13 April 2018

Dr Anne Byrne
General Manager
Manufacturing and Services Policy
Department of Industry and Science
Canberra ACT 2601

Via online portal: https://www.abcb.gov.au/Consultation/Public-Comment-Draft/Submit-your-comment

National Construction Code 2019 – Efficiency of hot water heating appliances

Dear Dr Byrne

Energy Networks Australia welcomes the opportunity to comment on the Public Comment Draft of the National Construction Code 2019 (the Draft).

We represent Australia's energy grid supporting all Australian customers with more than 900,000 km of electricity transmission and distribution lines and almost 90,000 km of gas distribution mains. Our members provide energy to almost every household and business in Australia.

Our gas distribution businesses manage five million connections to Australian households and businesses. Gas provided through these networks provides an average of 44 per cent of the annual energy consumption in homes.

Consumers select gas appliances for cooking, space heating and hot water as it is a reliable, safe and cost-effective solution. Gas is a low emission fuel with significant capacity to support Australia achieving carbon abatement targets. It is estimated that the direct use of gas in the home has between 1/3rd to 1/6th the emissions of the same energy sourced from the electricity grid.[1] Gas used in power generation has about half the emissions of the current electricity grid.

The intention of this submission is to highlight that some of the proposed amendments to the Draft NCC will place Australian manufacturers at a disadvantage and may lead to unintended consequences for national carbon emissions.

Proposed changes to hot water gas heating efficiency.

Section J5 and J7 of the Draft includes proposed changes to the gross thermal efficiency of hot water heating appliances. Specifically the Draft text states:

A gas water heater that —

[1] Energy Networks Association (2017), *Reliable and clean gas for Australian homes*, accessed from: www.energynetworks.com.au

- *if rated to consume 500 MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 86%; or*
- *if rated to consume more than 500 MJ/hour of gas, achieve a minimum gross thermal efficiency* of 90%.

Energy Networks Australia notes that this is an increase in the thermal efficiency requirements, which are currently set at 80% for appliances consuming less than 500 MJ/hour of gas. Australian manufacturers currently use the current thermal efficiency requirement.

Higher energy efficiencies may be possible through improved technology (especially condensing coils). Some higher efficiency appliances are available in the Australian market place but these are manufactured overseas putting Australian manufacturers at a disadvantage. These appliances are more complex and come at a greater cost compared to existing appliances.

Furthermore, the additional efficiency for appliances consuming more than 500 MJ/hour may require additional piping resulting in a more complicated installation process. In turn, this will lead to increased installation costs due to the improved energy efficiency requirements.

Energy Networks Australia supports an ability for customers to choose their energy source when constructing a new home. Customers should be able to make informed choices balancing fuel choice, capital cost, installation cost and running costs. The additional requirements being proposed in the Draft may have the unintended consequence of limiting the choice of appliances on offer to consumers.

Practical limitations of an all-electric household

The major reason that gas is a fuel of choice is that it provides ambience in space heating and cooking and performs well for heating and hot water. It is the preferred fuel in the southern regions of Australia and is more cost effective.

Gas provides households with choice, energy at lower cost and lower emissions compared with the grid. An additional 100,000 connections to the gas network are made annually, with a high level of penetration in new residential estates.

Placing additional and unrealistic requirements on the thermal efficiency of gas appliance may reduce customer choice and indirectly lead to an electrified house solution. For hot water in particular, this may create poor carbon emission outcomes. Hot water heat pumps are generally only suitable in warm environments. For colder climates, some heat pumps come with defrost and booster elements, but this essentially reduces any carbon benefit from paying a premium for heat pumps compared with gas appliances. Heat pumps have also been known to be noisy (as the compressor is on for a long time during the day) and more unreliable than gas appliances.

Energy Networks Australia supports government policies that are technology neutral and provide households with energy choice. Any amendments to the Draft should

consider unintended consequences such as increased carbon emissions due to inadvertent fuel switching from gas to a higher intensive emissions source.

Gas networks of the future

For Australia to meet its obligations under the Paris Agreement, electricity, transport and the direct use of gas sectors will need to be decarbonised. A major challenge is that gas provides about 44 per cent of energy to Australia's households; with nearly half of Australia's homes connected to the gas network.

Electrification may be an option to consider, however, this would require major infrastructure investment. A further challenge is that gas is a seasonal fuel and in winter, provides more than double the energy to homes compared with electricity. Put simply, if electricity is to replace gas, the electricity network will require three times as much energy in transmission as it utilises now. This projected augmentation does not account for the growth in electric vehicles that will require additional electricity network upgrades. Repurposing the gas networks through the use of decarbonised fuels (e.g. hydrogen and biogas) represents a much more cost effective approach to decarbonising energy.

Australia's gas networks comprise different materials for the distribution of gas including cast iron and steel pipes, polyethylene and nylon pipes. The businesses are completing mains replacement programs on an economic basis to replace the low pressure iron pipes with high pressure polyethylene or nylon pipes. Most of these programs are nearing completion. The added benefit of this is that the new networks are capable of transporting hydrogen in the future.

Switching to hydrogen or biogas in gas networks will result in zero emissions from using these hydrogen and or biogas appliances in the home. This will assist Australia reach its long term carbon emission targets.

More information is available from www.energynetworks.com.au/gas-vision-2050/

Recommendation

Energy Networks Australia proposes that paragraphs J5.9(d), J7.3(a)(iv) and J7.4(a)(iii) of the Draft be modified to the following:

> *A gas water heater that —*
>
> » if rated to consume 500 MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 80~~86~~%; or
>
> » if rated to consume more than 500 MJ/hour of gas, achieve a minimum gross thermal efficiency of 85~~90~~%.

Further information

Please do not hesitate to contact Dr Dennis Van Puyvelde – Head of Gas on 02 6272 1548 or dvanpuyvelde@energynetworks.com.au if you would like further information.

Yours sincerely,

Andrew Dillon
Chief Executive Officer