i.e. better able to

[12] AGL, AusNet Services, Australian Gas Networks, Red and Lumo Energy submissions to the 2017 draft decision methodology - June 2017.

[13] Settled data is data on UAFG that is agreed between distributors and retailers. Unsettled data is data that is based on meter readings at the gas supply point and at customer meters but has not yet been agreed to between retailers and distributors to account for metering or other issues. We propose to only use settled data in determining draft UAFG benchmarks.

[14] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p28

quantify UAFG issues) compared with class B benchmarks (which apply to residential and small businesses). They are generally also supplied from the distributors' high pressure network, which experiences lower rates of leakage compared to the low and medium pressure networks that apply to class B benchmarks.

Therefore, having separate DTS UAFG benchmarks for class A and class B reduces any cross subsidy in UAFG costs between these two classes, and results in a UAFG allocation that is more cost reflective.

Extending current UAFG benchmarks for a six-month transitional period

On 20 October 2020, the National Energy Legislation Amendment Act 2020 was enacted. This amended the Australian Energy Regulator's Victorian Gas Access Arrangement (GAA) framework to adjust the regulatory period from calendar to financial years.[15]

The GAA is the national economic regulatory framework for gas distributors, administered by the Australian Energy Regulator. The GAA period changing from calendar to financial years misaligns with the UAFG benchmarks, which are set in calendar years under our Gas Distribution Code of Practice (GDSCoP).

We met with several stakeholders to inform our proposal to introduce a transitional period for UAFG benchmarks. Some stakeholders suggested the commission consider how these processes can effectively interact with the broader economic regulatory framework. Others highlighted system processes needing to be changed and how these processes would affect stakeholders as well as distributors' mains network replacement program affecting the UAFG.

We consider our proposed approach provides clarity for stakeholders, as it will directly align with the Australian Energy Regulator's process to extend its current 2018 – 2022 GAA review period by six months.[16] Given this approach, we also consider it appropriate to apply the current UAFG benchmarks for the transitional period. We expect this to minimise variations between the UAFG considerations that were accounted for in the 2017-2022 GAA, which is itself being considered for a six-month extension.

[15] National Energy Legislation Amendment Act 2020, Part 1, section1, (b).

[16] AER's review of AGN's GAA six month extension.

Considering relevant gas programs and policy

Mains gas replacement programs

Victorian distributors have committed to replacing older low pressure gas mains pipelines, particularly to replace old cast iron and unprotected steel mains pipes. The primary objective of these programs is to manage gas pipeline safety issues, such as major incidents due to gas leaks.

For Australian Gas Networks (AGN), this program is expected to be concluded during the current regulatory period (by the end of 2022). For AusNet and Multinet, these replacement programs are expected to end within the next ten years.

During the 2017 UAFG review, the possible benefits to reducing UAFG by replacing old pipeline were also considered. However, as described earlier, the causes of UAFG are due to a range of factors, some of which pull in opposite directions. We also note that the deterioration of gas distribution networks could also outweigh the reduced leakage from mains replacement. Given the difficulties to quantify how certain factors may affect UAFG in a particular way, we propose to maintain our 2017 methodology.

Appendix A includes further information about the causes of UAFG and the effect of the mains gas replacement program.

Recent gas policy and considerations

We also recognise recent policy and proposals to inject and incorporate hydrogen and other renewable gases into the Victorian gas network. Some of these changes being considered could interact with unaccounted for gas in Victoria.

For example, the Australian Energy Market Operator's work on implementing zonal heating values, as requested by the Victorian government, may enable distributors to better quantify UAFG through more granular zonal heating values.[17]

The Australian Energy Market Commission's (AEMC) has also recently finalised rule changes for Declared Wholesale Gas Market (DWGM) Distribution Connected Facilities.[18] This work was also initiated by the Victorian government and is designed to better facilitate and promote the participation of distributed gas sources, such as renewable hydrogen, into the Victorian gas market. However, we also note other AEMC works such as the Review into extending the

[17] https://www.aemo.com.au/initiatives/trials-and-initiatives/renewable-gas-blending-in-victoria

[18] https://www.aemc.gov.au/rule-changes/dwgm-distribution-connected-facilities

regulatory frameworks to hydrogen and renewable gases, which interacts with the DWGM Distribution Connected Facilities set of rules, is still being considered.[19]

As the injection of hydrogen and other renewable gases would gradually alter the gas mixture and heating values, we expect this to require consideration with future UAFG benchmarks. We will assess in due time or when these issues have a considerable material impact how these changes may interact with UAFG benchmarks. However, based on the finalised changes and information currently available, we consider the current approach to setting UAFG benchmarks is appropriate.

Under the Essential Services Commission Act 2001, our existing energy codes are now codes of practice and the process of reviewing them to reflect this transition is ongoing. The GDSCoP will be substantively reviewed in due course to streamline our regulatory framework. However, this UAFG benchmarks review primarily focuses on proposing and setting UAFG benchmarks.

Proposed code drafting amendments

The UAFG benchmarks are set out in Schedule 1, Part C of the GDSCoP. Besides amendments to this section of the code to include the new benchmarks, we are proposing some consequential and administrative amendments to improve clarity. These include:

- adding a definition of *regulatory year*, following the change from calendar year to financial year under the National Energy Legislation Amendment Act 2020
- updated definitions of *declared transmission system (DTS)* and of *non-DTS distribution system*
- adjustments to Part C3 to update out-of-date drafting.

A markup of the proposed amendments can be found in the draft GDSCoP annexed to this draft decision.

Questions for stakeholders

Do stakeholders have any concerns with the proposed code drafting?

[19] https://www.aemc.gov.au/market-reviews-advice/review-extending-regulatory-frameworks-hydrogen-and-renewable-gases

Proposed Unaccounted for Gas Benchmarks

This chapter sets out our draft decision for the draft Unaccounted for Gas (UAFG) benchmarks. The first section sets out our proposed draft benchmarks for a six-month transitional period. The second proposes benchmarks to apply for the next forward regulatory period. The third section provides further information about the recent performance of distributors, their actions to manage UAFG levels and further details of our considerations.

Draft UAFG benchmarks to apply for a transitional period from 1 January to 30 June 2023

For both the Declared Transmission System (DTS) and non-Declared Transmission System (non-DTS), we propose to continue the current 2018 – 2022 UAFG benchmarks for a six-month transitional period from 1 January 2023 to 30 June 2023. Tables 1 and 2 summarise the proposed transitional UAFG benchmarks.

Table 1 Declared Transmission System (DTS) – Transitional UAFG benchmarks between 1 January 2023 to 30 June 2023

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 Gas	0.3%	5.3%

Table 2 Non-Declared Transmission System (Non-DTS) – Transitional UAFG benchmarks between 1 January 2023 to 30 June 2023

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

Question for stakeholders

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 we may have missed?

Draft UAFG benchmarks to apply in the next regulatory period from 1 July 2023 to 30 June 2028

Declared Transmission System (DTS) - Class A UAFG benchmarks

The DTS class A UAFG benchmarks are associated with high pressure gas infrastructure for bulk gas delivery. High pressure gas infrastructure is designed and built to different and more robust requirements with sophisticated and accurate metering equipment to quantify UAFG amounts. As a result, there are materially less leakage and metering error issues. This is reflected by the DTS class A UAFG benchmarks being set at a low percentage value and remaining unchanged since at least 2013.

Based on these factors, we propose draft DTS class A UAFG benchmarks as shown in Table 3. It should be noted that the proposed benchmarks have not changed from current benchmarks.

Table 3 Proposed DTS class A UAFG benchmarks.

Distributor	Class A 1 July 2023 – 30 June 2028
Australian Gas Networks (Victoria)	0.3%
Australian Gas Networks (Albury)	0.1%
AusNet Services	0.3%
Multinet Gas	0.3%

Declared Transmission System (DTS) - Class B UAFG benchmarks

Based on the recent performance of distributors, we have applied our proposed methodology to calculate draft class B UAFG benchmarks for the Declared Transmission System (DTS) shown in Table 4.

We note the proposed DTS class B benchmarks for most distributors to be stable against the historical UAFG performance trends. Only Multinet's UAFG performance is showing a slight increase resulting in a draft benchmark of 5.4 per cent (a change from the current benchmark of 5.3 per cent). We propose all other DTS class B UAFG benchmarks to remain unchanged.

Table 4 Proposed DTS class B UAFG benchmarks.

Distributor	Class B 1 July 2023 – 30 June 2028
Australian Gas Networks (Victoria)	4.0%
Australian Gas Networks (Albury)	4.0%
AusNet Services	4.6%
Multinet Gas	5.4%

Non-Declared Transmission System (non-DTS) – Combined Class A and Class B UAFG benchmarks

For the non-DTS we propose to continue combining class A and class B UAFG benchmarks in line with our 2017 UAFG review approach.[20] Distributors were either unable to provide up to date settled data (Australian Gas Networks and Multinet) or the information provided could not explain its management of UAFG issues (AusNet). Without the information to assess the distributors' UAFG performance, we propose the non-DTS combined class A class B benchmarks in accordance with Table 5. This proposes a continuation of the current non-DTS UAFG benchmarks.

Table 5 Proposed non-DTS combined class A and class B UAFG benchmarks.

Distributor	Combined Class A and Class B 1 July 2023 – 30 June 2028
Australian Gas Networks	2.0%
AusNet Services	4.9%
Multinet Gas	2.0%

Questions for stakeholders

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 proposed methodology?

[20] In the 2008 Gas Access Arrangement review, the commission set a combined class A and class B benchmarks for the non-DTS network due to their small scale. This approach has been continued since.

Distributor UAFG performance analysis

The following sections provide further detail on the individual performance of UAFG in Victorian gas distribution networks, including the actions and strategies distributors undertook to manage UAFG.

To inform our decision, we requested distributors' UAFG performance data (spanning over 10 years) and information demonstrating their management of UAFG. Distributors undertake UAFG management activities across different timeframes. For example, some UAFG management activities such as leakage surveys or temperature, pressure conversion and correction factor checks are operationally undertaken on an ongoing basis. Others such as the maintenance or replacement of Custody Transfer Meters would occur infrequently (every few years).

We also note that major capital projects such as mains replacement programs are coming to an end for AGN but will continue into the next regulatory period for the two other distributors (AusNet and Multinet).

We also monitor and report on distributors performance, to provide transparency for interested stakeholders. We regularly publish each distributor's actual UAFG levels against the benchmarks through our annual Victorian Energy Market Report. Previous reports can be accessed at our website.[21]

Australian Gas Networks – performance and actions to manage UAFG

Declared Transmission System (DTS)

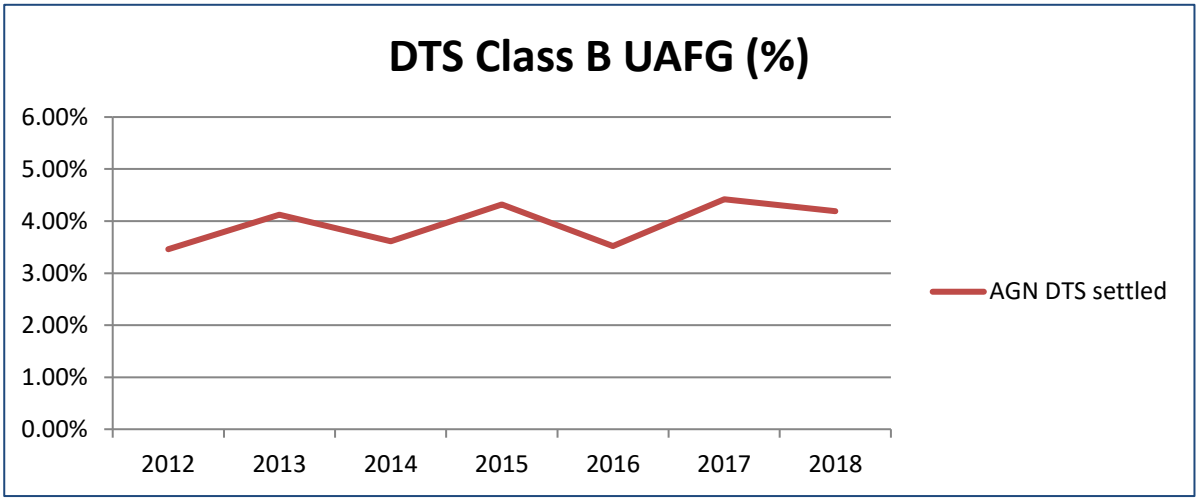
In late August 2022, AGN submitted nine years of data between 2012 to 2020 (the 2021 data was not yet available at the time of the request) for the Victoria and Albury networks. Because these two networks are interconnected and its UAFG levels not measured separately, these will be referred to as a single network.

We note that AGN submitted settled data up to 2018 but are expecting to settle data up to 2019 to inform our final decision. Should additional settled data become available we will consider it for our final decision. For this draft decision, three years of the latest available settled data (i.e., between 2016 and 2018) from AGN has been considered.

[21] www.esc.vic.gov.au/electricity-and-gas/market-performance-and-reporting/victorian-energy-market-report

Figure 2 illustrates AGN's UAFG performance based on provided settled data. We engaged an independent consultant, Zincara Pty. Ltd (Zincara) to assist our analysis of distributor information, UAFG strategies, performance and management to set the UAFG benchmarks

Figure 2 AGN DTS settled data UAFG performance



AGN's submission indicated approximately 17 activities,[22] which Zincara considered to be good industry practice to manage UAFG.[23] Some of the key activities include:

- Liaising with APA Group (the transmission operator) 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.
- Ensuring that meters on customers' sites are accurate through its ongoing time expired meter replacement program and replacement of faulty meters.
- Carrying 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.
- Monitoring AEMO's implementation of heating value zones in Victoria and the impact on UAFG.
- Ensuring that theft of gas is minimised by regular checks on industrial customers and monitoring the gas consumption of residential customers.
- Completing its low-pressure mains replacement program by replacing 297 kms of gas mains in the current Access Arrangement period.
- Carrying out leakage surveys on a regular basis.

[22] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p9.

[23] Ibid, p12.

- Monitoring 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.
- Reducing third party damage through participating in the Energy Safe Victoria (ESV) led Gas Asset Damage mitigation project.

We note that these actions are consistent with AGN's UAFG management approach made during our 2017 UAFG review. Although AGN's UAFG performance fluctuated on a yearly basis over the current regulatory period, when averaged, AGN performed relatively consistently at around the current benchmark of four per cent in recent years.

Given the consistent approach AGN has taken to manage UAFG levels, and the stable averaged performance of its DTS UAFG in recent years, we propose to maintain AGN's DTS class B UAFG benchmarks for the next regulatory period at four per cent, consistent with Zincara's recommendations.[24] We consider that seeking to improve AGN's UAFG performance relative to the cost to achieve it from their current stable performance may have limited benefits. However, we expect AGN will maintain its UAFG performance and where appropriate, pursue improvement strategies and actions to its assets and systems.

Non-Declared Transmission System (non-DTS)

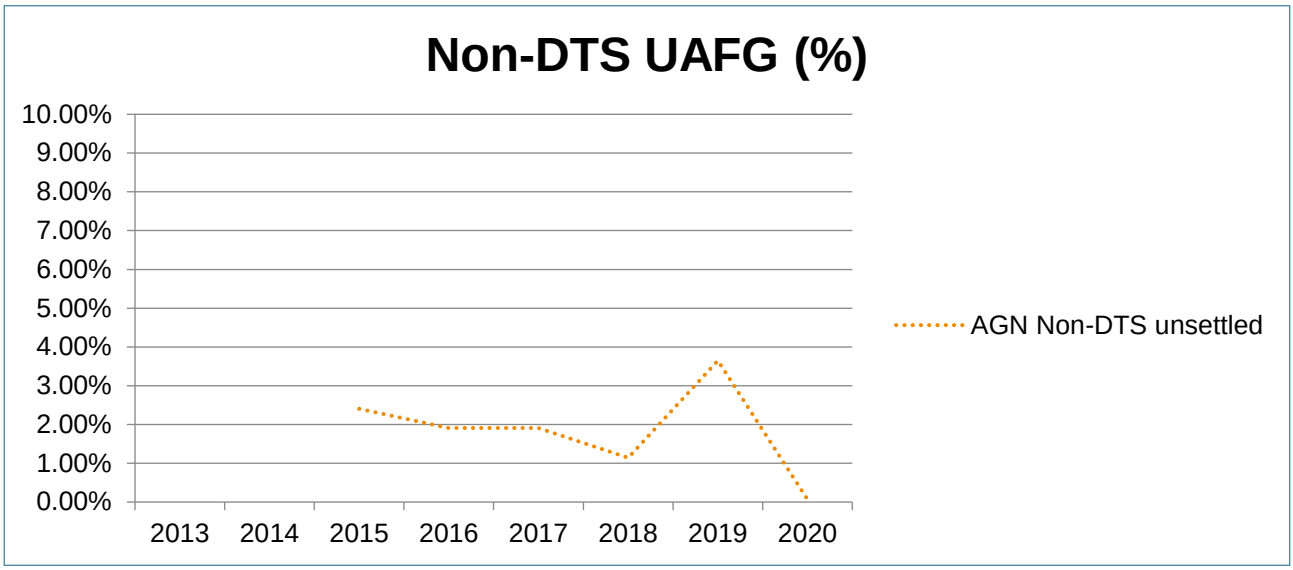
AGN's submission provided only partially settled data to inform our draft decision. However, AGN is currently seeking assistance from the Australian Energy Market Operator (AEMO) to settle non-DTS UAFG benchmarks. Because the last settled data dates back to 2015, we consider this data too out of date to be useful for the purposes of setting new non-DTS UAFG benchmarks.

Unless there is more sufficient and recent settled data, we propose to retain the current non-DTS UAFG benchmarks of two per cent. This aligns with Zincara's recommendations.[25]

[24] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p21.

[25] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p21.

Figure 3 AGN non-DTS UAFG performance (unsettled data)



AusNet Services – performance and actions to manage UAFG

Declared Transmission System (DTS)

In late August and early September 2022, AusNet Services (AusNet) submitted nine years of data between 2012 to 2020. We requested 10 years of data, but 2021 data was not yet available at the time of the request. Their latest settled data is up to 2019, but there was no indication as to whether additional settled data may become available during our review period. Should additional settled data become available, we will consider it for our final decision.

Our draft decision has been informed by AusNet's three years of latest available settled data between 2017 and 2019.

Figure 4 AusNet Services DTS settled data UAFG performance

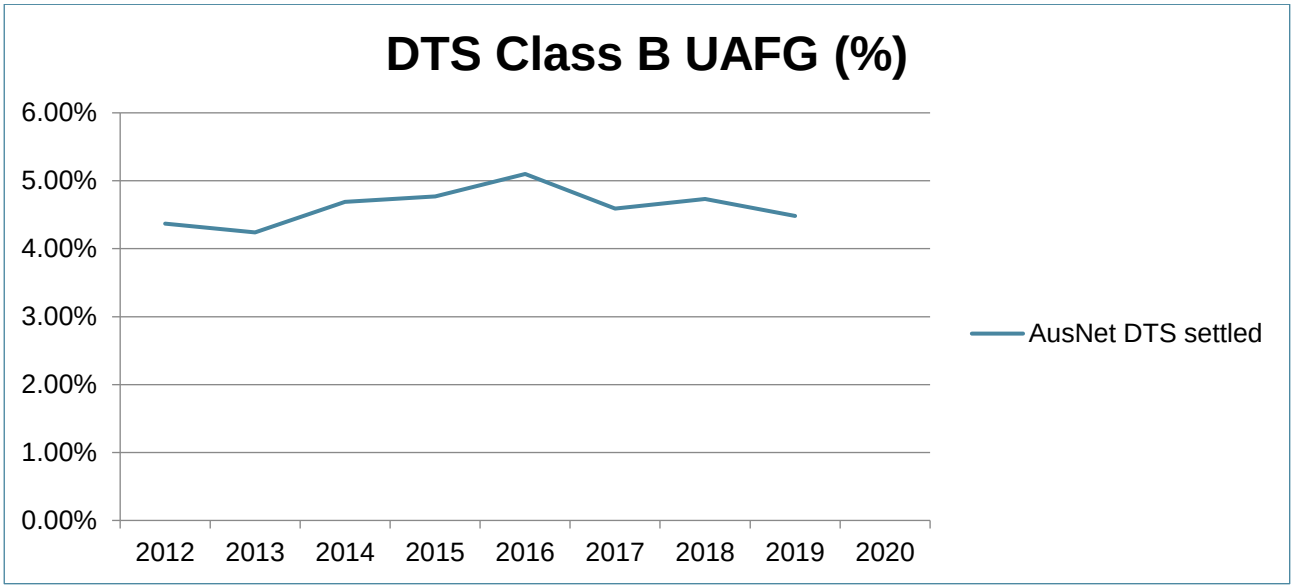


Figure 4 illustrates AusNet's DTS UAFG performance based on settled data. Zincara's review indicated that AusNet's approach to categorising UAFG sources differed slightly to those of the other two distributors as the categorisation was more consolidated, but undertook similar strategies and activities to manage and minimise UAFG.[26] Zincara also noted that the UAFG management strategy document submitted by AusNet was dated 2018, and it is unclear whether it has since made improvements or changes to its strategies.

Some of AusNet's key activities to address UAFG include:

- UAFG key performance indicators are monitored by a UAFG taskforce that also develops strategies. The Asset Management Committee receives annual reports on UAFG performance.
- 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.
- The heating value of the gas injected into the AusNet networks is monitored for consistency.
- As AusNet has only limited visibility how Australian Energy Market Operator (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 industrial and commercial customers.
- 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.
- AusNet proposes to extend its leakage survey to regional areas. It also proposes to analyse the leak repairs in several towns to understand the economics of using leakage survey and repair to manage UAFG.
- The pressure in the network is monitored by the Supervisory control and Data Acquisition (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.

Similar to the other distributors, we note AusNet's DTS UAFG performance on a yearly basis fluctuated over the current regulatory period, but when averaged, performed relatively consistently at around the current benchmark of 4.6 per cent in recent years.

To the extent that Ausnet's approach is consistent with the strategy outlined in its 2018 UAFG management document, AusNet's actions are observed to be consistent with the UAFG management approach it has used since our 2017 UAFG review.

[26] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p12.

With relatively stable DTS UAFG performance in recent years, we propose to maintain AusNet's DTS class B UAFG benchmarks for the next regulatory period at 4.6 per cent consistent with Zincara's recommendations.[27]

Non-Declared Transmission System (non-DTS)

Based on AusNet's settled data up to 2019, we observe that its non-DTS UAFG performance has returned to approximately pre-2013 UAFG levels after a period of significant variation as indicated in Figure 5.

These variations in performance were also observed in our 2017 review where we decided not to apply the revealed cost method. This is because we had limited confidence in AusNet's submitted information demonstrating its management of non-DTS UAFG issues. Instead, we retained and continued to apply the 2013 non-DTS UAFG benchmark of 4.9 per cent, as this was the expected performance AusNet should have been managing towards.

To address their performance issues, AusNet undertook a plan of action in late 2017 and early 2018. The results of AusNet's investigations into high UAFG levels in its non-DTS network resulted in the following: [28]

- An independent review of the Carisbrook Custody Transfer Meter (CTM) in terms of calibration, performance and operation. This will confirm that the source supply of gas metering is accurate. This will then isolate the issue to AusNet's non-DTS network rather than the pipeline owned by Gas Pipelines Victoria (GPV).
- Field audits of meters at Horsham, Stawell and Ararat to confirm the integrity of CTM metering.
- Complete an asset audit of meters installed in the three towns to determine if there are any new meters that have not been accounted for.
- Perform a downstream flow balance on the Horsham network to understand if there are any UAFG losses in the network. This will identify the location of potential losses that have not been accounted for.
- Further reconciliation of metering data with customer data sets.
- Further leakage detection within the non-DTS network and desktop modelling of the potential volume of gas which would arise from leaks at different pressure levels on the network.
- Further scrutiny of theft as a potential contributor to rising UAFG levels.

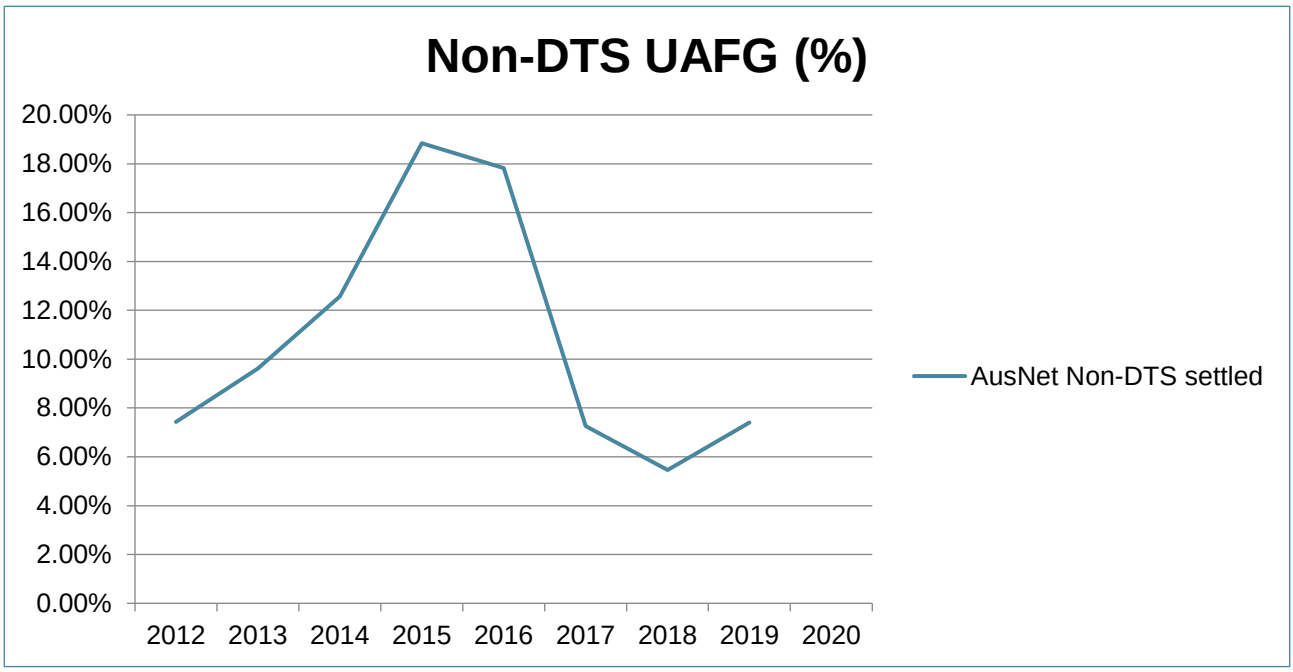
[27] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p21.

[28] Review of Unaccounted for Gas Benchmarks: Final Decision – Calculation, December 2017, p46.

AusNet, in preliminary engagement with us indicated that some of the actions above have been addressed (such as the Stawell meter being replaced). However, based on the information AusNet has submitted to us, it is unclear what further actions have been taken since 2018.

While we recognise the performance of AusNet's non-DTS UAFG is trending back to pre-2013 levels, we consider there to be insufficient information submitted by AusNet to justify the use of recent historical performance data in setting non-DTS UAFG benchmarks. Therefore, we have proposed to retain the current non-DTS UAFG benchmarks of 4.9 per cent, which has also been recommended by Zincara.[29]

Figure 5 AusNet non-DTS settled UAFG performance.



[29] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p21.

Multinet Gas Networks – performance and actions to manage UAFG

Declared Transmission System (DTS)

In late August 2022, Multinet submitted nine years of data for the period of 2012 to 2020. We requested 10 years of data, but 2021 data was not yet available at the time of the request. Multinet's submitted settled data up to 2018but expects to finalise and settle 2019 data during our review period. Should updated data become available before the UAFG review is finalised, we will take it into consideration for our final decision.

For this draft decision, Multinet's three years of latest available settled data (i.e., between 2016 and 2018) has been considered.

Figure 6 Multinet DTS settled UAFG performance

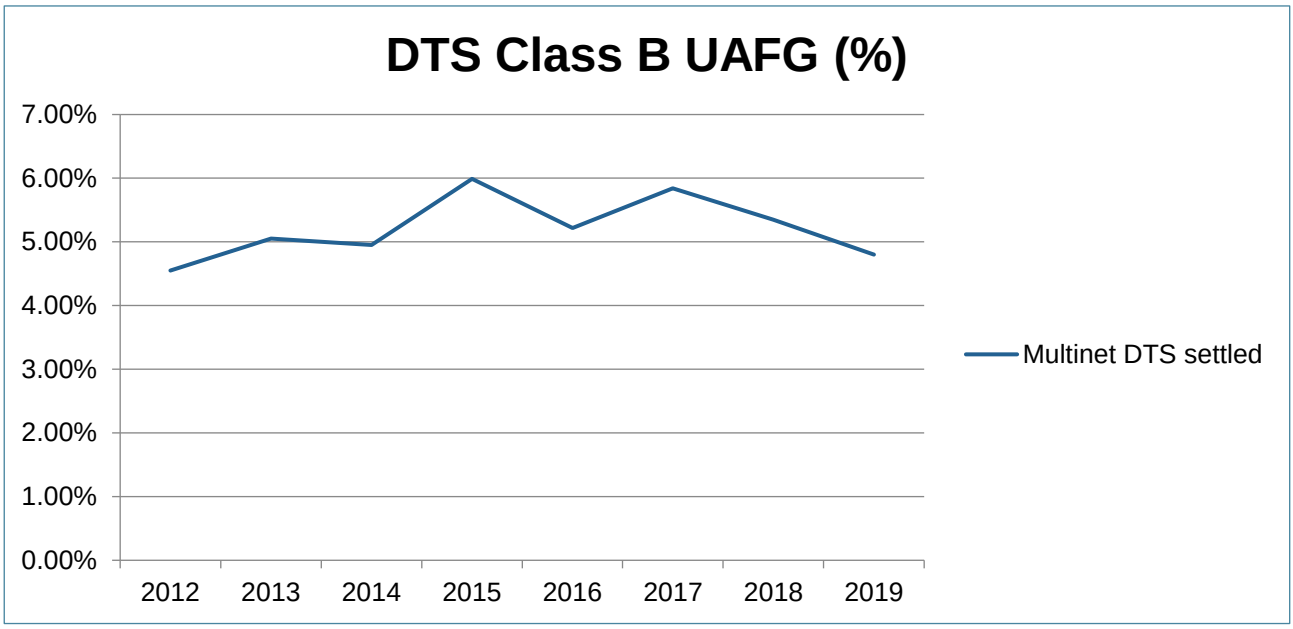


Figure 6 illustrates Multinet's DTS UAFG performance from their settled data. Zincara noted the similarities between submissions from Mutlinet and the AGN, noting the joint ownership of the two licensees by the Australian Gas Infrastructure Group (AGIG). This is particularly reflected in Multinet's activities and strategies to manage UAFG, which mirrors that of AGN's. Zincara considered Multinet's strategy and approach to be reasonable practice in line with what a prudent distributor should conduct to manage UAFG.

Multinet's yearly DTS UAFG performance fluctuated over the current regulatory period. As a result, its three-year averaged performance has slightly increased. Based on the averaged DTS UAFG performance in recent years, we propose Multinet's DTS class B UAFG benchmarks for the next

regulatory period to be set at 5.4 per cent, a slight increase from the current benchmark of 5.3 per cent, consistent with Zincara's recommendations.[30]

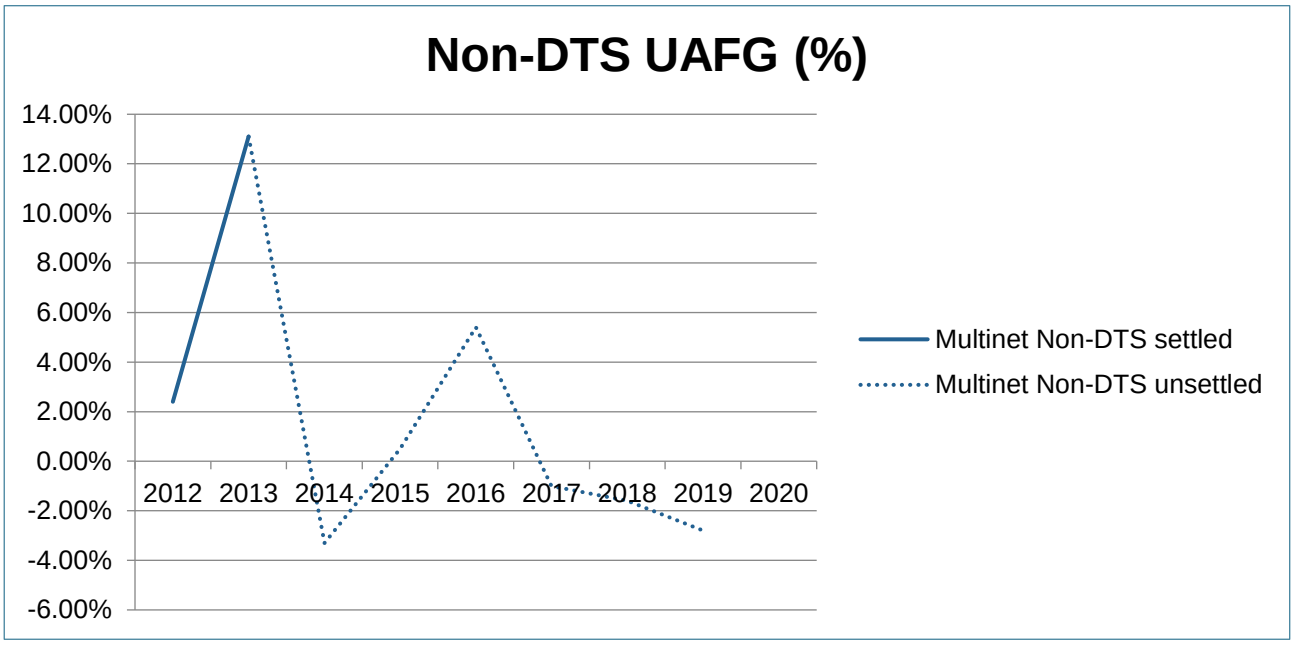
We expect Multinet to maintain and, where appropriate, seek to improve their DTS UAFG performance. We will also continue monitoring Multinet's annual UAFG performance through our Victorian Energy Market Report.

Non-Declared Transmission System (non-DTS)

Multinet's non-DTS submission provided much less settled data than the other distributors. Multinet also noted that it was seeking assistance from the Australian Energy Market Operator (AEMO) to settle non-DTS UAFG benchmarks. Because the last settled data dates back to 2013, we consider this data too out of date to be useful for the purposes of setting new UAFG benchmarks.

Unless there is more sufficient and recent settled data, we propose to retain the current non-DTS class B UAFG benchmarks of two per cent. This aligns with Zincara's recommendations.[31]

Figure 7 Multinet non-DTS UAFG performance



[30] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p6.

[31] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p21.

Next steps

Making a submission to our draft decision

We invite submissions from stakeholders and interested parties on our draft decisions and proposed UAFG benchmarks. In making the submission, stakeholders may wish to consider reflecting on the questions we posed in the draft decision such as:

- **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 we 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?

Submissions received in response to the draft decision will inform the development of the final UAFG benchmarks decision, which we aim to publish in December 2022.

Submissions should be made by: **5pm on Friday 25th November 2022** as follows:

By electronic submission: **Engage Victoria**

The Commission's general approach is that submissions will be published on our website, except for any information that is commercially sensitive or confidential, in accordance with our Submissions Policy. Submissions should clearly identify any information which you consider to be sensitive or confidential, and the basis for your claim.

For any questions regarding this consultation, please contact us on:

Phone: (03) 9032 1300.

Email: energy.reform@esc.vic.gov.au.

Appendix A – Causes of unaccounted for gas

Unaccounted for gas (UAFG) is the difference between the measured quantity of gas entering the gas distribution system and the gas delivered to customers.

There are several known causes that contribute to UAFG in any gas distribution system, broadly itemised into five categories of causes for UAFG:

- fugitive emissions (system leakage)
- metering errors
- heating value
- data quality, and
- theft.

The following sections describe these causes of UAFG in further detail.

Fugitive emissions

Fugitive emissions refers to gas that is lost into the atmosphere from each distributor's network due to leakage. The level of fugitive emissions is within the control of the distributors to an extent given that they are responsible for maintaining the quality of their distribution networks. Leaks are usually caused by defects, material failure and third-party damage.[32]

All Victorian gas distributors have ongoing programs to progressively refresh and replace its aged assets. This involves replacing the low pressure cast iron and unprotected steel pipes that are susceptible to deterioration over time and are the main cause of leaks in the distribution system. The old pipes are being replaced with new polyethylene and protected steel pipes that have much lower leakage. However, the primary objective of the mains replacement program is network safety requirements rather than UAFG, as there is a low correlation between mains replacement and reduced UAFG levels.[33]

In accordance with the 2017 final decision on the UAFG methodology, we will not account for possible reductions in UAFG resulting from the distributors' mains replacement programs nor account for possible increases in UAFG caused by continued deterioration of the distribution network. We highlight our reasoning from the 2017 decision as follows:

[32] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p5.

[33] Ibid, p20.

> "The Commission continues to consider that accounting for possible reductions in UAFG resulting from the distributors' mains replacement programs, without also accounting for possible variations related to the other known causes of UAFG, may bias the forecast for UAFG. For the same reason, the Commission does not propose to account for the possibility of any increased leakage caused by continued deterioration of the distribution networks which may outweigh the reduced leakage from mains replacement. There are many factors causing UAFG which pull in opposite directions, and collectively they affect the levels of UAFG in a distribution network." [34]

Metering errors

The two types of meters that contribute to metering errors are customer meters and custody transfer meters (CTM). A customer is billed for their gas usage using the measured volume of gas passing through the customer meter at their premises. The volume of gas is then converted to energy by multiplying the volume by the heating value, and for large customers by the pressure and temperature of the gas supplied to the customer.

In Victoria, allowable meter errors are specified by Part B, Schedule one of our Gas Distribution System Code of Practice version 15 (1 March 2022) (GDCoP). The maximum allowable error limits (in quantity from the agreed true quantity for gas meters) set out in the GDSCoP are[35]:

a) Not more than 2 percent in favour of the distributor.
b) Not more than 3 percent in favour of the customer.

In addition, there is a further allowance of ±1% for equipment used by large customers designed to correct their volume measurement from actual to standard conditions. Given that large customers consume substantial amounts of gas, there can be a significant impact on overall UAFG if these customers have not been metered accurately.[36]

These measurement inaccuracies do contribute to UAFG, but it is difficult to quantify the extent without extensive investigation and at best it is an estimate. In general, metering error is somewhat

[34] Ibid, p21.

[35] Schedule 1, Part B of the Gas Distribution System Code of Practice (GDSCoP), Version 15.

[36] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p6.

within the control of distributors with the scope to use higher quality meters to mitigate some of the metering errors, but this may not be economical.[3738]

Heating value

The heating value of gas is used to convert the measured volume of gas consumption to energy units for the purposes of billing customers. The level of UAFG is calculated using energy instead of volume because customers are billed for the amount of energy they have consumed, and retailers pay for the amount of energy that has been supplied by gas producers. However, gas can only be measured in volume, which can be influenced by temperature and pressure. Because of this, the process of converting heating value into energy, which could be subject to local conditions, could vary and differ from the theoretical ideal conversion, thereby introducing variations and discrepancies.

The heating value also relates to the quality of gas delivered into the network. There are multiple sources of gas supply across Victoria and each gas source may not have the same quality and heating value. For simplicity, a uniform state-wide heating value is used to calculate the energy consumption of customers. This leads to some uncertainty around the true heating value of gas in Victoria.[39]

For these reasons, the heating value for each distributor's network cannot be considered definitive, and outside the control of distributors as they do not source the gas being transported through their networks.[40] On a separate, but related matter, we note the works by AEMO regarding zonal heating values, which could influence the heating value discussions moving forward.[41]

Data quality

As residential and small commercial gas meters are read at different times and days, accounting, administrative and timing errors occur where the total demand for Class B customers lag the automated meter reading between the transmission and distribution systems.[42]

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[37] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p13.

[38] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p6.

[39] Ibid, p7.

[40] Ibid, p7.

[41] https://aemo.com.au/initiatives/trials-and-initiatives/renewable-gas-blending-in-victoria

[42] Review of Gas Distribution Businesses Unaccounted for Gas, Prepared for Essential Services Commission by Zincara Pty Ltd, September 2022, p. 14.

Data quality issues also have some impact on UAFG.

Theft

Theft occurs when gas is illegally removed from the networks without the knowledge of the distributor or retailer. It is thought that meter bypassing is one of potential methods to achieve this, with the percentage of that gas theft contributing to UAFG, which is unquantifiable.

Appendix B – Methodologies for setting unaccounted for gas benchmarks

In 2017, our approach to determining a methodology and calculating the unaccounted for gas (UAFG) benchmarks was substantively reviewed, with stakeholders generally supporting the final methodology. A detailed description of the methodology used in 2017, and proposed for setting new benchmarks in this draft decision is set out below,

Revealed cost approach

The revealed cost method considers three key themes as basis in calculating and setting the benchmarks. The revealed cost approach:

- uses past UAFG performance as the basis for determining future UAFG benchmarks
- assumes distributors have been efficiently investing in measures to reduce UAFG and so the data reflects efficient levels of UAFG
- requires distributors to provide an explanation of how they have efficiently sought to reduce UAFG levels during the preceding benchmarking period.

This approach has the major advantage of considering the distributors' network circumstances, even when the individual drivers of UAFG are not known with the required level of precision or where the drivers are out of the control of the distributors. For example, data quality and theft are mostly out of the distributors' control. In historical data, the amount to which these causes contribute to UAFG is difficult to quantify. Under the revealed cost approach, the unknown contribution of data quality and theft is included in an efficient benchmark as historical data accounts for these causes. Under other methodologies, it would be much more difficult to accurately incorporate these factors.[43]

The drawback associated with this approach is that distributors may underspend on investment associated with reducing UAFG, and, as a result, the actual UAFG amounts may increase leading to an increase in UAFG benchmark based on historical data. This could have the undesirable effect of distributors benefiting at the expense of retailers for prolonged periods of underinvestment in UAFG reducing strategies.

However, the consistency in applying this methodology and the resultant trend, enables the monitoring of distributors' long term performance to observe lagging factors such as chronic

[43] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p18.

underspending translating to UAFG performance. For example, it could help inform whether a particular level of UAFG on a network is reasonable at a point in time. In this regard, the review considered ten years of distributors raw data along with reviewing their current UAFG management strategies towards how distributors will continuously manage their UAFG.

Multi-year average

When using a multi-year average approach, the effect of any variations in year-to-year UAFG levels are minimised as an average of actual UAFG levels across years is used. For this reason, there is a greater likelihood that a multi-year average will provide a better estimate of future UAFG levels.[44]

With the 2022 review continuing to use the 2017 method, this results with the use of a three-year average period as the optimal number of years of UAFG data to include in a multi-year average.[45]

The reasoning behind this is, if a shorter period is used, the data is more recent and therefore more likely to reflect the distributors' current circumstances. If the period used is extended, the effects of year-to-year variations are reduced. However, the relevance of the data diminishes as the period used is extended because older data may not reflect the current circumstances faced by the distributors.[46]

We considered that the most practical options for the number of years of UAFG data to include in the multi-year average is three years. If a period of less than three years is used, the effect of any variations in year-to-year UAFG levels may result in the average being unreliable because it may not represent efficient UAFG levels in the future. Conversely, a period of more than three years would include older UAFG data and may result in the same outcome.

On this basis, we will continue the use of a three-year average to calculate the class B UAFG benchmarks for the DTS networks, as well as the combined class A and class B benchmarks for the non-DTS networks, for the next regulatory period.

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[44] Essential Services Commission, Review of Unaccounted for gas benchmarks: draft decision – methodology, May 2017.

[45] Essential Services Commission, Review of Unaccounted for Gas Benchmarks: Final Decision – Methodology, July 2017, p19.

[46] Essential Services Commission, Review of Unaccounted for gas benchmarks: final decision – calculation, December 2017, p11.

Settled data

We propose using only settled data to calculate UAFG benchmarks for the 2022 review, as we similarly decided for our 2017 UAFG benchmarks.[47]

As part of the UAFG settlement procedure, a gas distributor must consolidate all the UAFG data and apportion it to the relevant retailers. This data is called the unsettled data. Upon receipt of the data, each retailer will scrutinise the data and either seek to correct the data or accept the data as accurate. If the data must be corrected, the process is repeated till both the retailer and the distributor accept the data as correct. This final set of data is called settled data.[48]

There are several factors to be to be considered when deciding if settled or unsettled data should be used to determine UAFG benchmarks, as the final settled data could materially differ to the unsettled data. Expanding further:

- The benchmark UAFG is the base figure for the calculation of UAFG compensation from either the distributor to retailer or vice versa. It is therefore important to ensure that the benchmark has been calculated using the data that all parties have agreed upon.
- The principle of the distributor allocating UAFG to each retailer and seeking their approval means that there is a degree of independent scrutiny of the data from the retailers which ensures that the data is reliable.
- The use of unsettled data is like using unaudited data and therefore cannot be claimed to be true and correct.
- It is not possible to assume that the settled data is the same as the unsettled data. In the future, there could be a situation when erroneous unsettled data is used due to complexity in determining the contribution of the multiple factors that contribute to UAFG.[49]

Given these factors, the 2022 review will only use settled data to calculate the UAFG benchmarks.

[47] Review of Unaccounted for Gas Benchmarks – Methodology, Prepared for Essential Services Commission by Zincara Pty Ltd, July 2017, p22.

[48] Ibid.

[49] Review of Unaccounted for Gas Benchmarks – Methodology, Prepared for Essential Services Commission by Zincara Pty Ltd, July 2017, p22.