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Project EMO0042
Australian Energy Market Commission
Level 15
60 Castlereagh Street
Sydney NSW 2000

By email: www.aemc.gov.au

18 November 2021

Subject: Project EMO0042 - Review Into Extending the Regulatory Frameworks to Hydrogen and Renewable gases

Thank you for the opportunity to provide input into the above review.

Gas fuelled water heaters are found in approximately 40% of Australian homes. Rheem is the largest local manufacturer of gas water heaters, and the largest supplier of residential gas fuelled water heaters (both imported and locally manufactured) in Australia. We are also the largest supplier of water heaters to the Australian commercial market. With this background we have a significant interest in the outcome of your review.

We are aware that Australia has committed to a net zero emissions target and believe that a transition away from natural gas is likely to be a significant contributor to this goal. We are aware that there is a strong appeal to many stakeholders that gas networks transition from the supply of natural gas to hydrogen, via a mix at least initially, for a variety of both economic, commercial and environmental reasons. Whilst this goal is laudable, we are concerned that any review relating to the supply of gas to households and commercial users considers not just the delivery mechanisms required to get gas to the premises, but also whether the gas can be used once it is delivered.

This concern covers the gamut of issues ranging from product safety, through product performance, to installation and licencing regulations. Unfortunately, these issues are classified as "jurisdictional issues" and as such are considered to be outside the scope of this review. This is not a realistic approach given the enormity of the change being proposed. Community confidence in new fuels will be the deciding factor as to whether there is widespread consumer acceptance of not just "natural gas equivalents", but also the more widespread use of hydrogen in other sectors. By leaving these critical considerations to a range of state based regulators, many with their own agendas, the AEMC runs the risk of undermining efforts to transition away from natural gas.

A whole of government approach, including co-operation between state and federal energy regulators, is needed if this transition is to be successful. Any mis-steps, particularly with

regards to safety, can and will be magnified and used to damage the reputation of hydrogen as a whole or partial substitute for natural gas.

We note that this paper focuses only on what has been defined as "natural gas equivalents", low level blends and renewable gases that are suitable for consumption in natural gas appliances. We have therefore focussed our comments on the transition to this form of fuel, however have we have included our thoughts regarding higher percentage blends that may be proposed in the future.

Definition of "natural gas equivalents"

The paper from the outset provides a guide for readers that its references to natural gas equivalents refers to:

" low-level blends and renewable gases that are suitable for consumption in existing natural gas appliances"

Rheem is concerned that this definition is too broad and does not address the meaning of "suitable". Does it refer to operating safety, energy efficiency, consumer amenity or other categories of suitability?

The reference to "low-level blends", is also vague and needs to be specified. Without a unified definition of what constitutes a low-level hydrogen blend, stakeholders in the gas industry will be unable to adequately plan for the gas change.

Use of "natural gas equivalents"

Rheem is aware of and participating in a number of initiatives investigating alternative gases to methane, with Hydrogen far and away the most investigated solution.

We have been involved, though our industry body GAMAA, in a number of trials conducted on behalf of the Future Fuels Co-operative Research Centre. We have also conducted trials on our own residential products to supplement the CRC's findings, and we are aware that it appears that a 10% hydrogen blend can be accommodated by existing gas appliances. We believe that this may not apply to all residential gas appliances (eg ovens) however gas water heaters appear to operate normally at low levels of hydrogen blending.

We would note, however, that tests have not yet been conducted on Type B gas appliances (appliances with gas consumption exceeding 10 MJ/hour) which are normally installed in commercial and industrial situations. Testing these products with different gas blends is problematic, as they are often bespoke or sold in small volumes, are high cost (so expensive to test) and do not operate within an existing Australian certification scheme. Additional testing to prove that these products will operate safely and efficiently using "natural gas equivalents" should be required before any type of blend is introduced to the gas system.

Beyond low levels of blending, we would caution against assumptions that the blending rate could be increased without a replacement of a large number of "in situ" appliances. Discussions within Rheem and with the wider industry suggest that the goal of a

"universal" appliance, capable of using any blend of methane and hydrogen, is not realistic. Similarly, changing out existing gas appliances as each successive higher hydrogen blend is introduced to the network would be both disruptive to consumers and financially irresponsible.

Instead, Rheem would suggest that once a 10% hydrogen blend has been reached across the network, that networks begin to plan for either a 100% hydrogen supply or a substantial movement towards electrification.

Beyond 10% - Appliance Product Development

To ensure that the issues outlined above can be overcome, the appliance manufacturing and supply industry will need a well laid out and timetabled roadmap on which to base its product development. Regardless of whether product development occurs in Australia or overseas, manufacturers of appliances will require a clear understanding of the timetable that they are expected to meet, including estimates of how quickly any change to higher blends of hydrogen may occur. Only with a clear roadmap will manufacturers be able to make investment decisions regarding their continued participation in the market based on the size/attractiveness of the likely market for hydrogen appliances.

Such a roadmap would encompass the following issues:

- Plans for 10% hydrogen blending plans by market segment (homes, C&I etc)
- Plans for higher levels of hydrogen blending by market segment (homes, C&I etc)
- Regulatory plans by segment (new homes, existing homes, C&I) to limit the sale and installation of natural gas appliances

Also impacting any investment decisions will be whether Australian governments take a national approach to hydrogen, or whether it is left to individual jurisdictions to develop their own plans. It is unlikely that any single jurisdiction, perhaps with the exception of Victoria, could provide a market of sufficient size to justify manufacturing investments in new hydrogen fuelled appliances.

Additionally, it is likely that the range of gas appliances available to consumers will be reduced during any transition from methane to hydrogen, as manufacturers and wholesalers will not be able to justify the cost of carrying two full ranges of gas products (methane and hydrogen).

Rheem therefore recommends that a nationally co-ordinated approach be adopted that avoids plans for individual jurisdictions or networks attempting to deal with the transition in isolation. Any unco-ordinated long-term staggered (or undated) rollout of higher hydrogen blends will act as a disincentive to invest. If an unco-ordinated state-based approach is taken, then the potential result is that both demand for and supply of hydrogen capable products will not eventuate.

Sandbox Regulations

The proposal to include sandbox regulation for gas network operators to conduct H2 trial is unclear. Does this render all current field trials illegal, or have special licences been granted?

The sandbox regulations should also impose requirements on those conducting the trials to

- to display a warning to gas installers and technicians of the level of hydrogen that is supplied to the premises,
- to require a safety assessment prior to a conversion to a new gas type,
- to assign the responsibility for the adjustment, replacement, and maintenance of field trial (new & existing) gas appliances,
- to issue public notices and inform appropriate gas industry bodies of any such trials.

Hydrogen Safety

Whether justified or otherwise, anecdotal feedback suggests that there is a wariness amongst consumers regarding the volatility, and therefore safety, of hydrogen.

Rheem therefore recommends the need to develop nationally consistent regulatory requirements covering elements such as gas quality, product and installation standards and the training and accreditation of technicians.

The government should also commit to a guarantee that no hydrogen initiative (trials/blending etc) will be implemented until a full analysis of the safety impacts and potential for mitigation has been conducted.

In summary, Rheem believes that the AEMC needs to extend the scope of this review to deal with many issues that are currently deemed "out of scope". Ideally any review of these issues should take a national approach, as this will deliver the greatest chance of a successful transition to lower emission gaseous fuels.

If you have any queries regarding this response or our market, please don't hesitate to contact me.

Yours Sincerely

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