

17 June 2025

Productivity Commission
Australian Government

Via email: 5pillars@pc.gov.au

Dear Commissioners

Re: Investing in cheaper, cleaner energy and the net zero transformation

The Green Building Council of Australia (GBCA) welcomes the opportunity to provide feedback to the Australian Government Productivity Commission's inquiry into investing in cheaper, cleaner energy and the net zero transformation, one of the five pillars of productivity identified for priority reform.

The built environment sector has a critical role to play in Australia's net zero transformation and opportunities for improving productivity in the built environment also contribute to the long-term productivity, resilience and sustainability of other sectors and the Australian economy as whole. GBCA provides comments against several of the consultation questions in our submission included below and we look forward to further engagement with the Productivity Commission on these issues.

GBCA's purpose is to lead the sustainable transformation of the built environment. We do this primarily through our core functions:

- We advocate policies and programs that support our vision and purpose.
- We educate industry, government practitioners and decision-makers, and promote green building programs, technologies, design practices and operations.
- We collaborate with our members and other stakeholders to achieve our mission and strategic objectives.
- We rate the sustainability of buildings, fitouts and communities through Australia's largest national, voluntary, holistic rating system – Green Star.

Green Star is Australia's most widely used sustainability rating system for the design, construction and performance of buildings – including social infrastructure – fitouts and communities. Green Star aims to transform the built environment by:

- reducing the impact of climate change
- enhancing our health and quality of life
- restoring and protecting our planet's biodiversity and ecosystems
- driving resilient outcomes for buildings, fitouts, and communities
- contributing to market transformation and a sustainable economy.

To arrange further discussion, or for additional clarification or information relating to the points made in our submission, please do not hesitate to contact Katy Dean, Senior Policy Adviser, via email at katy.dean@gbca.org.au.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'D. Rooney', with a small horizontal line extending from the end of the signature.

Davina Rooney
Chief Executive
Green Building Council of Australia

GBCA submission to the Australian Government Productivity Commission Inquiry into investing in cheaper, cleaner energy and the net zero transformation

Section 2. Reduce the cost of meeting carbon targets

1. What could be done to improve the cost-effectiveness and alignment of policies to reduce emissions across the industrial, electricity and transport sectors?

Near-term priorities

Achieving cost-effective emissions reductions demands integrated and consistent signals across policy instruments and across sectors. This consultation recognises the need for clear and consistent targets for the industrial, electricity, and transport sectors, but GBCA notes that the built environment must also be considered alongside these sectors.

Buildings account for over 50% of electricity use in Australia and almost a quarter of total emissions.¹ Committing to a nationally consistent approach to energy efficiency and electrification in the built environment should be an immediate priority. The Australian Sustainable Built Environment Council (ASBEC) report, [Unlocking the pathway: Why electrification is the key to net zero buildings](https://www.asbec.asn.au/wordpress/wp-content/uploads/2022/12/ASBECUnlocking-the-pathway.pdf)² confirms 100% electrification is the lowest cost, fastest emissions reduction pathway for Australia's built environment. Electrification of Australia's built environment could save \$49 billion in energy costs and reduce emissions by 199Mt CO₂-e by 2050.

Coordinated signals

Every sector needs a clear pathway to show how policy and regulation will be updated to align with emissions reduction targets and how efforts will coordinate with other sectors.

As an example for the built environment, the updated Trajectory for Low Energy Buildings (yet to be released), provides a clear opportunity. The updated Trajectory should provide clear guidance for how the National Construction Code (NCC) will be updated over time to ensure that all new homes and buildings are designed and constructed to be zero-carbon-ready by 2030. The updated Trajectory can also set clear commitments to support a range of other measures to improve energy performance and reduce emissions in the built environment including:

- disclosure of energy performance (including support for residential disclosure and expansion of the Commercial Building Disclosure Program)
- minimum energy efficiency standards for rental properties
- incentives for homes and buildings to improve energy efficiency and electrify, including specific measures to support vulnerable households.

A harmonised NCC that reduces fragmentation of regulation and inconsistent adoption across jurisdictions will also reduce uncertainty, complexity and costs.

¹ Sources: Australian Government Department of Climate Change, Energy, the Environment and Water, 2023; Australian Government, Department of Industry, Science, Energy and Resources, National Energy and Emissions Audit 2020.

² ASBEC. 2022. Unlocking the pathway. <https://www.asbec.asn.au/wordpress/wp-content/uploads/2022/12/ASBECUnlocking-the-pathway.pdf>

2. Are there gaps in the emissions-reduction policies in the industrial, electricity and transport sectors which should be addressed?

Near-term priorities

The built environment offers cost-effective opportunities for rapid emissions reduction, especially when compared to harder-to-abate sectors. Leveraging these opportunities will help flatten and smooth Australia's overall emissions reduction curve, buying critical time and flexibility for more complex sectors to transition. These include:

- **A focus on the demand-side opportunities offered by the built environment should be an important part of the electricity sector's considerations when considering energy system capacity and resilience.**

With proven technologies and mature regulatory frameworks already in place, buildings can be decarbonised through electrification, energy efficiency upgrades, and improved design standards. Measures such as eliminating gas connections in new buildings, enhancing thermal performance, increasing renewable electricity use and prioritising other demand-side measures, such as consumer energy resources and enabling grid-interactive buildings, can deliver immediate and enduring emissions reductions, while supporting energy resilience. These interventions are not only technologically feasible but also economically advantageous, offering substantial energy cost savings to households and businesses.

In [Every Building Counts: For federal government](#), GBCA and the Property Council of Australia recommend a range of actions that the government can take to accelerate electrification and improve energy efficiency in new and existing homes and buildings. For further detail on encouraging flexible demand through grid interaction, please see GBCA's resources, [From Net Zero to Zero: A Discussion Paper on Grid-Interactive Efficient Buildings](#) and [The Future is Electric: A Practical Guide to Grid-Optimised Precincts](#).

- **Progress and work underway in the built environment sector regarding embodied carbon will also help to support transport sector objectives.**

GBCA is a member of Infrastructure Net Zero,³ a collaboration of government and industry bodies, hosted by the Australian Sustainable Built Environment Council (ASBEC). This group shares a vision to enable an effective, efficient, and collaborative transition to net zero for infrastructure. In March 2025, it released [A solid foundation: A common definition for net zero infrastructure and how to get there](#). This paper:

- provides a common definition for net zero
- summarises best practice carbon measurement and management standards
- provides guidance on when to adopt relevant best practice carbon measurement and management standards
- discusses the benefits of adopting consistent standards and approaches to carbon measurement and reporting.

ASBEC's issues paper, [Embodied carbon emissions in Australia's built environment](#) outlines the scale and urgency of the embodied carbon challenge. In conjunction with this paper, ASBEC has released a practical framework for government and industry collaboration to reduce these emissions - [Our upfront opportunity: Australia's policy roadmap to reduce upfront embodied carbon in the built environment](#).

³ <https://www.asbec.asn.au/news-items/infrastructure-sector-unites-to-support-net-zero/>

This roadmap supports the growing national momentum, including the development of a consistent embodied carbon measurement methodology by NABERS and increased industry capacity for low-carbon construction.

- **Rapid electrification of the built environment can be achieved with technology that is already available, smoothing the transition for the industrial sector and prioritising energy sources such as fossil gas and green hydrogen for heavy industry use in the transition to a net zero 2050. Built environment leadership in driving demand for low carbon materials and products will also support the industrial sector transition.**

All sectors need clear plans to decarbonise. As noted above, the built environment can be decarbonised relatively rapidly through electrification and improved energy efficiency which will help to smooth the more complex and costly transition of the industrial sector.

The built environment sector is also focused on reducing embodied carbon, particularly upfront carbon. Upfront carbon emissions are produced during a building's material production and construction activities before its use (including raw materials, transport and manufacturing) and the construction process itself. These are locked in at the point of construction – once a building is complete, these emissions can never be reduced. Upfront emissions account for approximately 70% of total embodied carbon. Nationally, upfront embodied carbon from construction represents around 5 to 10% of Australia's annual emissions—making it a critical but often overlooked priority.

The Green Star rating tools require and reward reduction of embodied and upfront carbon emissions, driving demand for low-carbon materials and products. For more information, please see GBCA's [A practical guide to upfront carbon reductions: For new buildings and major refurbishments](#), [Embodied carbon and embodied energy in Australia's buildings](#), and [Our homes weigh a tonne: Technical report](#) and [Our homes weigh a tonne: A call to action](#).

3. Are there any duplicative emissions-reduction policies in the industrial, electricity and transport sectors which could be streamlined?

GBCA supports the development of coordinated sector plans, including a Built Environment Sector Plan, that set clear emissions targets for each sector out to 2050. The sector plans should integrate existing initiatives and identify opportunities to minimise (and where possible, remove) overlaps and duplications, and streamline efforts to ensure the best possible outcomes.

Please see GBCA submissions made regarding the [Electricity and Energy Sector Plan](#) and the [Transport and Infrastructure Sector Plan](#) for more information.

Section 4. Encourage adaptation by addressing barriers to private investment

9. What are the barriers and enablers impacting decisions by owner-occupiers, landlords and developers about how housing is built and updated over time so that it is resilient to the effects of climate change?

A major barrier is the limited availability of trusted, easily accessible information on climate risks and limited understanding of the value in investing in resilience measures. Many households do not have the time, resources, or expertise to evaluate the long-term benefits of resilience features, such as thermal performance, flood mitigation, or bushfire safety. For new builds, customers will rely heavily on builder or developer recommendations. When purchasing an existing home, many buyers will not necessarily value the resilience of a home over other features that drive purchasing decisions (such as location, price, size etc.), or have the knowledge, tools or understanding to weigh up resilience factors against other features.

Key enablers for considering resilience in decision-making include:

- regulatory clarity (such as updated minimum standards in the NCC)
- awareness of the importance of resilience
- access to clear, trusted, relevant information about resilience.

For example, a national rating tool for disclosure of residential energy performance will help potential buyers, investors and tenants to understand the importance of thermal comfort. Voluntary rating tools such as [Green Star for Homes](#) (available for use by volume builders of new homes) has a role to play in raising awareness and starting conversations about the importance of resilience.

Another barrier is cost – or the perceived cost – of building better, more resilient homes. However, the Australian Glass and Window Association (AGWA) reports that implementing the new energy efficiency standards included in NCC 2022 has raised costs by an average of just \$4,300 per home.⁴ These costs will be offset by homeowners saving at least \$326 in energy bills per year,⁵ every year, and improved health outcomes thanks to the improved energy efficiency of their homes. These figures highlight strong value for money, particularly if public health and reduced strain on emergency services were also to be considered.

In addition, CSIRO analysis⁶ offers valuable insights into how these standards are being implemented, particularly in New South Wales. In apartments in NSW, developers have managed costs effectively by making strategic adjustments, such as slightly reducing window sizes while maintaining the use of double glazing. This approach has resulted in minimal cost increases. However, in instances where the size of a house or its window areas have expanded—average home sizes in NSW have grown by 10% and window areas have increased by 10 square metres—the associated costs have risen accordingly.

By contrast, in Queensland, where the average home size has remained stable and window areas have slightly decreased, the cost increase has been much lower. The smaller window sizes in Queensland homes have meant that double glazing was often not required, resulting in more modest cost increases.

Similarly, provisions in NCC 2025, due to be published next year, stand to increase the energy performance of commercial buildings significantly through increased efficiency of the building envelope, its services and the provisioning for onsite solar PV and EV charging.

A CSIRO report⁷ also shows previous energy efficiency updates to the NCC have added little to the costs of building new homes.

“Reserve Bank analysis⁸ shows the construction cost inflation rate barely changed when 5-star (2006) and 6-star (2011) standards came in. In fact, CSIRO research⁹ found prices dropped in 2006. New houses built to a 5-star standard or above were cheaper on average than lower-rated houses by about \$5,000 in Melbourne and Adelaide and \$7,000 in Brisbane. Other reviews found the move to 6 stars cost less than expected.

⁴ Australian Glass and Window Association, 7.0 Star Cost Upgrade Analysis, September 2024

⁵ ACIL ALLEN for ABCB, [National Construction Code 2022: Decision Regulation Impact Statement for a proposal to increase residential building energy efficiency requirements NCC 2022](#), August 2022

⁶ CSIRO Energy Rating Dashboards for States and Territories, <https://ahd.csiro.au/dashboards/energy-rating/states/>, accessed 29 October 2024

⁷ CSIRO. 2022. [Will 7-star housing really cost more? It depends, but you can keep costs down in a few simple ways](#). Accessed 28 November 2024.

⁸ Reserve Bank of Australia. 2017. [Houses and Apartments in Australia](#). Accessed 28 November 2024.

⁹ CSIRO. 2013. [The evaluation of the 5-star energy efficiency standard for residential buildings](#). Accessed 28 November 2024.

Government assumptions tend to be conservative. They often overlook the capacity of designers, builders, manufacturers and consumers to find cost efficiencies. International evidence¹⁰ shows costs for higher performance have been over-estimated and fall more quickly than policymakers and industry predict.”

All levels of governments have critical roles to play in enabling households in better decision-making regarding resilience. This must be supported by the financial and insurance sectors, as well as the construction sector. Please see response to Q.10 below.

10. What information do people need to make decisions about where to live, how to build and how to upgrade their homes to appropriately factor in climate change?

To empower individuals and communities, information must be easy to access, location-specific, practical, and transparent. This includes:

- Access to trusted information such as digital platforms mapping climate risks (e.g., flood, bushfire, and heat exposure)
- Widespread use of comparative performance information for homes (e.g., NatHERS, NatHERS for existing homes, Green Star)
- Access to financial tools highlighting long-term savings from upgrades or resilience features
- Finance and insurance offerings that incentivise investment in upgrades and/or resilience features
- Clear guidelines and case studies on successful retrofits or climate-smart building approaches.

Strategies that support uptake include coupling information with incentives, like rebates or concessional loans, and embedding educational outreach into planning approvals and retrofitting programs.

11. What are the most cost-effective retrofitting options for improving the resilience of Australia’s existing housing stock? What are their costs and benefits?

Key cost-effective retrofitting strategies include:

- Upgrading windows and insulation to improve thermal performance
- Replacing gas with electric appliances, facilitating full electrification
- Installing rooftop solar and battery systems
- Adding shading, vegetation, and cool roofing to mitigate heat stress.

There are a number of valuable resources that can support both individual and policy-led approaches to cost-effective home retrofits. Some of these include:

- The Climateworks Centre’s [Renovation Pathways project](#) to support future-proofing of Australian homes
- GBCA and Allianz’s [A guide to sustainable home renovations](#)
- A range of resources available at [Renew](#).

¹⁰ Element Energy & Davis Langdon. 2013. [Costs of building to code for sustainable homes](#). Accessed 28 November 2024.

13. The impacts of climate change are being factored into the regulation of where and how houses are built in different ways around Australia. What does leading practice look like? Where is there room for improvement? Are there lessons we can learn from other countries?

Minimum standards serve a critical function in ensuring all dwellings provide a baseline of resilience and safety. GBCA strongly supports the Building Ministers' decision¹¹ to add climate resilience as a formal objective of the Australian Building Codes Board (ABCB) from mid-2025 to help embed resilience into the NCC over time. This ensures long-term affordability and protects residents from avoidable harm due to climate extremes.

Minimum standards also help correct market failures – such as underinvestment in long-term risk mitigation – and ensure that low-income or vulnerable households are not disproportionately exposed to climate risks due to substandard housing.

Planning decisions have profound, long-term impacts. We must ensure that planning decisions on where to site greenfield development, or encourage densification, have adequately considered modelling of short, medium and long-term impacts of climate change. Leading practice in climate-informed planning includes:

- Integrating climate risk into zoning and land-use policies
- Establishing resilience overlays or hazard maps in local planning schemes
- Encouraging or requiring all-electric, fossil fuel-free developments that utilise both onsite and offsite renewable energy
- Encouraging the use of tools like Green Star to guide resilient and sustainable design.

While there are examples of the above around Australia, we must rapidly scale resilient housing solutions through appropriate changes to standards and regulations, improving climate-informed planning practices, provision of trusted information, and targeted support for vulnerable households. These actions will protect lives and assets, reduce public costs, and enhance long-term housing affordability.

Please also [GBCA's submission to the Productivity Commission's research into housing construction productivity](#).

¹¹ Australian Government. 2024. Building Ministers Meeting June 2024. <https://www.industry.gov.au/news/building-ministers-meeting-communique-june-2024>