

4 July, 2022

Submitted by email
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Draft Gas Supply Regulation 2022

PIAC welcomes the opportunity to respond to the Draft Gas Supply Regulation 2022 (the Draft) and associated Regulatory Impact Statement (RIS).

PIAC opposes the proposal to remake the regulation with changes aimed at accommodating hydrogen and other gases within the Act. PIAC considers the blending of hydrogen in gas networks is not in the interests of consumers and has concerns regarding the potential climate, cost, and health and safety impacts on consumers of accommodating hydrogen in gas networks.

Reduced quality and efficiency of gas for consumers

Blending hydrogen in gas networks introduces quality issues for consumers and businesses, even at very low levels. While many appliances may tolerate up to 13% hydrogen blends, others may experience material efficiency losses, and in the case of some industrial uses, increased risk of failure, accidents and damage.

Though many end use appliances may be rated for up to 13% hydrogen blend, this rating is for a momentary mixture of hydrogen and natural gas rather than for continuous hydrogen blended fuel. As the International Energy Agency (IEA) notes, while appliances may be certified to these levels, 'the effects of such levels over many years of use are still unclear.'¹ The pipes, fittings, burners, valves and pressure settings of consumer appliances and premises may need to be adjusted to accommodate the different physical characteristics of hydrogen blended in the gas supply.

The energy density of hydrogen is significantly less than that of natural gas. As the IEA notes it is 'around a third of that of natural gas and so a blend reduces the energy content of the delivered gas: a 3% hydrogen blend in a natural gas transmission pipeline would reduce the energy that the pipeline transports by around 2%' (Haeseldonckx and D'haeseleer, 2007). End users would need to use greater gas volumes to meet a given energy need. Similarly,

¹ International Energy Agency (IEA), The Future of Hydrogen, June 2019. Page 71

industrial sectors that rely on the carbon contained in natural gas (e.g. for treating metal) would have to use greater volumes of gas. This has utility and cost implications for consumers.

Loss of utility and appliance efficiency and potential damage resulting from hydrogen blending is not in the interests of consumers and is contrary to:

- The Objective of the Gas Supply Acts to promote thermally efficient use of gas, and protect the interests of consumers, and
- The objective of the Regulation to improve performance of gas networks and reduce the risk of gas escape.

Health impacts on consumers

Blending of hydrogen in gas networks may increase the negative health impacts of methane gas by increasing the Nitrogen Oxides (NOx) associated with burning methane. NOx emissions are associated with a range of serious diseases, including asthma and dementia. There are already questions as to whether there is any safe way to combust methane in homes², the addition of hydrogen has the potential to compound the health impacts of methane in homes. This is contrary to the objectives of the Act and Regulations to protect the interests of consumers and deliver safe supply to consumers.

Safety risks to consumers

Even at relatively low levels, blending hydrogen lowers the density of the gas in networks, increasing the likelihood of leaks. A number of studies have noted the higher ignition properties of hydrogen that, combined with the increased potential for leaks, raises questions of higher risk of flame-backs and explosive failure in homes. This is contrary to the objectives of the Act and Regulations to protect the interests of consumers and deliver safe supply to consumers.

Added costs to consumers

Hydrogen, even that derived from fossil fuel sources, is more expensive than existing methane used in gas networks. 'Green' hydrogen sourced through electrolysis is substantially more costly than the methane that is currently used. This is not likely to change, even under circumstances of high gas prices, given the huge amounts of electricity required to generate hydrogen through electrolysis, and compress, blend and inject it (at scale) into gas networks. Regardless of the relative cost of hydrogen itself, blending it with methane is only likely to increase costs to consumers. This is contrary to the objective of the Act and Regulations to promote efficient use of gas and protect the interests of customers.

Little or no emissions benefit

Due to the relative properties of hydrogen and methane, blending hydrogen in gas networks would have negligible impact on emissions, even at the upper limit of what is regarded as possible for the existing network. If the injected hydrogen is derived from fossil sources, or through electrolysis via grid-connected electricity, hydrogen blending may actually result in increased emissions. The objectives of the Act and Regulations require compliance with principles of ecologically sustainable development and reduced risk of environmental damage.

² Climate Council ['kicking the gas habit: how gas is harming our health'](#) May 2021.

PIAC understands that the automatic repeal of the Gas Supply (safety and network management) Regulation 2013 (the Regulation) in September 2022 requires replacement regulation to ensure ongoing consumer protection and the safe operation of gas networks in NSW. However, we consider it inappropriate for the replacement regulation to focus on accommodating hydrogen blends and other gases when the cost, safety, health and efficiency impacts of doing so are not consistent with the objectives of the Act, Regulations and the interests of consumers.

Recommendation

PIAC recommends remade regulations address the existing climate, safety, health and efficiency issues with gas supply through networks in NSW. They should include measures to ensure:

- Limiting of fugitive methane emissions from gas networks through
 - measures to proactively identify and address leakage from networks and ensure transparent monitoring and reporting of leakage
 - measures to address and minimise venting and flaring
- greater transparency of reporting and monitoring of gas composition and quality
- efficient and accessible processes for disconnection and decommissioning of gas connections
- transparent reporting of local network utilisation and the number and mapping of actively metered connections in NSW

PIAC welcomes the opportunity to discuss these matters further.

Yours sincerely

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