

01 December 2023

The Energy Reform Team  
Essential Services Commission  
Level 8, 570 Burke Street  
Melbourne Victoria 3000

Via Email: [energyreform@esc.vic.gov.au](mailto:energyreform@esc.vic.gov.au)

Dear Madam/Sir

### **Gas Distribution System Code of Practice review**

Thank you for the opportunity to provide feedback on the Essential Services Commission's (the Commission) draft decision on its review of the Gas Distribution System Code of Practice (the draft decision).

The Master Plumbers and Mechanical Services Association of Australia (Master Plumbers) welcomes the review of the Gas Distribution System Code of Practice (the Code). As noted in the draft decision, the current market and outlook for natural gas in Victoria has changed significantly since the Code was written and it is sensible and timely to review it. We also appreciate that the time horizons for cost recovery for distributors has been truncated by the changed outlook for natural gas use, and the associated need to revise customer pricing models.

Reflecting this changing context, the Commission proposes several key changes to the Code. Master Plumbers supports many of these proposals. However, because of its potential to shrink the gas network and therefore stymie opportunity for the burgeoning renewable gas sector; and pose customer equity risks, we do not support the main change proposed.

We do not agree with the proposed new connections framework and its requirement that the full efficient costs of new connections to be funded by new customers.

The draft decision notes that the Commission has weighed a range of factors in reaching its decision. It notes that, for example, that fossil gas production continues to decline, and the energy market is somewhat volatile in terms of pricing. The draft decision also notes the policy context, and that the Victorian Government has committed to achieving net-zero emissions by 2045.

Despite noting that forecasting with confidence is challenging in such a dynamic sector, the draft decision asserts that electrification and energy efficiency will play a dominant role in reducing residential and commercial gas use this decade and that renewable gas is unlikely to have a substantial role in residential and most commercial buildings.

Master Plumbers does not agree with the premise that renewable gas is unlikely to have a significant role in providing energy to Victorian homes and businesses. We think this judgement is premature, and that the research and development in this emerging space is advancing so rapidly that to close off hydrogen and biogas as potential major low emission energy options is short sighted.

The key to achieving Victoria’s net zero ambitions, which we strongly support, is to keep Victoria’s energy options open. The long-term and broad transition pathway to net zero emissions is inherently uncertain. Policy decisions must allow scope for adaptation to new information, and for different decarbonisation pathways to emerge as their relative economic and technical feasibility becomes clearer over time.

This is a very significant point in the context of the draft decision. The whole decision is premised on the assumption that the policy trajectory away from natural gas means gas connections are redundant. This approach is reflected in the pricing model and the discussion around disconnection and abolishment.

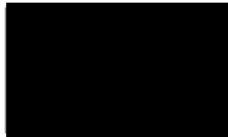
We believe the Commission has not given adequate weight to the fact that every gas connection is also a potential renewable gas connection. Master Plumbers’ industry-informed and well considered view is that renewable gas (biogas and green hydrogen primarily) has the potential to play a very significant role in achieving Victoria’s emissions reduction goals. And the fact that it is now widely acknowledged that an “all-in electrification” approach will see emissions increase, at least in the short-term, means that alternatives to the “one-size-fits-all” approach, like green hydrogen, are a vitally important part of the overall energy mix.

The upfront customer cost burden which is the central element of the proposed new connections framework will lead to fewer gas connections. This will mean that the ongoing network maintenance and related costs will be borne by fewer customers. Master Plumbers is concerned that this will not only impose an unfair cost impost on existing gas customers but could force those customers to move away from natural gas, resulting in another potential renewable gas connection lost and an additional burden on an already overstretched electricity grid. It will drive negative spiral for gas customers and the gas industry and discourage badly needed investment in renewable gas and we do not believe these things are in the long-term best interests of Victorian consumers.

In the following brief submission, we expand on the points made above and provide responses to the question we consider relevant to the issues of concern to the Master Plumbers. Thank you again for the opportunity to provide feedback on the Commission’s draft decision on the Gas Distribution System Code of Practice.

Should you wish to discuss this submission, please do not hesitate to contact Peter Daly via email: [redacted] or mobile: [redacted]

Yours faithfully



**Peter Daly**  
Chief Executive Officer

**Essential Services Commission**  
***Draft Decision***  
**Gas Distribution System Code of Practice**

*Response by*

*Master Plumbers and Mechanical Services  
Association of Australia (Master Plumbers)*

*December 2023*

## Introduction

Master Plumbers has **two key concerns** with the draft ESC decision about the Gas Distribution System Code of Practice. Those concerns relate to the impact the decision will have on the burgeoning renewable gas sector and on existing and future Victorian gas consumers.

Our view is that the more carbon free energy options available to industry and the community, the better. A successful transition to a net zero energy sector will require a range of energy sources used in a variety of ways. The key is choosing the right energy and right application for a given set of circumstances.

In that context we believe every effort should be made to keep consumers' energy options open. This means retaining existing gas connections because of their potential to enable the take-up of renewable gasses (hydrogen and biogas).

The focus of our comments is section 2 of the draft decision which relates to the proposal for a new framework for connections and connection charges. We broadly support the direction of the other sections which deal with customer information requirements, the need to collect data and information about disconnections and "abolishments" and ensuring alignment between this decision and other relevant Codes and Standards.

Our response therefore provides a detailed response to stakeholder question one only.

## Submission

**Q. Do you agree with the proposed introduction of upfront charges for new gas connections? Are there any implementation costs, advantages or disadvantages to the options considered that we should take into account? Please discuss**

The draft decision to impose the full and upfront costs of a new gas connection on the consumer will have the effect of reducing the overall number of connections. That is an intention of the policy behind the draft decision. We think the negative outcomes from this approach, in terms of foregone opportunity to utilise natural gas or renewable gas, significantly outweigh any perceived benefits.

The suitability of renewable gasses for both transporting in the existing piped infrastructure and for home appliance use, is being tested and proven all the time. To shut off gas connections, which are the key to the renewable gas opportunity, is short sighted in our view and will mean the true potential of renewable gasses will be significantly curtailed.

**Why we are positive about the future of renewable gas.**

Renewable gasses, like green hydrogen, renewable biogas from organic waste and synthetic methane, has the potential to play a major role in providing lower carbon energy to help power the Australian and Victorian economies.

Hydrogen is the most abundant chemical element, estimated to contribute 75% of the mass of the universe. It is already a proven energy technology, having been used for hundreds of years as a fuel and raw material. Hydrogen is a particularly significant opportunity in states like Victoria, where it can be produced at scale, stored and transported through extensive existing gas pipe infrastructure.

Hydrogen has the potential to play a very significant role in commercial, and industrial settings. Where gas is currently being used for its chemical composition as feedstock, hydrogen is proving to be a suitable replacement. For other heavy industrial users of gas, hydrogen, including hydrogen produced on site, will, we suggest have a growing number of applications. Hydrogen is also proving to be a suitable replacement for diesel as a fuel source for stationary engines which are used in a myriad of industrial settings in Australia. These stationary engines provide a vital fall-back option when there is no electricity available, a situation which could be expected to occur more frequently as the electricity grid becomes overburdened.

### **Potential of renewable gas a domestic energy source**

However, we also see the potential for renewable gas as a domestic energy source. A key part of the hydrogen transition journey is to demonstrate the role of hydrogen for homes, businesses, and industry. The logical steps are to start with renewable gas blends in networks, then to demonstrate 100 per cent renewable gas in dedicated towns or regions and ultimately to convert all existing networks to 100 per cent renewable gas.

The Australian Hydrogen Centre (AHC) has assessed the feasibility of blending renewable hydrogen into gas distribution networks (in the near term) and transition to 100 per cent hydrogen networks (over the long term). The feasibility studies focused on:

- 10 per cent hydrogen blending into selected regional towns in Victoria and South Australia.
- 10 per cent hydrogen blending into gas networks of Victoria and South Australia.
- 100 per cent hydrogen networks for Victoria and South Australia.

ARENA has recently published the AHC feasibility studies, supported by Industry and the Victorian and South Australian governments, which conclude, after comprehensive analysis, that it is technically and economically feasible to use existing gas infrastructure for scaled hydrogen distribution, delivering:

- A net zero carbon emissions gas network;
- Minimised customer disruption whilst retaining security and diversity of energy supply;
- Services to the electricity grid through flexible electricity demand and frequency control;
- 15 gigawatts (GW) of electrolysis supported by over 30 GW of new renewable electricity generation;
- 30 petajoules (PJ) of hydrogen storage to harness the ability of gas to store vast amounts of energy, balancing renewable electricity supply and demand swings between colder and warmer months; and
- Over \$1.5 billion in additional economic value a year including more than 12,500 jobs during construction and more than 6,200 jobs during operation.

More information about the AHC study can be found at: [Australian Hydrogen Centre - Australian Renewable Energy Agency \(ARENA\)](#).

Some states are more suitable for renewable gas industry development than others. Victoria for example, has in place now some of the best hydrogen enabling infrastructure in the world. Rather than viewing Victoria's reliance on gas as an additional emissions reduction burden to be overcome, we submit that Victoria's gas network is a key advantage for Australia.

## **Existing infrastructure is renewable gas suitable**

There is an often-expressed view that the existing piped infrastructure in Australia would need to be replaced or upgraded to accommodate hydrogen. We would suggest that this is not necessarily the case.

The impact of introducing hydrogen into the existing gas distribution network that services the Australian Capital Territory (ACT) has been subject to extensive testing via the ACT's Hydrogen Test Facility (see HyResource: <https://research.csiro.au/hyresource/hydrogen-test-facility-act-gas-network/>)

This testing involved examining the ACT network components (e.g., distribution piping and valves) and construction and maintenance practices under 100 per cent hydrogen application. A pressure hold test was conducted from April 2019 through 2020, which demonstrated that there is no escape of hydrogen from the buried network materials. Appliance testing (and of associated piping, regulators, meters) with different blends of hydrogen and natural gas to gauge how different equipment perform on different blends is also well advanced with early results showing that an off the shelf natural gas cooktop can safely use blends of 20% hydrogen:80% natural gas with higher proportions of hydrogen also showing favourable results.

Victoria's piped infrastructure currently used for natural gas is, generally, considered suitable for hydrogen. This is primarily because the network, which was once all steel pipes, has undergone significant upgrades over recent decades, and large parts of the network's pipes are already either made of or lined with polymers (plastic), and can safely accommodate and distribute hydrogen. Where there are parts of the network where upgrades are required to accommodate hydrogen, Industry's view is that the necessary upgrade work would require relatively low new capital expenditure or disruption to public infrastructure and can be phased in as the hydrogen share of the hydrogen/natural gas blend increases.

If natural gas is removed from the energy mix prematurely (before hydrogen has a chance to fully develop), and the gas network asset ceases to be maintained, the prospects for hydrogen distribution and therefore the development of the burgeoning hydrogen sector, will be set back significantly. Hydrogen is beneficial for the profitable growth of the renewable sector; it generates a favourable return for what would otherwise be surplus production while the sun is shining. It is potentially a very significant export product, increasing prospects for the renewable sector and value adding.

Hydrogen, with its power-to-gas conversion, is also a flexible source of balancing in the electricity system. Where there is an extensive reticulated gas network, that network can effectively become a giant battery, storing renewable energy. The economic value and utility of such a significant storage capacity, should not be underestimated. In its absence, a range of additional and expensive investments will be required in batteries, pumped hydro, other generation, and storage options.

Biogas is another important potential alternative to natural gas, particularly where it can be converted to biomethane. Biogas is a mixture of methane, CO<sub>2</sub> and small quantities of other gases produced by anaerobic digestion of organic matter in an oxygen-free environment. The precise composition of biogas depends on the type of feedstock and the production pathway (e.g., biodigesters, landfill gas recovery systems, wastewater treatment plants).

Biogas is a particularly attractive option in the Victorian context because it can be injected directly into the existing gas network. In a similar way to hydrogen, Victoria's biogas advantage lies in the gas pipeline infrastructure. Retaining and maintaining the pipe infrastructure and existing gas connections is vital if biogas (as biomethane) is to be an effective alternative fuel source to gas.

Premature full electrification could severely disrupt and limit the development prospects for green hydrogen because of the associated loss of hydrogen enabling infrastructure. The draft decision by the ESC will likely, in our view, hasten and add to that loss of key infrastructure.

A move to full electrification will mean existing domestic gas connections will reduce to the point where entire regions or jurisdictions have no gas connections. In the absence of customers, the pipes distributing gas to those houses or regions will, over time, cease to be maintained and become unusable. The ability of those unserved homes, businesses, and communities to take advantage of the hydrogen revolution, will be effectively foregone.

Giving residential and commercial consumers of energy a level of agency in determining which lower emissions energy option is right for them, is also a relevant consideration. If, for example, renewable gas was being transported to industrial users via the pipe network, and consumers chose to connect their homes or businesses to that network, we see no reason why they should be prevented from doing so.

In fact, we would argue that, as the hydrogen product market matures and the applications are proven, residential and commercial users should be strongly encouraged to connect and utilise renewable gas because every new connection would defray costs, help lower emissions, drive product innovation, and grow the renewable gas sector.

### **Taking pressure of the grid.**

Renewable gasses such as green hydrogen and biogas also add value by decreasing pressure on an already stretched electricity grid. All-in electrification will force a permanent, upward shift in demand for electricity which increases the risk of power disruption at peak times - domestic heating load currently met by gas also peaks in the early evening. Every home or business that uses renewable gas for energy will be one less home or building the electricity grid has to service. Substituting electricity for gas to meet residential heating requirements will compound the call on network capacity in the early evening, increasing the need for investment in further network capacity, at consumers' expense.

### **Industry is ready for renewable gas**

Australia already has in place some key enablers of renewable gas industry development, including skills and training, pipework infrastructure, and production know-how. For example, in training:

- Plumbers and gasfitters are the natural trade occupation to carry out the installation and ongoing maintenance of hydrogen systems. Hydrogen skills are an adjunct to those existing competency-based skill sets, rather than the creation of an entirely new skill set or trade. Gasfitting is a key component of the plumbing apprenticeship (nationally) and if hydrogen is incorporated into the Australian energy mix, plumbers' gasfitting training can easily be modified to ensure the ongoing safe operation of the gas networks and facilities powered by hydrogen gas, as well as the safe maintenance of household gas appliances and commercial premises.
- Hydrogen training development is well advanced. Under the Australian Industry and Skills Committee framework, Industry Reference Committees (IRC) have been established for key sectors. The relevant IRC for hydrogen training is the Gas IRC. The primary hydrogen

training development focussed body is the Hydrogen Technology Technical Advisory Committee (TAC), established under the umbrella of the Gas IRC. The majority of hydrogen competency development sits with the Hydrogen Technology TAC, upstream of the meter and this work will inform the work of the Construction, Plumbing and Services IRC/TAC.

- Together these bodies have developed a hydrogen training package. The proposed package is underpinned by two streams, combustion, and fuel cell electrolysis, and includes several new units of competency which will ensure existing skills gaps are addressed.
- As the draft decision notes, developing detailed training for hydrogen is not only product dependent, but also Standards dependent. Standards Australia has developed a detailed Strategic Work Plan for the development of standards along the hydrogen supply chain. This includes production, storage and handling, measurement, transport, transmission, and distribution of hydrogen in its pure form, blended with another fuel gas, or via another hydrogen transport vector.
- Nationally, the Net Zero Industries Division of the Department of Climate Change, Energy, the Environment and Water recently embarked on an extensive industry consultation process with a view to developing National Hydrogen Codes of Best Practice.

These are some of the key reasons we believe renewable gasses can have a significant role to play in terms of Victoria's energy transition journey. However, the realisation of its potential as a zero-emissions fuel source for Victorian consumers, depends on policy settings and decisions which keep our energy options open, rather than close them off. We think the aft decision will close off options for Victorian consumers and for that reason we do not support it.

As noted in the draft decision, the new connections framework will likely mean fewer gas connections. And that this will mean that fewer customers will bear the ongoing network maintenance and related costs. We are concerned that this will impose an unfair cost impost on existing gas customers (maintenance etc). Current customers, faced with increased bills because fewer people are paying for the network, will be incentivised to disconnect from gas.

Being priced out of gas is not only unfair, but also potentially very dangerous. In many cases this could have significant impacts on those consumers who find themselves effectively forced through cost increases to forego their gas connection (and their heating, cooking, hot water) before they are ready to. In many cases, especially in gas heavy states like Victoria, the additional cost impacts could have serious health impacts, especially relating to access by vulnerable members of the community to effective heating in the winter and access to efficient cooling in the summer months.

We are concerned that adding to the pace of disconnections, which this draft decision would do, will drive negative spiral for gas customers and the gas industry and discourage badly needed investment in renewable gas and we do not believe these things are in the long-term best interests of Victorian consumers.