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Housing Strategy Implementation Unit
Land and Housing Corporation
NSW Department of Planning, Industry and Environment
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To whom it may concern,

RE: ClimateWorks submission to NSW Housing Strategy Discussion Paper

ClimateWorks Australia welcomes the opportunity to respond to the *Discussion Paper: A Housing Strategy for NSW (May 2020)*. ClimateWorks Australia develops expert, independent solutions to assist the transition to net zero emissions for Australia, South-east Asia and the Pacific. A non-profit organisation, it was co-founded in 2009 by The Myer Foundation and Monash University and works within Monash Sustainable Development Institute. Our submission responds specifically to the questions listed below from the Discussion Paper, with a focus on the **Resilience** theme:

1. What influence would you or your organisation have in contributing to the joint delivery of a NSW Housing Strategy? What data or insights could you provide to support responsive action plans?
2. There are a range of actions we could take to support housing sustainability, resilience and safety trends. Which ones should be prioritised in the NSW Housing Strategy?

Development of the *Housing Strategy for NSW* is timely. As NSW manages and emerges from coronavirus, policy makers now have the opportunity to invest in initiatives that create jobs, restart the economy and help meet the state's *Net Zero Plan Stage 1: 2020-2030* and net zero emissions by 2050 target. Recovery after the Global Financial Crisis demonstrated that fiscal stimulus policies with environmental co-benefits often deliver greater return on expenditure when compared with traditional fiscal stimuli; indeed buildings retrofits were in the top five



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Since ClimateWorks' launch in 2009 through a partnership between The Myer Foundation and Monash University, philanthropic support has been key to achieving our mission of catalysing Australia's transition to a prosperous, net zero emissions future. This support continues to allow us to remain truly independent, evidence-based and non-partisan.

investments for maximum economic benefit alongside maximum climate benefit¹. Investing once today for multiple benefits, including emissions reductions and more comfortable and resilient homes with lower energy bills, can reduce costs in the long run.

Our detailed responses to the Discussion Paper questions are set out below.

1. ClimateWorks provides data and insights on decarbonisation opportunities for housing

Our *Decarbonisation Futures* and *Built to Perform* research reports provide benchmarks and metrics that can inform development of investment, energy performance and emissions targets in the *Housing Strategy for NSW*, in line with net zero emissions goals.

ClimateWorks Australia's recent *Decarbonisation Futures* report² provides evidence for how Australia, and NSW, can transition to net zero emissions in line with the Paris Climate Agreement. Buildings, which contribute around a quarter of national emissions, play a key role in the transition to net zero emissions in our modelled scenarios, and do so using technology that is either mature or has been demonstrated at scale. Emissions from Australia's buildings sector reduce by 63-64% by 2030 in the modelled 2 degrees-aligned scenarios, and 73% by 2030 for 1.5 degrees of warming. Even in scenarios where the electricity grid is 70-79% renewable energy powered by 2030, the energy performance of housing improves by at least 44-48% by 2030 compared to today, and performance of commercial buildings by 16-25%. For housing, these scenarios show that technology can enable energy performance of new builds to improve by 51-56% compared to housing built today, while energy performance of existing buildings would improve by 41-44%.

This indicates that both retrofitting existing buildings and continued commitment to delivering efficient new builds would contribute to the NSW Government's emissions targets, and highlights the potential for an accelerated retrofitting effort. A retrofitting program can deliver economic and social benefits in addition to emissions reductions.

In addition to energy efficiency improvements, our *Decarbonisation Futures* scenarios include buildings that reduce reliance on natural gas, incorporate on-site renewable energy, and support increased uptake of zero-emissions transport solutions (for example, through electric vehicle charging infrastructure).

¹ Hepburn, C., O'Callaghan, B., Stern, N., Stiglitz, J., and Zenghelis, D. (2020) 'Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?', accessed at: <https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-02.pdf>

² ClimateWorks Australia (2020) 'Decarbonisation Futures', accessed at: <https://www.climateworksaustralia.org/resource/decarbonisation-futures-solutions-actions-and-benchmarks-for-a-net-zero-emissions-australia/>

The National Construction Code sets out minimum energy performance requirements for all new buildings and major renovations, and provides a key regulatory opportunity to drive down emissions from housing. Ministers on the COAG Energy Council and Building Ministers Forum have committed to strengthening energy requirements in the Code, through policies such as the *National Energy Productivity Plan* and *Trajectory for Low Energy Buildings*. These reforms will support long-term economic recovery and productivity post-coronavirus by reducing avoidable energy bills and stimulating innovation in product manufacturing. ClimateWorks Australia's *Built to Perform* report, delivered in partnership with the Australian Sustainable Built Environment Council (ASBEC), shows that strengthening the Code energy requirements from 2022 could save \$5 billion in residential energy bills for NSW households, cut non-residential energy bills by \$2.2 billion, and reduce NSW emissions by 20 million tonnes, between 2022 and 2050³. It would also reduce network investment costs by \$12.6 billion across Australia. *Built to Perform* provides benchmarks for energy performance targets that can be mandated cost-effectively in future revisions of the Code, for eight building archetypes and four climate zones relevant to NSW.

2. The NSW Housing Strategy can provide a platform for decarbonisation action

Delivering sustainable, decarbonised housing includes delivering higher energy efficiency, a shift from natural gas to renewably-powered electricity, on-site renewable energy, and support for zero-emissions transport solutions. While the full list of viable solutions is long, the *NSW Housing Strategy* can accelerate decarbonisation of housing by focusing on:

1. Rolling out large-scale retrofits to decarbonise existing housing, with a focus on publicly-owned buildings, social housing and private rental housing, incentivised by mandatory disclosure of energy performance
2. Combine direct grants for retrofits with finance mechanisms such as Environmental Upgrade Agreements to stimulate private finance and deliver retrofits at lower cost to Treasury
3. Clarify and enhance enforcement of existing energy efficiency standards in the National Construction Code for renovations
4. Continue progressing existing policies and reforms to improve energy performance of new builds via the National Construction Code, as set out in COAG Energy Council's *Trajectory for Low Energy Buildings* and *Building Confidence* recommendations by Shergold and Weir to the Building Ministers' Forum

Action 1: Large-scale retrofit program

A major building renovation program targeting publicly owned assets in the short term, extending to privately owned buildings (mid-tier commercial and single-family residential buildings) in the mid-term, can generate employment, investment and innovation in the

³ ASBEC and ClimateWorks Australia (2018) 'Built to Perform - An industry-led pathway to a zero carbon ready building code', accessed at: <https://www.climateworksaustralia.org/resource/built-to-perform/>

construction sector, while reducing energy costs and improving productivity over time. It can also address the climate change vulnerability (energy cost and health, including extreme weather risks) associated with Australia's stock of low resource efficient housing and mid-tier non-residential buildings.

A rapid systematic review produced by the Global Buildings Performance Network for the UN Environment Program on the costs and benefits of adopting decarbonisation policies in the buildings sector demonstrates that renovation of buildings has the largest impact on long-term energy savings and co-benefits, especially job creation and indoor health and well-being⁴. Energy efficiency is the lowest-cost energy resource available to energy utilities, at significantly lower cost than energy generation⁵. A focus on building retrofits in Australia would align with international efforts to improve energy performance; for example, the European Union's Energy Efficient Directive includes a commitment to increase the rate of renovating in public buildings to 3% per year, and a long-term strategy for mobilising investment in renovating existing residential and commercial building stock beyond 2020⁶.

Importantly, the renovation program was designed to support jobs and economic growth in addition to energy and environmental benefits; it is estimated that this increased the EU's gross domestic product (GDP) by 2.7% (€33.8 billion) by 2020 compared to 2012, when the Directive was legislated.

Priority measures for retrofit packages include:

- heating, ventilation and air conditioning upgrades;
- installation of building optimisation and smart energy systems;
- air tightness and ventilation improvements such as draft sealing; and
- a continued focus on lighting upgrades.

In addition to these energy efficiency measures, buildings could be made fully net zero emissions aligned if retrofits also tackled the following, where appropriate:

- Renewable electricity generation and storage through on-site solar photovoltaic

⁴ Graham, P. for United Nations Environment Programme (2020) 'Adopting decarbonization policies in the buildings & construction sector: Costs and Benefits', UNEP Paris. All case studies and research quoted in this building retrofits section of this submission will be detailed in the UNEP report

⁵ Energy Efficiency Council (2019) 'The World's First Fuel: How energy efficiency is reshaping global energy systems', accessed at: <https://www.eec.org.au/uploads/Documents/The%20Worlds%20First%20Fuel%20-%20June%202019.pdf>

⁶ European Commission (2020) 'Energy efficiency directive', accessed at: https://ec.europa.eu/energy/topics/energy-efficiency/targets-directive-and-rules/energy-efficiency-directive_en

- systems and batteries; and
- Infrastructure to support zero emissions transport solutions, including electric vehicle charging, bike parking and end-of-trip active transport facilities.

A retrofit program should be complemented by measures to encourage take-up of retrofitting funding, finance and services. A framework for expanding mandatory disclosure of energy performance beyond large office buildings, as described in COAG Energy Council's *Trajectory for Low Energy Buildings* plan, would incentivise retrofits to upgrade energy performance. This is also a recommendation of the King Review which was agreed in principle by the Federal Government, noting that the implementation is within state government jurisdictions⁷.

Action 2: Grants and finance mechanisms to support retrofits

A major barrier to rolling out large-scale building retrofits is access to finance to reduce, or cover, capital costs. The NSW Government can combine direct grants (for example, to upgrade social housing assets) with mechanisms to leverage private finance in a way that delivers maximum economic, environmental and social benefits at lowest cost to Treasury.

A package of grants and financial mechanisms for retrofits could include:

- Grants focused on low income households - both new builds and retrofits. These can maximise co-benefits, such as reducing energy and economic hardship, and have been successfully implemented in the past (such as the Federal Government's 2011-16 Low Income Energy Efficiency Program). A meta-analysis of energy efficiency programs in advanced economies found that 90% of energy efficiency interventions identified in the review took a general population approach, but those that did segment and tailor components of the program to population groups tended to be more effective (e.g. building fabric and heating and cooling retrofits will have the greatest socioeconomic benefit for low income earners as comfort and wellbeing will be improved)⁸
- Grants for small-to-medium and COVID-affected businesses for net zero retrofits. These can allow commercial enterprises to significantly reduce their overheads through the economic recovery without upfront costs that may be prohibitive in the current context. Commercial building efficiency grants have successful historical precedent. Sustainability Victoria's gas efficiency grants between 2017-2019 delivered \$2.59m of energy cost savings per annum, with businesses saving \$52,700 per year

⁷ Australian Government (2020) 'Australian Government response to the Final Report of the Expert Panel examining additional sources of low-cost abatement ('the King Review')', accessed at: <https://www.industry.gov.au/sites/default/files/2020-05/government-response-to-the-expert-panel-report-examining-additional-sources-of-low-cost-abatement.pdf>

⁸ Russell-Bennett, R., McAndrew, R., Gordon, R., Mulcahy, R. and Letheren, K. (2019) 'Effectiveness of Household Energy Efficiency Interventions in Advanced Economies – what works and what doesn't', Final Report. Brisbane: Queensland University of Technology

(on average) in energy costs⁹. Grants should be developed in harmony with Environmental Upgrade Agreement legislation development, as the EUA model can achieve similar ends leveraging private finance which reduces the need for grant funding.

- Develop Environmental Upgrade Agreement (EUA) legislation if not already in place, and advertise EUAs as a finance option in building stimulus packages. Environmental Upgrade Agreements (EUAs) provide businesses and households with access to loans to fund energy efficiency upgrades, with loan repayments being made through local council rates. They have the potential to address owner/tenant split incentive issues if taken up at scale. The Australian Renewable Energy Agency is currently working to expand Victoria's Better Building Finance program into NSW and SA¹⁰.
- Support delivery of discounted finance through the Clean Energy Finance Corporation/banks for residential and commercial new builds and retrofits. This includes enforcing basic quality standards for loan approvals and delivering lower cost loans for high performing homes, as recommended by peak industry body the Australian Sustainable Built Environment Council (ASBEC)¹¹. Increased advertisement of existing options, such as the CEFC-supported Bank Australia Clean Energy Home Loan (which offers a discount of 0.40% p.a. on homes that are 7 Star or higher), as well as driving the creation of new offerings, can increase uptake of energy efficiency measures. The NSW Government could also support the development of sustainable finance through a co-investment fund with the Clean Energy Finance and Australia's Renewable Energy Agency that targets deep decarbonisation through Australia's buildings sector.

Action 3: Enforce existing energy efficiency standards for renovations

One of the biggest impacts and short-term wins for governments is to ensure major renovations comply with existing energy efficiency requirements. Renovations provide a cost-effective opportunity to improve the energy performance through strategies that may not be feasible otherwise; for example, installing sufficient wall insulation to meet today's standards would be more practical during major renovation works when trades are on site and significant building works are already underway.

The National Construction Code sets out minimum energy efficiency requirements for major renovations, in addition to new buildings. However, there exists confusion and inconsistencies in how these requirements are applied to major renovations and alterations, which can lead

⁹ Sustainability Victoria (2020) 'Gas efficiency grants', accessed at:

<https://www.sustainability.vic.gov.au/Grants-and-funding/Gas-efficiency-grants>

¹⁰ ARENA (2019) 'Scaling up Environmental Upgrade Agreements Across Australia', accessed at:

<https://arena.gov.au/projects/scaling-up-environmental-upgrade-agreements-across-australia/>

¹¹ ASBEC (2020) 'Tomorrow's Homes', accessed at: <https://www.asbec.asn.au/research-items/tomorrows-homes-a-policy-framework-to-transition-to-sustainable-homes-for-all-australians/>

to actual energy performance below what is required in the Code. Reasons for these inconsistencies include¹²:

- Guidance for applying Code provisions to major renovations varies across jurisdictions, including thresholds for defining ‘major’ renovations and the specific requirements to retrofit existing building elements when these thresholds are met. For example, some jurisdictions require that the existing parts of a building are upgraded to current Code energy requirements, while others do not; and
- Discretionary powers afforded to building certifiers in many jurisdictions, to determine the application of Code provisions to renovations on a case-by-case basis with limited expert knowledge of energy performance requirements.

Clarifying and enforcing the Code’s energy efficiency requirements for renovations is greatly needed. We support the recommendation by the COAG Energy Council, in its *Trajectory for Low Energy Buildings*, that:

“Energy efficiency requirements for renovations should be strengthened to ensure retrofits are realised at least cost while tradespeople are on site and other renovations are being undertaken. This should include:

- *Working with jurisdictional building regulators to strengthen the jurisdictional approach to applying the requirements in the NCC for major renovations so they become clearer and more consistent nationally.*
- *Providing households with information and tools relevant to their situation that encourages energy efficiency upgrades for smaller renovations and appliance end-of-life.”*

Action 4: Continue progressing existing plans to reform new building standards and delivery

In addition to existing building retrofits, reaffirming ongoing plans to strengthen energy requirements for new buildings will play a key role in delivering economic, social and emissions reduction benefits. Building Ministers’ Forum’s committed in its recent communique¹³ to continue planned reforms, including progressing recommendations in Shergold and Weir’s *Building Confidence* report.

In addition to *Building Confidence*, a key component of planned reforms is strengthening

¹² National Energy Efficient Building Project (2016) ‘Improving compliance and consistency in the application of the national construction code energy performance requirements to class 1 and 10 additions and alterations’, accessed at:

http://www.energymining.sa.gov.au/_data/assets/pdf_file/0015/315420/NEEBP-project-3-Alterations-and-additions-final-report.pdf

¹³ In its April 2020 meeting, the BMF agreed that “the reform journey that the BMF has committed to must continue to progress” as part of the post-COVID recovery. Accessed at:

<https://www.industry.gov.au/sites/default/files/final-communique-23-april-2020.pdf>

minimum energy requirements in the National Construction Code (NCC), starting with NCC 2022. Forward targets and a clear, transparent process for upgrading NCC energy requirements will provide the certainty the industry needs to innovate and invest in higher performing buildings at lower cost. This is particularly important for innovations that require a long lead-time, such as the development of new insulation, windows and other products by Australian manufacturers, as it allows the industry to plan ahead for future regulatory requirements. Although there are early leaders already bringing higher performing products to the market, feedback from manufacturers suggests that a lead time of three to four years is typically required to re-tool machinery to produce new products.

Although there are upfront costs associated with these improvements, these are small (around 3% for detached homes) relative to overall construction costs and other pressures on affordability such as land prices. Our *Built to Perform* research also shows that these upfront costs would be more than offset by bill savings, reduced size of heating, cooling and ventilation equipment, and network savings, resulting in an overall societal benefit as well as benefit to building owner occupiers. In addition, energy efficiency is most cost effective during building design.

A commitment to stronger NCC energy requirements from 2022 onwards should be accompanied by state government support for ‘green door’ planning incentives by local governments. These could prioritise or expedite development approvals for proposals that meet energy performance above current minimum requirements, which would support accelerated deployment of high performance buildings and ultimately reduce the upfront costs of delivering buildings that meet future Code standards.

If stronger energy performance is not implemented today, governments and building owners would need to bear higher future costs to retrofit buildings to align with net zero targets. Even a three-year delay in strengthening energy requirements is costly; our *Built to Perform* research shows that delaying changes to the 2025 Code (rather than 2022) could lock in, between now and 2030 across Australia, \$2 billion in residential energy bills, \$620 million in non-residential energy bills and \$720 million of additional network investments.

A suite of actions is needed for the *NSW Housing Strategy* to decarbonise housing

Critically, the greatest benefits will be best achieved by addressing the four priorities together, rather than tackling each separately. Combinations of measures can achieve greater emissions reductions at an attractive rate of return, ensure that upgrades made are suitable to building needs, and will reduce transaction costs for building owners, occupants and finance providers.

Particularly in the current context of managing coronavirus impacts, the buildings, construction and trades sectors will be key to economic recovery. Federal, state and territory



governments are already announcing stimulus measures in these sectors, and now is the perfect time to use platforms such as the *Housing Strategy for NSW* to design the details of these measures to deliver the trifecta of economic, environmental and social dividends.

On behalf of ClimateWorks, I thank you for the opportunity to provide input in response to the Discussion paper. Please do not hesitate to contact me if you have any further questions.

Yours sincerely,

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