

5 November 2021

Neil Savery
CEO
Australian Building Codes Board

Via: <https://consultation.abcb.gov.au/engagement/consultation-ris-proposed-ncc-2022-residential/>

Dear Mr Savery,

The Consultation RIS does not justify the proposed National Construction Code 2022 provisions

Energy Networks Australia welcomes the opportunity to provide input during the consultation period on ACIL Allen's CRIS on the National Construction Code 2022.

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.

Both electricity and gas networks are decarbonising. Electricity networks are facilitating the continued build out of renewable generation, while ensuring safe and reliable supply. The focus to date of decarbonisation has been on the electricity sector, but gas networks are on their own decarbonisation journey. Customers 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 hydrogen and biomethane, have the potential to become mainstream and complementary energy solutions that will use existing energy infrastructure. Our gas networks are leading the development of renewable gas projects and blending renewable hydrogen in the Adelaide and Sydney gas distribution networks, with further projects under development for Victoria, Western Australia and Queensland.

Energy Networks Australia is supportive of the housing sector's transition to net zero emissions. We support a technology neutral approach to energy efficiency and agree that improvements in energy efficiency of homes will reduce customer bills and emissions at the same time.

The NCC2022 is not technology neutral

The CRIS indicates that the energy efficiency requirements in the NCC2022 are technology neutral (Sect 8.6.5). However, the method adopted in the energy budget creates a bias against gas and does not include metrics to account for the performance of the building shell.

The CRIS indicates that:

Compliance can be achieved either by improving the performance of the building shell, its equipment or by adding some solar PV or a combination of these approaches (ACIL Allen (2021), National Construction Code 2022: Consultation Regulatory Impact Statement for a proposal to increase residential building energy efficiency requirements, pg xx).

This statement does not reflect the whole-of-home approach described in the NCC. The energy equivalency factors for heating, cooling and hot water are in kW/ m² and multiplied by the area of the proposed house. These factors can be offset by an installed level of rooftop PV, but there is no provision to meet compliance by improving the performance of the building shell in this budget.

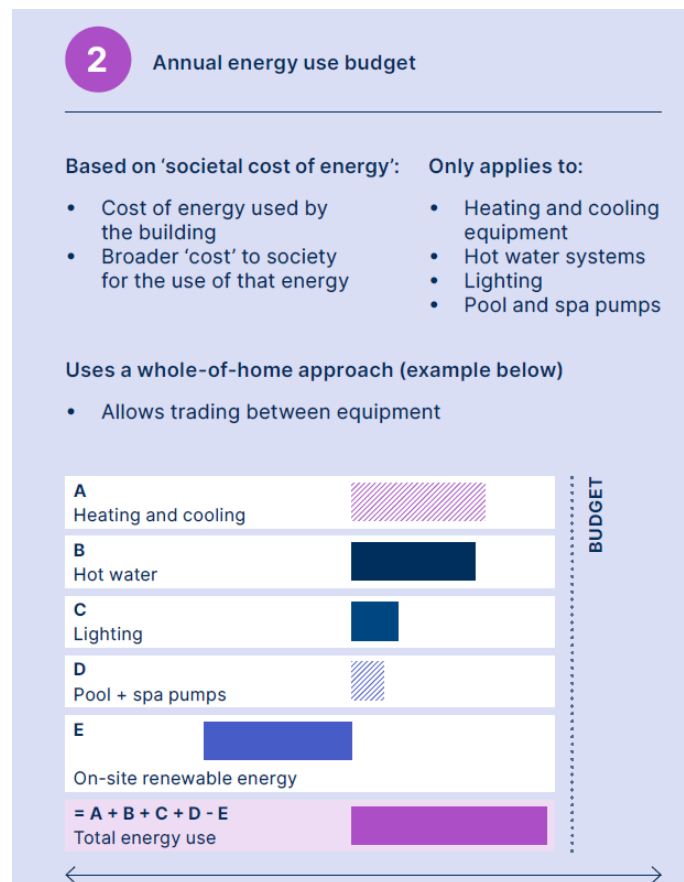


Figure 1: infographic of the annual energy use budget (Source: NCC2022 – Infographic)

Using the calculator provided as part of the consultation process, the overwhelming finding¹ is that rooftop solar PV is required in many cases, but that a higher amount of solar PV is required for new homes with gas appliances. In some cases (Figure 2), all electric homes² are deemed to comply with the provisions but selecting gas

¹ This observation is based on using the calculators to compare a range of appliance combinations in different climatic regions in Australia.

² Electric homes with heat pumps, not necessarily those with storage hot water heating.

appliances to provide heating and hot water requires an installation of 4.7 kW of rooftop PV. This is an additional cost of \$5,568³ for customers selecting gas appliances in their new home.

Home details		Net equivalent energy usage	
State/Territory	NSW	Allowance	4.5
Climate zone	6	Actual	3.9
Floor area (m ²)	200		
Building classification	1		
Equipment details			
Space heating/cooling		Pools and spas	
	Type	Star rating	
Space heating	Ducted Heat Pump	6	Pool volume (L)
Space cooling	Other		Pool pump star rating
			Spa volume (L)
Water heating		Photovoltaics	
Water heater type	Heat Pump (Standard)	Photovoltaic capacity (kW)	0

Home details		Net equivalent energy usage	
State/Territory	NSW	Allowance	4.5
Climate zone	6	Actual	9.2
Floor area (m ²)	200		
Building classification	1		
Equipment details			
Space heating/cooling		Pools and spas	
	Type	Star rating	
Space heating	Ducted Gas	6	Pool volume (L)
Space cooling	Other		Pool pump star rating
			Spa volume (L)
Water heating		Photovoltaics	
Water heater type	Gas Instantaneous	Photovoltaic capacity (kW)	0

Figure 2: Comparison of rooftop PV requirements for an all electric (top) and all gas home (bottom) (Source: NCC Class 1 and 2 whole-of-home calculator 2022.xls)

Further examples demonstrate the same bias occur across the country. The outcome from this calculator is that it will drive the appliance choices that customers will make when selecting appliances for new homes. However, these results are misleading because:

1. If, as the calculator shows, homes are more expensive with gas appliances, then the solution suggested by the calculator is to increase the costs to new homeowners by requiring them to install rooftop PV. This by itself increases the costs and hence is counterproductive to the objective of minimising energy costs.

³ Cost estimate for 5 kW solar PV system for NSW from Table 30, NCC2022 Update - Whole of Home Component

2. The calculator does not account for capital costs of appliances. The costs of heat pumps and solar assisted hot water heating units are significantly more expensive⁴ compared with gas or electric storage hot water units.

Both of these items create biases against gas, and as such, it is hard to see how the NCC2022 is technology neutral. We note that the CRIS does include the capital cost of appliances and that this has resulted in a net negative benefit.

Gas networks are decarbonising

Australia's gas distribution networks are leading the development of renewable gas demonstration. Both renewable hydrogen and biomethane projects are under development.

Of particular interest are the following projects:

- » **Hydrogen Park, SA:** Renewable hydrogen is produced using a 1.25MW electrolyser with water and renewable electricity. The renewable hydrogen is blended with natural gas at volumes of up to 5 per cent and supplied to nearby homes via the existing gas network. This project is already demonstrating that renewable gas can be provided to customers. (source: <https://www.agig.com.au/hydrogen-park-south-australia>)
- » **Western Sydney Green Gas Project:** Hydrogen is carbon neutral and a 500kW electrolyser installed as part of the Western Sydney Green Gas Project will produce renewable hydrogen which will then be blending into Jemena's gas network and delivered to approximately 250 homes. The project will contribute to the NSW Government's Stage 1, Net Zero Plan, to cut emissions by 35 per cent by 2030 compared to 2005 levels. (source: <https://jemena.com.au/about/innovation/power-to-gas-trial>)
- » **Malabar Biomethane Project:** This project located in Sydney aims to produce renewable biogas from wastewater. This biogas will be upgraded to meet the specifications of natural gas allowing it to be injected and blended into the natural gas distribution system. The project is currently under construction with a planned operation date in early 2022 when renewable biomethane will be injected into Jemena's natural gas network. At the same time, GreenPower is developing a pilot certification scheme to verify that this biomethane is a renewable gas (source: <https://jemena.com.au/about/innovation/malabar-biomethane-project>)

These projects are demonstrating a pathway to deliver renewable gas to homes and businesses without emissions. The CRIS does not recognise the opportunity of emissions savings from the transition to renewable gas.

⁴ For example, a installed hot water heat pumps is \$4,196 while an installed instantaneous hot water gas heart is \$2,182, which is around half the installed cost of the heat pump. Source: Table 32 of the NCC2022 Update - Whole of Home Component report

The CRIS does not support the NCC2022 provisions

The Consultation RIS estimated the Net Present Value of the proposed NCC2022 provision. The costs were estimated using a societal cost metric as well as using residential tariffs. The benefits included household savings from reduced energy consumption and societal savings that included deferral of network investment, deferral and emissions and health benefits. The NPV came back as negative, meaning that the costs incurred to comply with the provisions are not justified by the combined household and societal benefits flowing from those provisions.

The conclusion on page xx of the CRIS state:

*The analysis of the proposed policy options for more stringent energy efficiency requirements for new dwellings in the NCC 2022 indicates (based on the best available data and assumptions) that there would be a net societal cost for both options – **the costs are estimated to outweigh the benefits by a significant margin**. The capital costs associated with meeting the proposed energy efficiency requirements are estimated to be well in excess of the societal benefits that are largely derived from avoided resource costs in the energy sector (and which are estimated using wholesale energy costs and avoided network investment as a proxy). (CRIS, pg xx)*

The conclusion of the CRIS is strong evidence that the broad combination of energy efficiency requirements proposed in the NCC2022 do not create a societal benefit. Alternative options could be considered where the building material and the fixed appliance provisions are evaluated separately. This may lead to a more conventional results where improvements of the building shell performance do create a net benefit to households.

Energy Networks Australia does not support implementation of the proposed provisions as:

1. The provisions are not technology neutral.
2. The potential of renewable gas is not recognised as a viable option to provide decarbonised energy.
3. The CRIS demonstrates that the costs of complying with the provisions far outweigh the benefits.

If you have any questions or would like a to discuss this further, please do not hesitate to contact our Head of Renewable Gas, Dr Dennis Van Puyvelde on dvanpuyvelde@energynetworks.com.au.

Yours sincerely,



Andrew Dillon
Chief Executive Officer