Brotherhood of St Laurence
Working for an Australia free of poverty

2023-2028 Victorian Gas Distributors' Access Arrangement

Submission from Brotherhood of St. Laurence

September 2022

Contents

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The views expressed in this document do not necessarily reflect the views of Energy Consumers Australia.

1 Summary

Key issues for BSL include the importance of affordability for low-income households; the proposal for accelerated depreciation, which we do not support; and expenditure categories that should not be funded in our view, such as hydrogen readiness, the Renewable Gas Education Fund and the Priority Service Program. A full summary is provided below.

Affordability

- Affordability is particularly important, through both the upcoming period and the challenges of the longer-term transition.

Stakeholder engagement

- Stakeholder engagement was well-coordinated and supported by useful information.
- Networks did not respond to a number of issues raised by consumer advocates through the roundtable and through submissions to their draft proposal, and BSL's feedback differed from distributors' representation in some ways.

Accelerated depreciation

- We do not support the proposal for accelerated depreciation, and we don't agree that 'evidence of stranding risk' is a sufficient condition for the approval of accelerated depreciation.
- Accelerated depreciation does not manage the risk for consumers associated with an unmanaged exit from the network, and is likely to increase it.
- A 'reasonable' opportunity to recover investment should be understood as a requirement to limit consumer risks. This will require a new approach to capex planning, and negotiation regarding accelerated depreciation must also address other concerns.

Hydrogen expenditure

- We do not support hydrogen readiness expenditure.
- The full cost implications of the proposal to introduce blends is unclear, and the proposal has not been evaluated with independence or detail adequate to justify network investment. Expenditure to accommodate hydrogen will add to the size of the asset base at risk of stranding, and has the potential to increase the challenge of transition.

Forecasts

- Forecasts should be revisited for the revised proposals.
- We support a mechanism to revisit prices during the period should demand or connection numbers differ from forecasts significantly.
- Policies to increase certainty around customer and demand forecast would benefit consumers.

Capital expenditure (capex)

- A tighter-than-BAU standard should be applied to evaluating capex given the stranding risk identified.

- Augmentation to accommodate growth should be avoided, metering upgrade proposals should be revised, and the detail of mains replacement strategies should be re-considered given the forecast for falling demand. Mains replacement should not be justified on hydrogen compatibility or augmentation grounds.
- Service improvements through a Digital Customer Services program are not warranted.

Operating expenditure (opex)

- An increase to overall operational costs should be avoided.
- In line with other consumer organisation, we don't support funding for a new Priority Service Program or a renewable gas education program.

Tariffs and charges

- Consultation (which has not occurred) is needed on tariff structures in the context of high gas prices and low availability
- Abolishment services charges should be evaluated in detail, to deliver modest and efficient physical service costs only. Abolishment service charges are inconsistent across companies and costs to consumers have increased. Abolishment charges should not be implemented to deter consumers from leaving the network or attempt to recover additional revenue from those leaving the network.
- 'No-access (gas meter)' and 'Reconnect service in street after payment' should be Ancillary Reference Services

Incentives

- We support the networks' withdrawal of the gas network innovation scheme proposal
- We do not support the removal of augmentation from the Capital Expenditure Sharing Scheme

2 Introduction

The Brotherhood of St. Laurence (BSL) would like to thank the Australian Energy Regulator (AER) for the opportunity to make a submission to the Victorian gas distributors' – AusNet Services (ASG), Multinet Gas Networks (MGN) and Australian Gas Networks (AGN)[1] – Initial Proposals for the 2023-2028 access arrangement (after amendment following the release of the Gas Substitution Roadmap). We represent residential, and particularly vulnerable, consumers. We have been participating in the distributors' Roundtable stakeholder consultation process.

This submission to the distributors' Initial Proposals follows earlier input made by BSL and our colleagues to the distributors' draft submissions, APA's transmission access arrangement, and an associated submission to the AER's consultation on Regulating Gas Pipelines Under Uncertainty (the Issues Paper).

Our submission, and the accompanying research conducted by TRAC Partners, has been enabled by an Energy Consumers Australia (ECA) grant. The detailed analysis informing this submission is included as Appendix 2 of this document.

[1] AGN and MGN are owned by the Australian Gas Infrastructure Group (AGIG).

BSL and University of Melbourne: household research

As part of the BSL's project to engage in the current Victorian gas access arrangements, we partnered with the ARC Centre of Excellence for Children and Families over the Life Course (Life Course Centre) at the University of Melbourne to conduct research on low-income and vulnerable households' attitudes towards the gas transition and barriers they face to adopting alternative fuels. The findings and implications below are BSL's interpretation of preliminary findings and do not necessarily represent the views of the Life Course Centre researchers.

2.1 Methods

Our research involved a literature review, and survey and focus group discussions conducted in August and September 2022. We received 236 survey responses, of which 220 met our low-income criteria for inclusion. We held six focus groups (four in person and two online) with 34 participants in total. Survey data was analysed using Stata Statistical Software (Release 17). Descriptive summaries were used to appraise the sociodemographic profile of survey respondents, and inferential analyses explored variation in experiences and attitudes based on individual and household characteristics.

2.2 Demographics of respondents

Respondents were from low-income households, with 85% reporting an equivalised income of less than $40,000 per year and 86% receiving one or more forms of income support payments. Around a third of participants own their own home, another third rent privately, and 14% are in social housing. Most participants (87%) use gas in their home. Over half of participants were considered to be in financial stress – significantly higher than national figures.

2.3 Initial findings

Our findings include:

- Over half (54%) of households support ending the expansion of the Victorian gas network (with strong support from 35%). Most households (69%) support the gas transition and only 7.8% oppose it.[1]
- Households were highly sensitive to affordability. One in three households had been unable to heat their home due to a lack of money in the past year, well above national figures (of under 4%). Most households said they tried to limit their household's energy use (45% 'a great deal' + 'a lot'; 78% 'a great deal' + 'a lot' + 'a moderate amount').

[1] Question: 'The Victorian Government is exploring ways to reduce the use of gas by Victorian households over the next 30 years, and increase the use of cleaner (i.e. less polluting) energy sources instead. How do you feel about this?'

- Cooktops were the only appliance category where a majority of participants preferred gas, and very few participants had experience with induction cooktops. Across all categories of energy use in the home, there was a significant link between people's current energy use and their preferences.
- Common barriers to electrifying appliances included not owning one's home and the high upfront cost of buying new appliances – both cited by one in three participants. Focus groups also highlighted widespread concerns about a lack of access to independent information and tailored advice in plain language on energy-related topics.
- Of the small number of people who opposed the gas transition, one in three (35%) indicated that financial support would cause them to change their opinion. Information-based measures were considered important overall, but had a lesser effect on attitudes amongst people opposing or neutral to the transition.

2.4 Implications

We conclude that low-income households facing energy stress are generally supportive of a transition away from gas and to electric homes. However, many are constrained by affordability concerns and housing tenure, and therefore risk being left behind. Bill increases, such as those resulting from increased distributor revenue, may perpetuate and extend rationing of essential services, such as heating, within the home. Low-income households will need support – both financial and information – from government to electrify their homes. The tenant-landlord split incentive problem is a significant barrier to electrification and requires further analysis and reform efforts.

3 Affordability

3.1 Affordability is particularly important through the upcoming period, and through the challenges of the transition

Avoiding inefficient expenditure is particularly important in this access arrangement. In the short term, higher network prices would add to a cost-of-living crisis, of which energy costs are a significant part. The potential for further increases in energy costs is a source of anxiety for many of the households that BSL works with.

There is evidence of growing energy hardship in Victoria. Gas and electricity disconnections increased significantly across the first month of 2022; and energy debt levels are increasing.[2] A recent ACOSS survey of welfare recipients has found that energy stress is growing for vulnerable Australians: 70% cutting their use of

[2] Essential Services Commission. 2022. *June 2022 Energy Market Report*
https://www.esc.vic.gov.au/sites/default/files/documents/Victorian-Energy-Market-Report-June-2022.pdf

heating, 28% currently have energy bill debt, a further 22% expect to go into debt with their next bill, and 46% going to bed early to keep warm.[3]

In the long term, unnecessary expenditure may increase the challenge of our transition away from fossil gas.

This context – and the stranded asset risk that has been identified for the networks – warrant a higher-than-business-as-usual (BAU) level of evidence for all spending proposed in this access arrangement.

4 Stakeholder engagement

4.1 Stakeholder engagement was useful and informative

Distributors' stakeholder engagement through the roundtable was open and informative. Consumer representatives appreciate the efforts made by the networks to run a combined engagement program, which made participation much easier. This engagement was continued after the release of the Roadmap.

Networks supported the engagement process with useful information. This included the provision of most of the assumptions used in the consumer choice modelling conducted by the networks, and also the responsive and timely effort to survey volume builders after the release of the Victorian Gas Substitution Roadmap (the Roadmap).

4.2 Networks did not respond to a number of issues raised by consumer advocates through the roundtable and through submissions to their draft proposal

BSL, and other consumer stakeholders, raised a number of key issues through the Roundtable process that distributors did not address in the consultation:

- The need to review tariff structures to account for current conditions
- The need to address a number of issues relating to the proposal for accelerated depreciation as raised in Section 6.
- The need to better understand the full costs and works required for hydrogen blend readiness

[3] ACOSS 2022 ACOSS Cost of Living Report https://www.acoss.org.au/wp-content/uploads/2022/09/ACOSS-cost-of-living-report_web_v02.pdf

4.3 BSL's feedback differed from distributors' representation in some ways

BSL's feedback differs from the consultation summary tables presented by the Australian Gas Infrastructure Group (AGIG – the owner of AGN and MGN) in their Final Plan Overview[4] documents in the following ways:

- AGIG states: 'Stakeholders welcome the reduction in our proposed hydrogen readiness expenditure based on draft plan feedback but struggle to support our plans given policy uncertainty'.

  This summary does not reflect BSL's position stated in our submission to their draft plan. We do not support hydrogen expenditure for a range of reasons, outlined in Section 7.

- AGIG states: 'Stakeholders acknowledge that our accelerated depreciation plans have been developed under great uncertainty and expect that we continue to engage on and adapt these plans during post lodgement.'

  While we agree with this statement, the summary does not capture the BSL's position stated in our submission to their draft plan, which was in line with our comments in Section 6.

- AGIG states 'We have received limited feedback on the proposed digital customer experience proposal. Stakeholders are generally supportive of our plans to meet customers' communication expectations, which have shifted to more digital preferences.' (AGIG have rated stakeholders' position as 'green', reflecting acceptance) and 'We received limited detailed feedback on IT-related aspects of our plans. Stakeholders welcome the benefits of consolidating the IT environments across AGIG.'

  This summary does not reflect BSL's feedback to the draft proposal, that stated the IT expenditure should be minimised to necessary expenditure only, with a tighter-than-BAU level of evidence.

- AGIG states 'Social Service Organisations had a strong preference for the program [Priority Services Program] to be Victoria wide, as opposed to network specific.'

  This summary does not reflect BSL's feedback to the draft proposal, which did not support additional spending for the Priority Service Program, or the views of other community organisations we consulted.

  ASG's high level summary of stakeholder feedback included in the July Access Arrangement Information Document[5] is more representative of our feedback.

[4] MGN 2022 *MGN Final Plan 2023/24-2027/28* https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/multinet-gas-access-arrangement-2023%E2%80%9328

[5] ASG 2022 *ASG - Access Arrangement Information 2024-28 - https://www.aer.gov.au/system/files/ASG%20-%20Access%20Arrangement%20Information%202024-28%20-%201%20July%202022%20-%20PUBLIC.pdf*

5 Response to the Victorian Gas Substitution Roadmap

5.1 Network proposals overstate the Roadmap's responsibility for the stranding risk

Distributors' proposals place disproportionate blame on the Roadmap as the driver for electrification and the expectation for lower demand and connections forecasts.

For example, ASG states:

> '...the Roadmap narrative is strongly biased towards electrification, for at least the medium term. As a result [of the roadmap] the Hydrogen Hero and Muddling Through scenarios are now unlikely to occur, and the full electrification or dual fuel scenarios are now the more credible types of outcomes that we expect to occur […] As a result, the stranding risk that our gas network faces has materially increased under the Roadmap. The scenarios where the network would not end up stranded are now less likely to occur.'[6]

However, the primary drivers for the networks' stranding risk are the urgent issues facing Victorian gas users: higher natural gas costs (and declining cost-competitiveness of gas), forecast gas shortfalls in the near term (peak and absolute), and the imperative to reduce emissions. These are also the issues to which the Roadmap responds.

We note the following:

- The 7-Star rating implemented for new homes is a performance-based standard. If it discourages gas in new homes, this is because gas is less competitive for contemporary energy needs.
- The networks' research shows customer sentiment shifting rapidly towards electrification: ASG's 6-monthly survey found customers' intention to leave the network doubled over the last year (from 7% to 16%).[7]
- Changing sentiment shouldn't assumed to be a result of the Roadmap. The survey was conducted in Autumn 2022 before the release of the Roadmap – national and global energy crises driven by high gas prices are equally likely causes.

[6] ASG 2022 *Access Arrangement Information Gas access arrangement review 2024-28* https://www.aer.gov.au/system/files/ASG%20-%20Gas%20Access%20Arrangement%20review%202024-28%20-%20Addendum%20to%20proposal%20-%202%20September%202022%20-%20PUBLIC.pdf

[7] ASG 2022 *Access Arrangement Information Gas access arrangement review 2024-28* https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ausnet-services-access-arrangement-2023%E2%80%9328

- 'Hydrogen Hero' was not a likely scenario, even in the absence of the Roadmap, for the reasons discussed in Section 6.

  The Future of Gas workshop that identified the modelling scenarios did not evaluate their relative likelihood, nor did any other process.

  The 'muddling through' scenario is a high-risk and undesirable scenario for both consumers and networks, as was recognised in the July Initial Proposals.[8]

5.2 The Roadmap should not be framed as 'biased' against hydrogen

We disagree with the framing of the Roadmap as being 'biased' against hydrogen (See above).

The Roadmap has been developed in response to urgent problems. Electrification is a commercialised solution, able to address these issues in a relevant timeframe. Hydrogen is a research-and-development-stage technology, and not expected to be able to be reticulated until 2050, or 2040 as a 'stretch'.

Electrification is identified by many independent models – such as Climateworks Centre's Decarbonisation Futures scenarios – as a priority action to be conducted through the 2020s in meeting either 2 or 1.5 degree targets. Most carbon budget allocation methods recommend that Australia achieve net zero by 2035.[9]

AEMO has forecast peak day shortfalls for 2023, and the 2022 GSOO recommends that fast deployment of electrification expected under the ISP's central 'Step Change' scenario could resolve these supply-demand imbalances in the short term.[10]

Electrification also provides relief for households and businesses to periods of high gas prices, as we have seen through 2022.

If it is not reticulated until 2050, hydrogen will be too late to assist these issues, so it is unreasonable for the network businesses to suggest that the Roadmap is biased.

The Roadmap should not be cited as justification for compensation through accelerated depreciation or other means.

[8] ASG 2022 *Access Arrangement Information Gas access arrangement review 2024-29* https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ausnet-services-access-arrangement-2023%E2%80%9328
[9] Climateworks Centre 2020 *Decarbonisation Futures* https://www.climateworkscentre.org/wp-content/uploads/2020/04/CWA-DECARBONISATION-FUTURES-2020-TECH-REPORT.pdf
[10] AEMO 2022 *Gas Statement of opportunities* https://aemo.com.au/-/media/files/gas/national_planning_and_forecasting/gsoo/2022/2022-gas-statement-of-opportunities.pdf?la=en

6 Accelerated depreciation

6.1 We do not support the proposal for accelerated depreciation

In their post-Roadmap proposal, ASG has proposed $200m of accelerated depreciation, and the AGIG networks a total of $265m.

We do not support this proposal. The additional risk this transfers to customers is unreasonable, given the absence of measures to mitigate or limit this risk.

An adequate response to the stranding risk identified by the networks will require planning and risk management, and should be developed as a coordinated response from government, network businesses, and other key stakeholders.

Although some of the measures necessary to properly manage this risk may be outside the scope of the access arrangement, or outside the direct responsibility of the AER or the network businesses, it's necessary to consider whether they have been addressed in making this determination - because the lack of provision in the regulatory framework for the prospect of a network wind-down will require a coordinated response.

6.2 A 'reasonable' opportunity to recover investment should be understood as a requirement to limit consumer risks

The National Gas Rules' Revenue and Pricing Principles states that networks should be provided with 'a reasonable opportunity to recover at least the efficient costs the service providers incur in providing reference services (gas pipeline services).'

The qualifiers 'reasonable' and 'at-least-efficient' provides useful guidance in the consideration of the networks' accelerated depreciation.

Cooperation by the networks, in a process to identify and mitigate the range of risks associated with winding down the network should be considered minimum 'reasonable' circumstances for the transferal of stranding risks to consumers through accelerated depreciation.

The networks' current proposals to continue new connections, deploy large capex programs and (for AGIG) invest in hydrogen readiness despite their identification of a stranding risk, have a high likelihood of proving to be inefficient. The Principle's specification that investment applies to 'at-least-efficient' expenditure suggests that capex proposed despite the identification of a stranding risk should not necessarily be subject to full recovery.

6.3 The Roadmap does not constitute justification for accelerated depreciation

As stated previously, the Roadmap is not a primary driver for the networks' stranding risk.

Neither do the Roadmap's moderate policy measures constitute a sufficient framework to reduce the consumer risks associated with a network wind-down or the possibility of a demand collapse.

Therefore, changed regulatory circumstances should not be considered justification for mitigating stranding risk.

6.4 'Evidence of stranding risk' is an insufficient condition for the approval of accelerated depreciation

The AER's draft decision for the Victorian Transmission System (VTS) 2023-2027 Access Arrangement states:

> 'We expressed a preliminary view [in the Regulating Gas Pipelines Under Uncertainty Issues Paper] that some form of accelerated depreciation would be appropriate where there is sufficient evidence to demonstrate and quantify both the pricing risk and stranded asset risk arising from demand uncertainty.'

However, we suggest that this is a necessary-but-not-sufficient condition for the approval of accelerated depreciation. Limiting the regulatory test to this requirement has the potential to increase cost and risk for consumers, and that there are a range of other considerations that must also be addressed before it might be considered reasonable to transfer stranding risk to consumers through accelerated depreciation.

6.5 Accelerated depreciation doesn't manage consumer risk, and may increase it

The details of the networks' consumer choice modelling demonstrate the way in which accelerated depreciation will increase consumer risks. We disagree that it is 'too early' for accelerated to contribute to a disconnections spiral – and therefore, this possibility must be anticipated and managed.

Figure 3.1 and 3.2 in ASG's post-Roadmap Addendum shows the findings of their consumer choice model adapted for their post Roadmap forecasts. Figure 3.1 shows a sensitivity where the wholesale component of the tariff rises very gradually through the period to 2100. Figure 3.2 shows a sensitivity where the wholesale component rises to $16 per GJ after 2040, causing the asset base to become stranded.

The red line represents the maximum tariff that the model finds possible without risking a disconnections spiral – equal to about $700m in accelerated depreciation.

Figure 3.1: Residential distribution (volumetric) price per GJ Growth Index

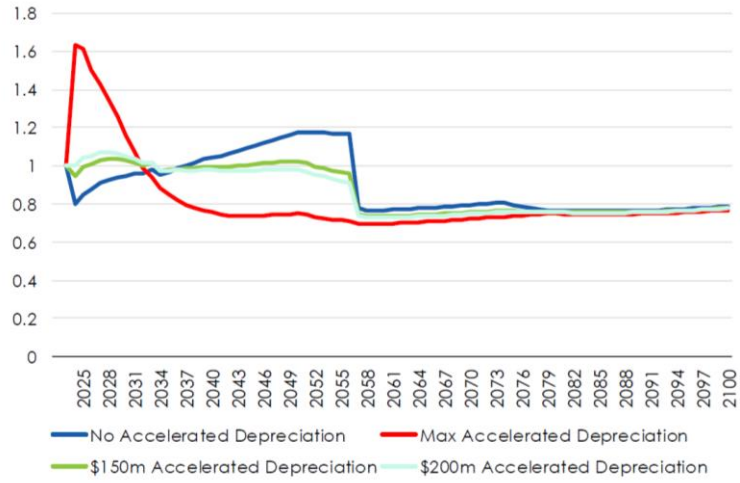
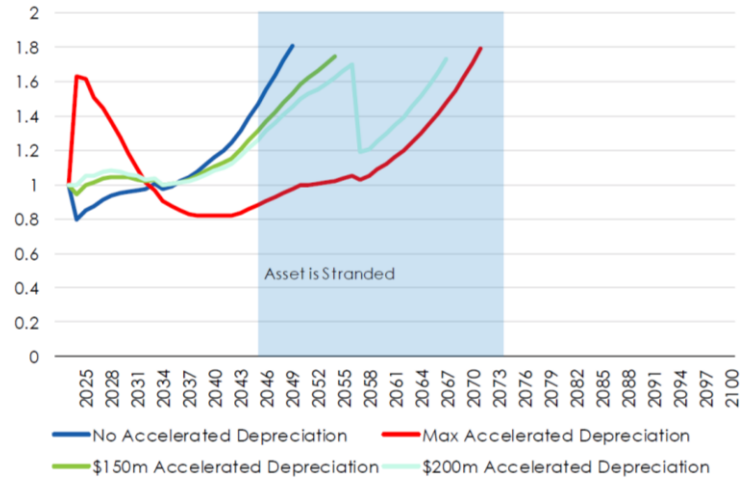


Figure 3.2: Residential distribution (volumetric) price per GJ Growth Index



We note the following points about this modelling:

- The red tariff's average value through the 5-year access arrangement period is 1.5 times the base year. This is not a significant margin give the volatility of gas wholesale prices.
- The residential retail tariff assumed for year 1 appears to be significantly lower than currently available gas retail offers. The volumetric component of the retail tariff assumed for year 1 is 1.82c per MJ and the fixed retail charge is 81c per day. The assumed wholesale price in year 1 is $11.63 per GJ (63% of the base tariff).[11]

  1.5 times the base year's volumetric cost is 2.73c per MJ.

[11] ASG 2022 *ASG – GAAR – Gas Substitution Roadmap – Consumer Choice Model – 2 September 2022 – PUBLIC (1)* https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ausnet-services-access-arrangement-2023%E2%80%9328

- Consumer exposure to a period of high gas wholesale prices during the next 5 or 10 years may drive tariffs to the 1.5-factor limit. Accelerated depreciation would add to tariffs in these circumstances, increasing the chance of reaching this point.
- A disconnections spiral initiated largely by high wholesale prices could be accelerated and sustained by high network prices, given the largely fixed nature of network costs.
- The consumer choice model adopts central estimates for its inputs – but the effect of variation will be important on predicting customer behaviour. Electrification will be much cheaper, and offer a much better NPV for some households than others.

  Demand reduction from those consumers for which electrification offers particularly good economics could be sufficient to trigger a disconnections spiral well before a model based on averages might anticipate.
- Some scenarios demonstrate a rapid drop in tariffs in the 2050s, with tariffs settling at 0.8 of current rates. This implies that the asset base must be smaller, or that it has stopped growing. It is not clear what assumptions have been made about ongoing capex, and how this would be managed.

Because a large proportion of consumer tariffs consists of the natural gas market price, accelerated depreciation can't be used to control prices and disconnection rates in a way that manages risk. It's important to anticipate and manage the possibility that consumers will be exposed to a period of high wholesale prices over the next 5 or 10 years. If this occurs, accelerated depreciation should be expected to accelerate a disconnections spiral at the same time as increasing costs for remaining consumers. Cost and risk will increase for consumers on the network.

Because accelerated depreciation does not adequately address risk for remaining consumers, other measures will be needed to support these customers, including policies that overcome barriers for all consumers to leave the network. These must be addressed before allowing accelerated depreciation.

6.6 Accelerated depreciation poses additional risks for consumers

As well as the potential to contribute to a disconnections spiral discussed in above, accelerated depreciation poses the risks of:

- increased prices adding to the current cost-of-living burden, the risk of household debt, and energy stress
- increased the possibility for inefficient capex, given that networks are shielded from the stranding risk

In these ways, accelerated depreciation has the potential to add to consumer risk, without adequately reducing the risk for consumers.

We have discussed the possible risks associated with accelerated depreciation in our submission to the AER's Issues Paper on Regulating Gas Pipelines under Uncertainty.[12]

6.7 Accelerated depreciation should not be framed as supporting a hydrogen future

Through the consultation process distributors framed accelerated depreciation as a BAU measure that was equally relevant to supporting their transition to a hydrogen-based network as to managing the stranding risk posed by electrification.

Accelerated depreciation is not consistent with a hydrogen future. There is no equity argument for today's customers to pay down the network early so that future customers can enjoy a hydrogen future. There has also been an unanswered question raised about the risk of raising adequate capital for capex after the asset base is disproportionately depreciated under this scenario.

More importantly, the prospect of reticulated hydrogen is unlikely, for the reasons outlined in Appendix 1, and because it can't be deployed in line with a relevant timeline (see Section 7).

The insistence that the proposal for accelerated depreciation should be understood as being equally relevant to a hydrogen future as to asset stranding has obstructed the discussion of the range of considerations that should be addressed in association with the possibility that the network may be wound down.

As a result, stakeholders have not been able to discuss ways to address the risks that the prospect of a wind-down (or a demand crash) poses for consumers, as would provide reasonable balance to the networks' request to manage their stranding risk through higher near-term tariffs.

6.8 Managing stranding risk requires a new approach to capex planning

Consumers should not be asked to take on stranding risk until there is a clear plan to ensure that safe and reliable service can be maintained on the network, while reducing further capex to a minimum. Consumers have no agency to respond to stranding risk by reducing investment.

Ending new connections is an important first step in reducing further network capex. Networks are well placed to advocate for this policy. However, a framework to minimise all categories of capex will also be necessary.

Augex that is not addressed by ceasing connections should be avoided through flexible low-cost measures, such as demand management, or supporting customers to shift off the network.

[12] BSL 2022 Victorian Community Organisations Submission to Regulating Gas Pipelines Under Uncertainty https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/apa-victorian-transmission-system-access-arrangement-2023%E2%80%9327

Networks will also have to consult on the development of a staged plan to manage the wind-down of the network in a way that avoids further significant repex. There may also be a requirement to assess the feasibility of re-using assets, including meters removed from customers leaving the network.

While it may not be found to be appropriate to avoid repex at the current access arrangement through staged shutdowns, it is necessary to consult on the development of this framework – given the significant advantages for all parties in giving long-notice for required network shutdowns. It is also important that networks adopt a more-conservative-than-BAU approach to proposing capex, given the changed circumstances of the current access arrangement.

None of these issues have been adequately addressed through stakeholder consultation.

6.9 Negotiation regarding accelerated depreciation must also address other concerns

BSL has raised a range of additional concerns related to accelerated depreciation through our submissions to the APA process, and to the distributors' drafts. Other stakeholders may have further issues that are also necessary to resolve.

Accelerated depreciation should not be considered without also addressing:

- A plan to secure safe and reliable services while minimising capex
- Appropriate arrangements for decommissioning assets, or alternatively, transferring ownership of potentially useful assets depreciated before their end-of-life
- Adequate policies to support those facing barriers to electrification
- Timelines for a scheduled wind-down, as well as flexibility to respond to falling demand on the network
- Measures to establish a fair share of cost and risk between key stakeholders, and to ensure affordability through the transition/asset wind-down
- Other issues relevant to other consumer types

Given the need for coordinated effort between key stakeholders, particularly networks, to manage a successful transition – it is important that the prospect of a network wind-down is approached as a whole – and that networks risks are not mitigated in isolation, through accelerated depreciation or otherwise.

7 Hydrogen expenditure

7.1 We do not support hydrogen readiness expenditure

We do not support the AGIG networks' proposals for $19m in hydrogen readiness expenditure for the following reasons:

- Broadscale infrastructure investment is premature where there is no detailed understanding of how Australia's hydrogen production capacity will develop
- Full costs of the hydrogen blending proposal are not known – including full distribution network costs, costs for the VTS (which Energy Safe Victoria has confirmed will be exposed to any hydrogen in the distribution network) and production costs
- The assumed benefits of the proposal – articulated in the National Hydrogen Strategy as being a way to artificially grow local demand with an aim to drive down electrolyser costs - have not been demonstrated in adequate detail
- The articulated benefits are not customer-focused. They are not consistent with the National Gas Objective or stipulations of Rule 79 of the National Gas Rules.
- Hydrogen expenditure is likely to increase the challenge of electrification, by increasing the asset base at risk of stranding
- The AEMC's rule change clarifies that the particular gases for transport will be determined by jurisdictional governments. The Victorian Government has not determined that hydrogen blends will be required
- The expected timelines are not consistent with the articulated goals. Networks have said they will be able to accommodate blends by 2030.

  By this date, hydrogen may be expected to be in high demand by the priority applications for hydrogen, so that these industries would be disadvantaged by a competing demand for reticulated gas blending.

  As stated elsewhere, the 2050 (or 2040 as a stretch) timeline for 100% hydrogen is not consistent with climate goals.

Appendix 1 includes a list of consumer-focused concerns with respect to the proposal to transport blends or hydrogen through the network. It is premature to approve expenditure for hydrogen blend reticulation, and particularly disadvantageous for consumers given the viability of the residential electrification alternative.

We note that a recent meta-study found that no independent review supported the prospect of broadscale reticulation of hydrogen for space heating.[13]

The scenarios developed in the Future of Gas workshop (Hydrogen Hero, Electric Dreams, etc.) have been presented as a source of 'uncertainty.' However, in a commercial context, businesses would be required to evaluate the relative uncertainty of various possible outcomes. The AER's role is often considered as standing

13 Jan Rosenow, Is heating homes with hydrogen all but a pipe dream? An evidence review, Joule, 2022, (https://www.sciencedirect.com/science/article/pii/S2542435122004160)

in for the pressures imposed by a competitive market.[14] This suggests that the AER should be active in evaluating the likelihood of alternative scenarios.

8 Forecasts

8.1 Forecasts should be revisited for the Revised Proposals

The network businesses' research demonstrates a high level of uncertainty amongst housing development stakeholders regarding the likelihood of gas connections to new estates. The networks' 6-monthly consumer sentiment survey results demonstrate rapidly changing community expectations around the future role of gas.

Therefore, revisiting the intentions of this sector for the December proposals, and preparing renewed forecasts to inform the revised proposals would be worthwhile.

8.2 We support a mechanism to revisit prices during the period

We would support the inclusion of a mechanism to adjust tariffs or reopen the access arrangement should demand or connection numbers differ from forecasts by a significant amount.

8.3 Policies to increase certainty around customer and demand forecasts would benefit consumers

The challenge of accurate forecasting in the current circumstances, and the significant risks of inaccurate forecasts, support the case to end to new gas connections. Networks are well-placed to advocate for this policy.

9 Capital expenditure (capex)

9.1 A tighter-than-BAU standard should be applied to evaluating capex

AGN has proposed $434m of total capex in their post-Roadmap submission (lower than this period's actuals given the extensive mains replacement program coming to completion), MGN $669m (an increase of 33% on this period) and ASG's net capex is $427.6.4m (a decrease of 10% on the current period).

These final values represent a BAU approach to forecasting capex.

[14] AER 2021 *Regulating Gas Pipelines Under Uncertainty Issues Paper* https://www.aer.gov.au/system/files/AER%20Information%20Paper%20-%20Regulating%20gas%20pipelines%20under%20uncertainty%20-%2015%20November%202021.pdf

Networks have made some changes to growth capex and augmentation as a result of the Roadmap. These changes reflect their revised demand forecasts only.

9.2 Augmentation to accommodate growth should be avoided

In general, distributors have made modest adjustments to their significant augmentation programs in their post-Roadmap proposals.

AGN has reduced the July proposal for $80.4m to $57.8m. MGN, whose area does not include greenfield development sites, decreased proposed augmentation from $9.1m to $1.5m. ASG has proposed $20m, down from $23.3, which is still an increase on this period.

We note that ASG's proposed Werribee city gate upgrade is proposed for the last year of the period, 2027-28. Given this project can be delayed for 4 years, and given the uncertainty in forecasting, we propose that strong evidence should be required as to why it could not be deferred another year.

Given the stranding risk identified, low cost and flexible solutions, such as demand management, should be explored to avoid augmentation.

9.3 Metering upgrade proposals should be revised

AGN has proposed $39.8m in metering upgrades, MGN $22.4m and ASG $33.7m. This represents an increase for the AGIG networks on last period's spend, with ASG broadly consistent.

It's important that networks quantify the opportunity to avoid replacement through re-use of meters removed from houses that disconnect from the network.

9.4 Mains replacement should not be justified on hydrogen compatibility or augmentation grounds

MGN has proposed a substantial mains replacement program of $408m. AGN has largely completed a program in the current period, but has proposed a $29.5m program to replace high-pressure steel mains. ASG has a significant repex program of $134m, similar in scale to the current period.

MGN's mains replacement program was first presented to consumer representatives as being a fast-tracked upgrade as part of the hydrogen-readiness initiative (given the need for synthetic pipes for hydrogen compatibility).

We note the following:

- It's important that the program is to no extent fast tracked or expanded as a project with the intention to accommodation of hydrogen blends. During consultation with the networks, no clear answer was given to the question of what works were responsible for the networks' expectation that hydrogen would not be accommodated until 2030.

MGN's mains replacement program anticipates that cast iron pipes will be eliminated by 2033 or 2030, depending on the program adopted, suggesting it may be a key barrier.

The proposal to introduce hydrogen blends was originally proposed as a zero-cost measure, and the proposal has not been independently scrutinised – it is important that this proposal does not drive capex of the scale of the proposed mains replacement program.

- It's also important that the program is not being pursued as an augmentation project, especially given MGN's downgraded demand forecast and the possibility for even faster demand decline.

  Most of the projects included in the Distribution Mains and Services Strategy: the major cast iron and unprotected steel mains replacement program, and the medium pressure steel replacement program both cite an upgraded the pressure rating to accommodate growing demand as being a major driver for the works.

  Rather than assuming that growth will continue on the MGN network, analysis should be undertaken to explore the potential to lower the pressure rating for sections of pipeline as a way to address safety concerns in a declining demand environment.

- While reducing gas leaks, and eliminating safety concerns is imperative, it would be useful to understand the extent to which a targeted and sequenced program of works – e.g. for the cast iron replacement - might be able to prioritise the worst assets.

  For example, Figure 2 shows MGN's distribution mains leak incidence. During consultation, AGIG explained that the uptick in leaks shown for all pipe types after 2018 was due to increased ground movement due to ground movement caused by alternating wet and dry years.

  It would be helpful to understand to what extent this effect was localised across their network, and how much could be resolved through a targeted program.

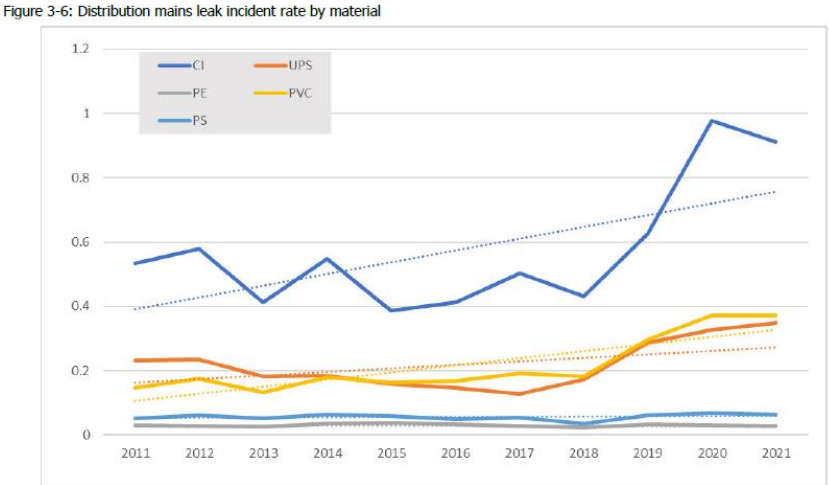


Figure 2: MGN's distribution mains leak incident rate by material

- MGN's Distribution Mains Strategy document does not clarify Energy Safe Victoria's opinion on the safety imperative of the proposed mains program. Consumers requested this input during consultation.
- The cost of MGN's mains replacement program is significantly higher than the $398m estimated in its Distribution Mains and Services Strategy:
    - Given the expectation to accommodate hydrogen blends by 2030, it's important to ascertain whether MGN adopted the more-expensive fast-tracked replacement schedule for cast iron mains, against the findings of the options analysis.
- ASG's block mains replacement projects are also justified on augmentation grounds, on the assumption that pressure upgrades will be needed.[15] The ASG program should be revisited in light of the forecast for consumption decline. A targeted program of necessary upgrades only may provide better value in the current circumstances.

The details of AGN's proposed mains replacement program (attachment 9.7) is marked as Confidential Information, and has not been made available via the AER's website. We note that this proactive mains replacement program has a focus on high-pressure steel. It's important to confirm that this program is required on safety grounds alone, and that it has not been proposed to enable the introduction of hydrogen blends, or to accommodate growth.

Proposed replacement programs must be supported by clear evidence of the safety risks under which they have been proposed. This should include an evaluation for the entire asset included in the proposal for replacement, i.e., the potential for a smaller program should be considered.

9.5 Service improvements through a Digital Customer Services program are not warranted

AGIG has proposed a Digital Customer Services program.

We are not supportive of IT expenditure to expand services as part of the current access arrangement.

10 Operating expenditure (opex)

10.1 An increase to overall operational costs should be avoided

Like capex, opex costs for the upcoming period should be subject to approval criteria that are more conservative than in previous access arrangements, given the identified stranding risk.

[15] AusNet Services 2022 *AMS 30-52 – Mains & Services Strategy* https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ausnet-services-access-arrangement-2023%E2%80%9328

MGN and AGN have proposed total post-Roadmap opex that have increased slightly from their July opex proposals, which represented 29% and 13% increases on current period actuals respectively.

ASN has proposed opex about 7% higher than current actuals, although as TRAC's attached analysis notes (page 61) this is not a like-for-like comparison given excluded ESV levies in the new total, and other items.

Avoiding continued opex increases will be an important way to support affordability over the next period, and through the transition.

10.2 Consumer organisations don't support funding for a new Priority Service Program

AGN, MGN and ASG have proposed a combined $13.9m for a new Priority Service Program, to assist vulnerable consumers.

Given the importance of delivering affordable energy costs to all customers in this access arrangement, we do not think there is a strong enough justification for awarding additional spending for this program.

BSL participated with other community organisations in the Priority Service Panel, and we made feedback after the process. We engaged with the detail of the proposal, and we appreciate the networks' initiative in exploring this avenue.

Participating consumer organisations were agreed in the final decision that additional funding for this proposal was not warranted. Please refer to a separate joint submission from community organisations on this issue.

Importantly, we note that during their direct consultation via focus groups, consumers who stated their qualified support for this proposal stated that this was dependent on consultation with the community sector.

10.3 The renewable gas education program should not be funded.

AGIG has proposed a $6m opex step change for a renewable gas communications and education program. ASG withdrew its initial program, in response to stakeholder feedback. We appreciate ASG's response, and we strongly oppose AGIG's proposal.

The Victorian community will be required to accommodate significant change over coming decades, given the energy challenges we face (Section 4). Consumers need to be supported through this change with independent information. They should not be charged for expanded gas-industry marketing programs.

We note that there is no equivalent fund to promote electrification, despite the network businesses' claim through consultation that their proposed fund is required to 'level the playing field.'

As an example of consumers' lack of information about electric alternatives to gas, most participants in recent focus-group research that BSL commissioned had not even heard of induction cooking, and none had

used it. When surveyed about the comparative costs of buying and installing gas or electric appliances, the single largest group (44%) said they did not know.

We refer to recent advertorials published by AGN, suggesting that reticulated hydrogen will be available to consumers 'sooner than you think,' and noting that 'the next decade will be defined by sustainability in the home'. There's a strong chance this presentation could confuse consumers about the expected timescale for hydrogen.

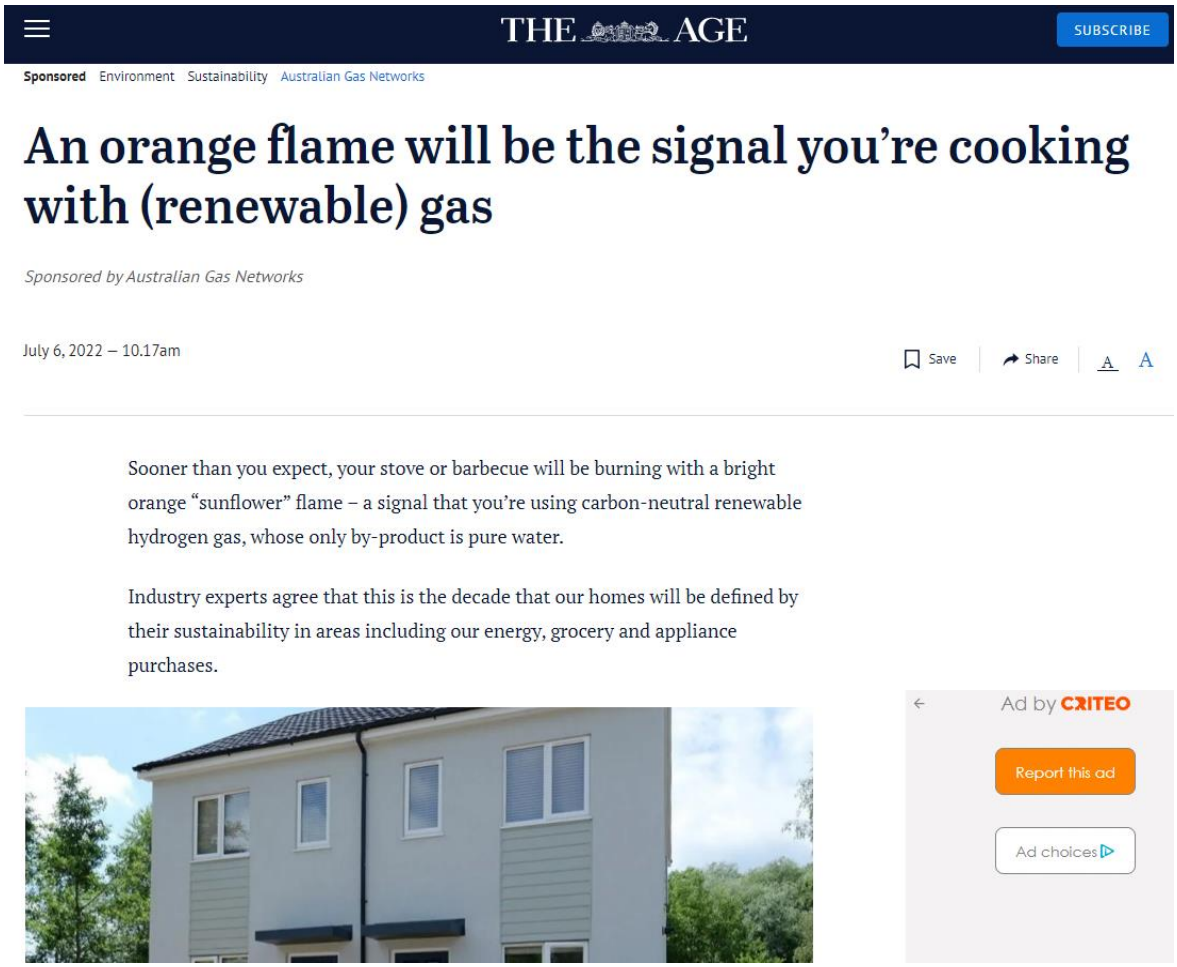


Figure 3: AGN Advertorial

10.4 Current network-run subsidy programs should be considered when evaluating opex

In the 2018-2022 access arrangement, distributors proposed a gas 'marketing program' step change, which was rejected by the AER. This marketing program included the proposal to subsidise gas appliances for customers switching from electricity.

Despite the AER's decision, AGIG networks made the decision to pursue gas appliance rebates, and have subsidised consumers to switch from electricity to gas through the period.

This program is not responsible expenditure in our view. There is a strong chance that some participating customers will be disadvantaged by their switch to gas, and some may not be aware of the changed economics of running gas vs electric appliances. The program also represents an active cost transfer to grant recipients from other customers, with no consideration of the equity impact.

The decision to pursue this program despite its rejection from the last access arrangement demonstrates that networks are not operating at the efficient edge.

The networks' choice should be taken into account when assessing the efficiency of networks' nominated base year – it warrants the application of a bottom-up opex base year assessment.

It is also a relevant consideration when determining an appropriate productivity target, and should count against the networks' case for new programs like the Renewable Gas Education step change, and the Priority Service Program.

10.5 The joint ownership of AGIG networks should deliver opex reductions to consumers

MGN, Dampier Bunbury Pipeline (DBP) and AGN merged in 2017. However, despite this occurring towards the start of the last period, there is no apparent evidence of the expected efficiency advantages of this structure in terms of opex reductions.

We note that AGN's most recent South Australian proposal included an 11% reduction in opex costs due to the merger. It's not clear why a similar cost reduction is not possible to pass on in Victoria.

10.6 Capitalising overheads and expensive items that were previously capitalised will increase tariffs in the near term

AGN has proposed an opex step change of $37.7m to expense overheads that were previously capitalised – and $16.3m in capex to opex activities.

This will increase tariffs in the near term – which will also reduce the network's exposure to identified stranding risks.

It is not in the interest of consumers that to make this change in the current context of a higher inflation environment, and cost-of-living stress.

10.7 IT software as a service (SAAS) reclassification and IT cloud migration

We note the comment from TRAC Partners in attached report regarding the importance of clarifying that sufficient information is provided to determine that costs between SAAS reclassification and IT cloud migration are distinct, and do not include double counting.

10.8 Higher productivity targets should be applied

We have advocated through this process for productivity targets higher than the 0.4% proposed by the networks, given the higher requirements for electricity distributors, which themselves have been noted to be below the Australian average.6

In their post-Roadmap proposals networks have reduced their proposed targets from 0.4% to 0%.

We disagree that it is prudent to abandon productivity increases in the face of increased competition and the prospect for reduced market share.

As we note in above, the networks' decision to initiate gas appliance subsidies programs after the proposed expenditure was not approved demonstrates that they are not operating at the efficient edge.

For regulated opex ongoing productivity targets go some way to offsetting the continual positive opex step changes proposed by network businesses at every access arrangement, given that negative steps are not identified.

11 Tariffs and charges

11.1 Consultation is needed on tariff structures

In our March submission to the networks' draft proposals, BSL submitted that declining block tariffs were no longer appropriate in an environment of declining availability of gas and high gas volume prices.

Despite this, tariffs were not raised as an issue for consultation during the roundtables.

Despite the limited time remaining in the access arrangement, it's important that tariff structures are appropriate for the changed conditions of the next five years.

Consultation on tariff impacts is important, as is an evaluation of the impact of proposed tariff changes.

However, given the fast-changing environment of energy in Victoria, it's also important that we are able to enact necessary changes with enough flexibility to keep up with changing conditions.

We recommend consultation on a move away from declining block tariff structures for the upcoming period, at least for residential consumers.

11.2 Abolishment services charges should be limited to modest, physical service costs only

We are concerned about the high abolishment costs and meter removal fees proposed by the networks.

AGN has proposed an abolishment fee of $950, compared to the meter removal fee of $124. MGN has proposed $950, up from $72. ASG has proposed meter removal fees of $825, compared to a disconnection fee of $65.

For many Victorian households replacing gas appliances with electric at the end of their service life will provide a cost-effective means to transition. This is likely to be an important pathway for low-income households. Raising the upfront costs will introduce a barrier that will disproportionately affect low-income households.

It is important that charge reflect the most efficient means of safe disconnection, and the most efficient cost for those works.

Abolishment charges should not be implemented to deter disconnections, or to attempt to recover additional revenue from those leaving the network. We note ASG's remark in Section 17.5 of the Access Arrangement Information document[16] that ASG pricing principles include 'reference tariff should not encourage customers to "disconnect from the network, or seek to bypass the existing network, when the cost of providing the service is less than their willingness to pay for gas services'. It is important to ensure that meter disconnection/abolishment charges have not been levied as a way to disincentivise disconnection.

We hope that scrutiny of these charges leads to a reduction of these charges back down to the rates listed for meter removal in the current period.

11.3 'No-access (gas meter)' and 'Reconnect service in street after payment' should be Ancillary Reference Services

We are concerned about the impact of the classification of two non-reference services for vulnerable consumers: 'No access (gas meter)' and 'Reconnect service in street after payment'.

We propose their reclassification as ancillary reference services, with careful thought given to the price set, so as to avoid punitive and unproductive burden on customers facing energy stress.

These are likely to disproportionately affect consumers experiencing energy stress, and they have the potential to exacerbate financial difficulty at a time when households are known to be susceptible to debt.

As such, it's important that the charges are scrutinised by the regulator, and limited to a minimal amount.

12 Incentives

12.1 We support the networks' withdrawal of the gas network innovation scheme proposal

All networks have withdrawn their proposal for a gas network innovation scheme.

This is in line with stakeholder feedback and we welcome this response.

[16] AGN 2022 *ASG - Access Arrangement Information 2024-28 - 1 July 2022 – PUBLIC* https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ausnet-services-access-arrangement-2023%E2%80%9328

12.2 We don’t support the removal of augmentation from the Capital Efficiency Sharing Scheme (CESS)

AGIG has proposed to remove augmentation from the CESS. They have stated: ‘Consistent with the reasons new connections capex is excluded from the scheme, the augmentation capex too, is largely impacted by customer behaviour. Excluding this capex from the operation of the CESS is an appropriate way within the regulatory framework to balance our needs to be able to recover our efficient costs, customer interests in terms of lowest possible costs and the administrative burden of in period changes.’

The CESS exists as a way to incentivise efficient capital expenditure.

Finding efficient ways to deliver safe and efficient services while avoiding unnecessary capex is particularly important in the current access arrangement, given the stranding risk identified. Therefore we don’t support the removal of augmentation from the CESS.

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14 Appendix 1 – Consumer-centric concerns regarding investment to accommodate hydrogen in the gas networks

14.1 Hydrogen may be deployed in a way that won't need broadscale reticulation

Green hydrogen is at a trial-stage in Australia, but most studies expect this technology to play some role in a decarbonised economy, especially for industry and heavy freight.

However, there are many ways to deploy green hydrogen that don't require reticulation through a broad-scale network as is currently used for gas.[17] The industry's development is at too early a stage to understand which mode of deployment is most likely (although there have been clear disadvantages identified for broadscale reticulation, as discussed below.)

For example, hydrogen may be used primarily in fuel cells, or it may be generated and reticulated locally, via small isolated networks. It may be used primarily to generate electricity, so that it would be reticulated via transmission lines. [18]

Given the significant uncertainties about the configuration of a future green-hydrogen economy, investment in gas networks to accommodate hydrogen is premature.

We note that a recent meta-study found that no independent review supported the prospect of broadscale reticulation of hydrogen for space heating.[19]

14.2 Reticulated hydrogen would compete directly with electrification for residential loads

The proposal to introduce hydrogen blends into the network, and to develop the network for 100% hydrogen does not complement the alternative pathway identified for residential electrification – it competes directly, and increases the challenges of the electrification transition.

Network spending to develop hydrogen will increase gas costs – and all else being equal, should be expected to drive customers faster, to leave the network.

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[17] Advisian, 2021. *Australian Hydrogen Market Study* https://www.cefc.com.au/media/nkmljvkc/australian-hydrogen-market-study.pdf

[18] Advisian, 2021. *Australian Hydrogen Market Study* https://www.cefc.com.au/media/nkmljvkc/australian-hydrogen-market-study.pdf

19 Jan Rosenow, Is heating homes with hydrogen all but a pipe dream? An evidence review, Joule, 2022, (https://www.sciencedirect.com/science/article/pii/S2542435122004160)

As discussed in the body of our submission - in the absence of an adequate transition plan to manage a migration off the network, the prospect of the networks becoming underused poses risks for consumers remaining on the network.

Pursuing a reticulated hydrogen pathway is likely to delay the development of an adequate plan to manage electrification and migration off the network – at the same time that it may speed this migration and increase the asset base at risk of stranding.

Therefore, the proposal to introduce blends and develop reticulated hydrogen competes directly with the proven and cost-efficient residential electrification pathway, and should not be pursued in concert.

14.3 There are unresolved safety concerns for households regarding the prospect of reticulated hydrogen (blends and 100%)

Hydrogen and hydrogen blends pose the following safety concerns for households:

- Hydrogen increases the explosion risk by a factor of four (equipment required to mitigate explosion risk, like excess flow valves, have a limited impact, and will introduce an as-yet unquantified cost)[20]
- Hydrogen blends (and pure hydrogen) emit higher levels of NOx than methane. This will increase the respiratory health risk associated with domestic gas and contribute to air pollution[21]
- Hydrogen blends may cause damage to existing heaters (through embrittlement) and increase the risk of internal failure and carbon monoxide poisoning (such long-term aspects of safety have not been addressed by current compatibility testing)[22]

14.4 There are unresolved technical concerns regarding the long-term impacts of hydrogen blends

Current Australian research and trials are progressing to demonstrate the proposition to add hydrogen blends to the network.

[20] HyHeat 2021 *Safety Assessment: Conclusions Report (Incorporating Quantitative Risk Assessment* https://www.hy4heat.info/wp7
[21] Madeleine Wright and Alistair Lewis, 2022. *Emissions of NOx from blending of hydrogen and natural gas in space heating boilers* University of California Press https://online.ucpress.edu/elementa/article/10/1/00114/183173/Emissions-of-NOx-from-blending-of-hydrogen-and
[22] GPA Engineering, 2019. 'Hydrogen Impacts on Downstream Installations and Appliances' https://www.industry.gov.au/sites/default/files/2021-09/hydrogen-impacts-on-downstream-installations-appliances-report-2019.pdf

However, these do not resolve the long-term implications that hydrogen poses on the range of modern equipment the blended gas will be in contact with, which remains uncertain.[23]

We note that a recent meta-study found that no independent review supported the prospect of broadscale reticulation of hydrogen for space heating.[24]

14.5 The full costs of adding hydrogen blends or hydrogen to the network are not known

The Victorian distribution networks have indicated that they aim to be ready to accommodate blends by 2030.

This implies that there will be work in the next access arrangement to complete the transition.

Expenditure on hydrogen should not be started until there is a full and representative (high-confidence) understanding of the full costs of the transition. A recent German report found that adding 20% green hydrogen to Europe's distribution networks would increase end-user costs by up to 43%, while cutting greenhouse gases by just 6-7% (considering network costs alone).[25]

It's also important to consider the costs that hydrogen production would imply to consumers, in determining whether network costs are prudent.

14.6 APA has stated that hydrogen introduced to the distribution network will impinge on the VTS

APA has stated that the low-pressure sections of the VTS mean that it can't be isolated from gases in the distribution network – and that preparing the VTS for hydrogen blends is therefore a necessary safety measure if it is to be included in the distribution network.

This raises many concerns around safety and cost.

APA has told stakeholders that without the proposed safety study, it is not known whether hydrogen will be compatible with their pipeline at any pressure. They have suggested that without this study, a cost estimate to accommodate blends would not be possible to prepare.

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[23] Fraunhofer IEE, 2022 *Limitations of Hydrogen Blending in the European Gas Grid* https://www.iee.fraunhofer.de/content/dam/iee/energiesystemtechnik/en/documents/Studies-Reports/FINAL_FraunhoferIEE_ShortStudy_H2_Blending_EU_ECF_Jan22.pdf
24 Jan Rosenow, Is heating homes with hydrogen all but a pipe dream? An evidence review, Joule, 2022, (https://www.sciencedirect.com/science/article/pii/S2542435122004160)

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They have also suggested that hydrogen blends may require pressures to be lowered, with the potential to drive augmentation, or to impact operations.

14.7 The network's timeline to accommodate blends is inconsistent with transition requirements

The Victorian distribution networks have indicated that they aim to be ready to accommodate blends by 2030.

This is inconsistent with the stated purpose for introducing a hydrogen blend to the network. The blending proposal has been advanced with the intention to force the growth of local demand – on the assumption that this will drive down production costs, in line with a learning-rate model.[26]

Victoria has committed to reduce emissions by 45 – 50% of the 2005 level by 2030.

It's likely that the hydrogen industry will need to develop between now and 2030, to serve the identified high priority applications (such as industry and heavy freight), so that growing an artificial demand through blending after 2030 is unlikely to assist cost trajectories for these sectors, and is more likely to compete with these high-priority applications.[27]

14.8 The proposal to introduce hydrogen blends doesn't benefit consumers

As discussed, the proposal to introduce hydrogen blends into the network has been put forward as a way to grow the local industry and reduce production costs.[28]

Independent studies identify hydrogen as important for industrial uses. There is also an expectation that hydrogen will be developed as an export industry.

Residential consumers require access to affordable energy services to fuel essential heating, cooking or hot water. Network tariffs, therefore, should not be used as a source of capital to grow a new sector that will chiefly benefit industry, and exporters.

This is especially the case given the stranding risk identified for these networks, and the potential for new hydrogen expenditure to increase this risk.

The proposed hydrogen spending, and the project to grow Australia's hydrogen industry, does not align with any of the prescriptions for compliant spending listed in the NGR, rule 79.

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[26] DISER 2019 *Australia's National Hydrogen Strategy* https://www.industry.gov.au/data-and-publications/australias-national-hydrogen-strategy

[27] Fraunhofer IEE, 2022 *Limitations of Hydrogen Blending in the European Gas Grid* https://www.iee.fraunhofer.de/content/dam/iee/energiesystemtechnik/en/documents/Studies-Reports/FINAL_FraunhoferIEE_ShortStudy_H2_Blending_EU_ECF_Jan22.pdf

[28] DISER 2019 *Australia's National Hydrogen Strategy* https://www.industry.gov.au/data-and-publications/australias-national-hydrogen-strategy

14.9 The greenhouse impacts of green hydrogen will limit its use in a net-zero economy

Green hydrogen has an associated global warming potential (GWP).

1. Hydrogen released fugitively has GWP of 11 CO2e. This is lower than the value for methane – but hydrogen should be expected to escape at greater volume, given its leaky characteristics. (This is particularly an argument against reticulating hydrogen in a low-carbon scenario.)[29]
2. Hydrogen releases NOx when burnt. The climate impacts of NOx depend on local circumstances[30]
3. Under some conditions (particularly lean burns implemented to reduce NOx pollution), hydrogen combustion can release the very harmful greenhouse gas N2O[31]

The greenhouse impacts of reticulated hydrogen have not so far been included in least-cost modelling exercises undertaken by AEMO (the ISP), the Victorian Government, Infrastructure Victoria or the networks.

Given the high marginal cost to offset additional residual remaining emissions in a net-zero economy, hydrogen's emissions will limit the total volume of green hydrogen optimal.

In particular, given the leakiness of hydrogen, its emissions will limit the case for reticulated hydrogen networks in an optimal decarbonisation pathway.

14.10 Decisions regarding hydrogen should not be deferred to interested parties

The Victorian Gas Substitution Roadmap suggests that the decision on whether to introduce a hydrogen blend to the network will be dependent on the outcome of a feasibility assessment conducted by the Australian Hydrogen Centre.

The Australian Hydrogen Centre is an AGIG-led project. AGIG's Initial Proposal released in July has stressed the existential importance of hydrogen to the future of their network – and as such, they are not a disinterested party.

Similarly, the Gas Appliance Manufacturers Association of Australia's report emphasising the high cost for households to electrify should not be considered an independent study.

[29] Nicola Warwick, Paul Griffiths, James Keeble, Alexander Archibald, John Pyle, University of Cambridge and NCAS and Keith Shine, University of Reading, 2022. Atmospheric Implications of Increased Hydrogen Use https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1067144/atmospheric-implications-of-increased-hydrogen-use.pdf

[30] Wright, Madeline, 2022 *Emissions of NOx from blending of hydrogen and natural gas in space heating boilers* https://online.ucpress.edu/elementa/article/10/1/00114/183173/Emissions-of-NOx-from-blending-of-hydrogen-and

[31] Colorado, Andres 2016 *Direct emissions of nitrous oxide from combustion of gaseous fuels* https://www.sciencedirect.com/science/article/abs/pii/S0360319916329548