Response to Scoping study: Energy efficiency NCC 2022 and beyond

8 September 2019

Introduction

We welcome the opportunity to submit this response to the *Scoping Study: Energy Efficiency NCC 2022 & Beyond* and contribute to shaping this important process over the next three years.

Renew and our partners in the national *Community Coalition for Healthy, Affordable Homes* represent Australian homeowners, social housing tenants and private renters, many of whom are living on low incomes or experiencing financial or energy hardship or other forms of disadvantage. We also represent hundreds of thousands of Australians who have taken action to improve the efficiency of their homes or to build beyond minimum standards, and are consequently reaping the financial, health and comfort benefits of low energy homes. Our objective in engaging with this important process is to ensure all Australians – not only the most affluent or informed – are able to benefit from homes that affordably support their health and wellbeing.

At present, minimum energy efficiency requirements for new residential buildings set out in the Australian National Construction Code are significantly weaker than those of other major economies.[1] By the time the 2022 update of the NCC is implemented, it will have been 12 years since the last residential stringency increase when the 6-Star standard was introduced (2010). In that time, household energy costs have risen sharply, building materials and technology costs have fallen, and the need to achieve large-scale, low-cost emission reductions across the Australian economy has become more urgent.

More than half the buildings standing in 2050 will have been built after 2019, meaning today's residential energy efficiency standards will continue to influence energy costs, health and wellbeing for millions of Australians for decades to come. The three years' delay in implementing a 1-Star increase in 2022 rather than 2019 has been estimated to cost $2.6 billion in wasted energy bills and $930 million of additional electricity network investments to 2030.[2]

Consumers, particularly low income and vulnerable households are already struggling with high energy costs, stagnant wages growth and increasing health risks from climate change. We cannot afford any further delay.

Recent analysis of AGL's energy hardship program customers (representing around a quarter of all NEM hardship customers) found that a large and growing cohort of customers experiencing financial difficulties were families on low to middle incomes with higher than average energy use. The largest growth in this 'Family Formation' cohort tended to be concentrated in outer suburban areas where it could be assumed a significant proportion of housing has been built since 2005.[3] This suggests that current energy performance standards are not adequately shielding people from energy hardship as energy prices continue to rise, particularly in the context of the high housing (mortgage) and transport costs faced by many new home buyers.

The current crisis flowing from systemic compliance failures across the Australian building and construction sector as documented in the 2018 Shergold-Weir report, clearly illustrate the significant risks to consumers of an inadequate regulatory regime and poor industry practice.[4] Thousands, if not hundreds of thousands of Australians are currently highly exposed to very serious safety and financial risks that are attributable to failures of building regulation and industry practice.

It is clearly in the best interests of Australians for government to ensure there is a strong and effective regulatory system governing the design and construction of their home – the single largest investment most Australians will ever make and one which has a fundamental impact on their quality of life and cost of living.

It is critical that the NCC policy development process proceed from the perspective of maximising benefits and minimising risks to occupants, particularly where improvements to standards at the point of construction are orders of magnitude more cost-effective than retrofitting (even where retrofitting is possible). In this context, we note that there is ample evidence that raising energy performance standards for new homes:

- **Is affordable for home-buyers**. Renew and our project partners in the building industry have a wealth of case studies of Class 1 (detached) homes built up to 2.2 Stars above the mandatory minimum of 6 Stars with solar PV. These higher performing homes have annual energy bills less than $500 per year, with annual savings in the order of $2,000 - $3,000, often for less than $6,000 upfront cost. As the vast majority of new home-buyers in Australia mortgage their purchase over 25 or 30 years, costs of this magnitude are modest and would be able to be absorbed over the average 25-year mortgage. It is the ongoing costs in terms of energy bills and their impact on mortgage repayments that has a much bigger impact on overall affordability for consumers.[5]

- **Delivers benefits valued by consumers**. While Australians may not be highly technically literate or use the language of energy efficiency, there is ample evidence they do value the co-benefits that high performing homes and developments deliver – affordability, health, comfort and community.[6]

- **Can be delivered by industry**. A significant minority of the building and construction industry is already building well above minimum standards. In 2018, almost 10% of the 118,608 Class 1 NatHERS certificates created nationally were 7.0 Stars or above; whilst for apartment buildings (Class 2), this rose to 31%.[7] While these figures demonstrate that building to higher standards is possible and cost-effective now, it is equally clear that the vast majority of home-buyers are continuing to miss out on the financial and health benefits of higher performance. If, nearly a decade after the last standards increase, most homes continue to meet only minimum requirements, it is clear that industry cannot be relied upon to voluntarily deliver higher performing homes across the board even when it is demonstrably feasible and cost-effective to do so.

- **Typically costs less than predicted**. A comprehensive analysis of the Regulatory Impact Assessment of the change from 5 to 6-Stars (2009) concluded that actual cost impacts have been lower than predicted, due to the effect of industry learning rates, innovation and adaptation, adoption of least-cost techniques, economies of scale and market transformation of higher performing products.[8] This is a consistent issue with cost-benefit analyses typically over-estimating future costs – the rapid decline in the cost of solar PV being a case in point.[9]

Approach & Scope of the Energy Efficiency Project

Cost-benefit analyses are a key component of policy development. High quality decision-making depends on realistic assumptions and the scope of such analyses accurately describing and assessing the real-world impact of proposed policies.

A comprehensive analysis of the Regulatory Impact Assessment (RIS) undertaken for the change from 5 to 6-Stars (2009) concluded that the way Australia currently evaluates energy efficiency options often substantially underestimates the benefits[10]. We are concerned that a continuation of this approach could deliver sub-optimal benefits to consumers and society more broadly.

A failure to fully capture the benefits of improving household energy performance could lead to significant cost burdens over the lifetime of our housing stock and neglect significant economic growth, health and emissions reduction opportunities.

Key learnings from this 6-Star analysis that we recommend be considered in the design of the NCC 2022 RIS process include:

- **House upgrade costs can be over-estimated** if the impact of industry learning rates, innovation and adaptation, adoption of least-cost techniques, economies of scale and market transformation of higher performing products are not considered. Numerous studies have found the actual costs of complying with the 6-Star standard were about one third lower than estimates used in 2009 RIS.[11]
- **The selection of the discount rate** materially alters the estimated value of future benefits. The standard discount rate of 7% (real) used in Commonwealth and State analyses is broadly equivalent to a current household mortgage rate of around 9 - 10%. Yet current, recent and

near-term interest rates are around 4%. As such, using the standard 7% discount rate would again significantly understate the value of future benefits to consumers, given a residential mortgage is the primary financing mechanism for Australian new home buyers.

Whilst we recognise the ABCB will need to produce analysis using the 7% rate, we strongly recommend additional scenarios be modelled using a more realistic discount rates of 2-3% (real), so as to provide a more accurate measure of the potential future benefits to consumers.

- **The value of other benefits** that are not easily monetised are no less important, particularly in terms of benefits valued by consumers. We note that the Scoping Study identifies that energy efficiency should not be considered in isolation, and that other relevant areas such as safety, health and amenity should also be considered to avoid unintended consequences.

  We support this approach and recommend defining appropriate values for key benefits of improving efficiency (even if ranges must be used) so they can be included in the RIS modelling. Priorities for additional benefits to be modelled include:

  - health benefits, particularly in terms of reduced mortality and emergency department admissions due to extreme weather events such as heatwaves and chronic cold. New Zealand's home insulation program delivered net benefits of $1.2 billion largely through savings in hospitalisation costs and reduced mortality rates for vulnerable groups.[12] The 2009 heatwave in south-eastern Australia led to a 46 percent increase in ambulance call-outs and a 12 percent increase in emergency department presentations in Melbourne, and was estimated to have contributed to an additional 374 deaths.[13]
  - emissions reduction, both in terms of the economic benefits of capturing no cost and least-cost opportunities to meet international obligations, as well as the direct benefits to Australians of reducing the economic, health, food and water security and political instability risks of climate change (the Victorian Essential Services Commission's work on the Victorian feed-in tariff is of relevance here) [14]; and
  - demand reduction (particularly peak) contributing to improved network reliability and security, as well as cost savings from avoided investment in new generation exerting downwards pressure on wholesale electricity prices. COAG Energy Council's current review of 'smart' appliance capabilities has estimated net benefits of improved demand response at between $2,260 and $4,270 million net present value (NPV) – equating to more than $300 NPV for each Australian household.[15]

Proposed Options 1 & 2

We broadly support the proposed Options 1 and 2 as consistent with an approach that optimises the multiple benefits of efficiency for home occupants.

Prioritising a step-change in thermal efficiency first will deliver complementary health and comfort benefits not achievable through renewable energy alone. We would strongly advocate against any approach which permitted lower thermal efficiency performance to be compensated for by the

inclusion of renewable energy in order to achieve a 'net zero' outcome. However, our primary concern is the potential for Option 1 to facilitate house designs that achieve 'net zero' simply through a large solar PV system on a building whose thermal efficiency has not been improved beyond current 6-star NatHERS minimum requirements. Such an outcome would miss the complementary health, peak demand and other benefits of improving the thermal performance of the building shell, and not be in the long-term interests of the home's occupants nor the wider Australian society. Indeed, given the low and declining cost of PV and its high generation capacity, as well as the ongoing transition of the stationary grid to 100% renewable energy, we question whether the concept of net zero is even a useful concept for the RIS.

Hence, we support the framing of the two Options in terms of a minimum 7-star NatHERS thermal efficiency requirement. However, to ensure the process accurately tests the limits of cost-effective changes and potential benefits to home occupants are not inadvertently missed, we recommend an additional minimum thermal efficiency rating (e.g. NatHERS 7.5 or 8.0 Stars equivalent) be modelled as part of the RIS process – to fully understand the boundaries of potential consumer and societal value.

Research undertaken by Renew over the past few years consistently finds that an economically optimal level of thermal performance for new homes is between 7 and 8 Stars. In many cases this level of performance can even be achieved at no additional cost, simply through improved design (particularly house orientation).[16]

We also support the move to a 'whole of house' performance approach that sets a stringent energy usage budget for specific fixed appliances, thus capturing the major cost components of most household energy bills.

We note the need for regulatory options that are regionally appropriate and consider the need for different approaches in different climate zones, particularly Northern Australia. Recent analysis of the applicability of NatHERS to tropical climate zones concluded that raising minimum efficiency requirements would drive more widespread adoption of 'hot climate' design strategies.[17] Designs that prioritise cross-ventilation, shade and appropriate orientation reduce reliance on (or improve effectiveness of) active cooling (air-conditioning), delivering financial and comfort benefits to occupants. However, this study also concluded that further work is needed to ensure the software assumptions are appropriate to homes in northern Australia.

We recommend an approach that seeks to establish the maximum possible benefits that can be delivered to occupants in any given climate zone via improvements to the building envelope, before cascading to fixed appliance usage limits, and finally to the addition of complementary renewable energy as necessary in the context of the ongoing transition of the stationary energy system.

Recently updated and re-released Renew research has also demonstrated that consumers in all climate zones and all energy markets in the NEM and WEM are better off in all-electric new homes rather than connecting to gas.[18] These all-electric homes also have lower emissions than dual-fuel homes, largely due to the significant efficiency savings of heat pump technology as compared to combustion gas heating. For space and water heating, new heat pump electric appliances now deliver these residential end uses more than five times more efficiently than new gas appliances.[19]

Whole of house approach

We support the move to a 'whole of house' performance approach that sets a stringent energy usage budget for specific fixed appliances, thus capturing the major cost components of most household energy bills.

With complementary policy options such as mandatory disclosure and efficiency standards for existing homes currently under consideration within the *Trajectory for Low Energy Buildings* process, the move towards whole of house performance rating in the NCC provides an opportunity to evolve a nationally consistent rating scheme applying to the entire residential housing sector.

To effectively support informed consumer decision-making, a whole-of-house rating scheme needs to be low cost, visually simple and easy to use, allowing people to easily understand a home's performance relative to others and identify options for improvement.

However, consumers need to feel confident that rating methods will actually deliver promised outcomes in practice. There is growing evidence that the current regulatory regime is not delivering appropriate energy efficiency performance outcomes in practice, with a recent assessment concluding that Australia's building energy performance "fell a long way short of best practice".[20] In particular, various alternative compliance pathways are subject to a high degree of 'gaming', particularly in certain jurisdictions.

Australians spend billions of dollars every year on new housing – the largest investment most Australians will ever make. These major investment decisions will have ongoing impacts on people's cost of living and health for decades into the future. Consumers need to be confident that rating tools support an effective standards regime that is delivering expected outcomes and benefits.

In this context, we recommend that additional resources be invested in modelling and testing of the proposed performance requirements and alternative pathways, to ensure that they will actually meet the requirements of any higher efficiency standards in the field.

Renovations

Maximising opportunities for capturing cost-effective efficiency improvements during major renovations has the potential to materially improve performance across the entire housing stock. It is in consumers' interests to invest in efficiency improvements that will lower energy bills and improve health and comfort, and renovations offer a significant 'least cost' opportunity to make changes that would be more expensive to retrofit subsequently, in isolation.

Hence an ambitious regulatory regime that supports consumers to make good decisions about investments in long-lived structural changes or fixed appliances, will be in their long-term interests.

Policy settings need to ensure simple, common-sense upgrades that may not be specifically identified in regulations, are captured at this critical 'least-cost' juncture. For example, a rigid adherence to Deemed to Satisfy provisions for the newly renovated component of the house, risks missing cost-effective 'low-hanging' fruit opportunities in the existing part of the house that is not currently subject to NCC provisions.

It would be in consumers' long-term interests to consider an approach whereby regulations required improvement in the performance of the house as a whole as an outcome of the renovation process. There is an opportunity to ensure requirements for renovations under the NCC align with the objectives and timelines of the COAG Energy Council *Trajectory for Low Energy Existing Homes* process, to ensure major renovations contribute to a step-change improvement in the energy performance of all existing homes over time.

Conclusion

Thank-you once again for the opportunity to respond to the *Scoping Study: Energy Efficiency NCC 2022 & Beyond*. If you have any further questions please contact:

Damien Moyse
Policy and Projects Manager
Renew
E: Damien.moyse@renew.org.au or T: 03 9631 5417

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