

28 October 2020

Jorge Chapa
Head of Market Transformation
Green Building Council Australia
Via email: homes@gbca.org.au

Dear Jorge,

Green Star Homes Standard

Energy Networks Australia welcomes the opportunity to provide input during the consultation period on the proposed Green Star Homes Standard.

Energy Networks Australia is the national industry body representing Australia's electricity transmission and distribution and gas distribution networks. Our members provide more than 16 million electricity and gas connections to almost every home and business across Australia.

To date, the focus of decarbonisation has been on the electricity sector, but gas networks are on their own decarbonisation journey. Customer tell us that they are seeking a clean energy future and are engaged in achieving emission reductions from gas use. New renewable fuels, such as biogas and hydrogen, will become mainstream and complementary energy solutions that will use existing energy infrastructure. Our gas networks businesses are leading the development of renewable gas projects and will shortly begin blending renewable hydrogen in the Adelaide and Sydney gas networks.

We support initiatives to improve the liveability and energy efficiency of homes and elements of the proposed Standard will contribute to healthier and more resilient homes as well as increased energy efficiency. Unfortunately, the definition of Net Zero Energy focusses on all-electric homes and appears to exclude a natural gas or in the near future, a renewable gas option to provide energy to homes. A recent study by Frontier Economics¹ showed that reaching net-zero emissions by decarbonising the gas network could be achieved at half the cost of electrifying the energy provided by gas.

Net Zero Energy

The GBCA Green Star Standard consultation includes a definition of Net Zero Energy. The requirement of net zero energy homes appears misleading as homes still consume energy in the form of rooftop solar PV or grid based electricity. To avoid the risk of dangerous climate change we need to reduce emissions. ENA suggests it would be far more sensible to consider a Net Zero Emissions test, as that is what really matters. If the intention is to minimise emissions, then a broader range of renewable energy

¹ Frontier Economics (2020), *The benefits of gas infrastructure to decarbonise Australia*, available from www.energynetworks.com.au/gas-vision-2050/

options should be considered including rooftop PV, rooftop PV with batteries, natural gas, renewable gas (including hydrogen and biogas) or a combination of those energy sources.

The schematic below illustrates the mismatch between solar PV generation and general energy consumption in the home. It is clear that there are two energy consumption peaks in typical homes, one in the morning and one in the evening. Solar PV does not contribute significantly to these peaks and indeed solar PV generation peaks in the middle of the day, at a point of minimal energy consumption in typical homes.

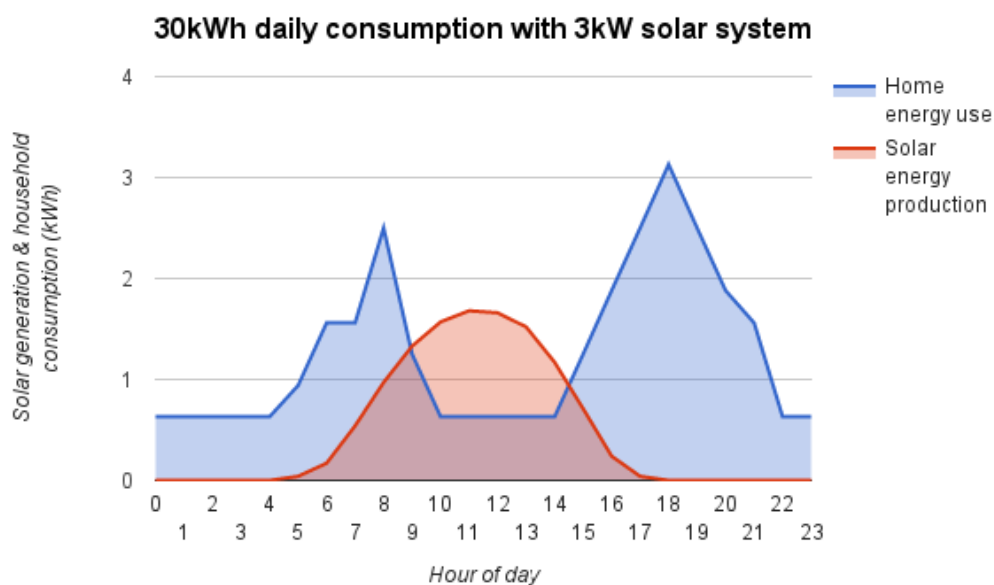


Figure 1: Illustration of home energy use and solar energy production ²

The intention of the GBCA definition appears to be “all-electric” homes, rather than Net Zero Energy. Using the definition of:

“generating operational energy requirements across a 12 month period from an on-site renewable energy system”

does not result in all the energy used in the home being renewable energy. As can be clearly seen from Figure 1 above, most of the energy consumed in the home would be taken from the grid and incur emissions reflecting the emission intensity of the fuel mix at different times of the day and year. The Net Zero Energy definition does not account for these emissions.

The Net Zero Energy definition assumes that the total solar PV generated equals the total energy consumed in that home over a 12-month period but does not ensure that the energy used is renewable energy. Electricity distribution networks are facing

² <https://www.solarchoice.net.au/blog/solar-self-consumption-overview>

increasing challenges from the growing level of rooftop PV. Network constraints may limit the amount of renewable electricity that can be exported. This may result in the renewable energy generated in “Net Zero Energy” homes not being able to offset the electricity consumed by that home. Offsetting the energy consumed through solar panels does not account for the intermittency of solar PV. While this can be absorbed by the network at low levels of renewables, as the total renewables component increases, additional augmentation and investment will be required in the electricity network to manage this intermittency. The additional costs for managing this intermittency will impact on customer bills, which needs to be considered.

Defining Net Zero Emission Homes

As noted, consumers are looking for clean energy options and this could be achieved by modifying the Net Zero Energy definition to focus on emissions rather than energy. This would produce Net Zero Emission homes, in line with international commitments to reduce emissions.

Your definition could include both electricity and gas components. This would allow renewable generation to offset emissions from electricity and renewable gas options to offset emissions from gas use.

Renewable gas projects are progressing with over 2 MW of electrolysers operating or under construction in Australia. Later this year, renewable hydrogen blending will commence in Adelaide and in early 2021, blending will commence in the Sydney gas network.

The next steps for networks are to expand renewable gas options and to become fully CO₂ free in the 2030’s. This will result in gas achieving decarbonisation before electricity networks are fully decarbonised.

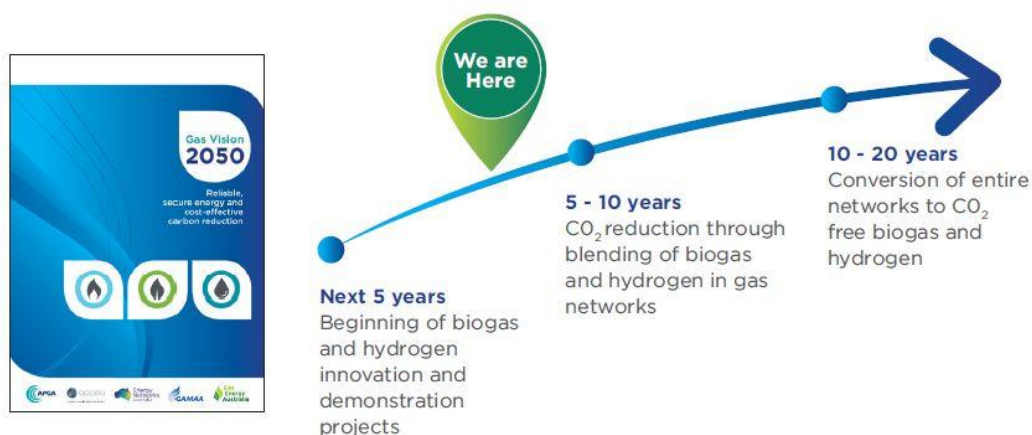
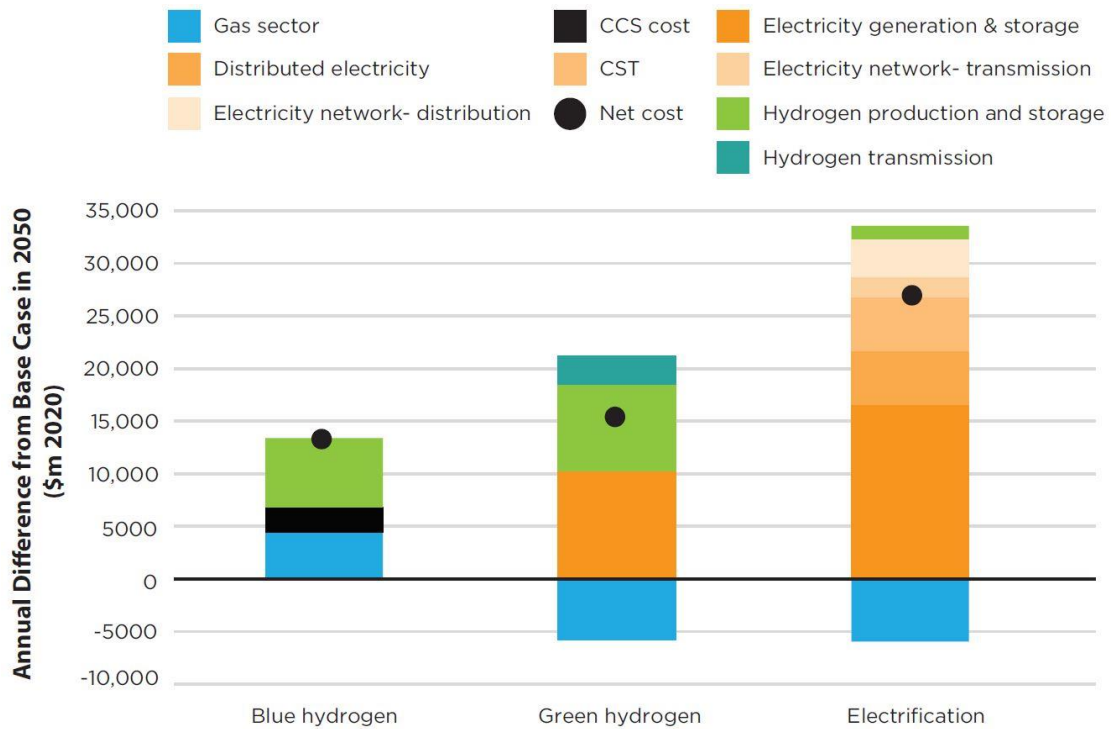


Figure 2: Renewable gas pathway (Source: Gas Vision 2050: Delivering a Clean Energy Future).

A 2020 study by Frontier Economics demonstrated that decarbonising the energy produced by the gas networks could be a cheaper option compared to electrifying

that energy. This reflects the opportunity to repurpose existing gas infrastructure and because electrification will impose massive system-wide costs for grid reinforcement on customer bills.



Source: Frontier Economics (2020)

Figure 3: Costs of decarbonisation scenarios (Source: Gas Vision 2050: Delivering a Clean Energy Future)

This is an opportunity for the GBCA to continue its leadership by offering a certification scheme that provides customer choice as well as ensuring ongoing emission reductions from energy use in homes by broadening its Green Star certification standard to include renewable gas options.

If you have any questions or would like a to discuss this further, please do not hesitate to contact our Head of Gas - Dr Van Puyvelde on: dvanpuyvelde@energynetworks.com.au or (02) 6272 1548.

Yours sincerely,



Andrew Dillon
Chief Executive Officer