

To whom it may concern,

Thank you for the opportunity to make a submission to the Inquiry into Climate Resilience.

Renew is a national not-for-profit organisation providing independent sustainability advice to households and representing the needs of households in the energy transition.

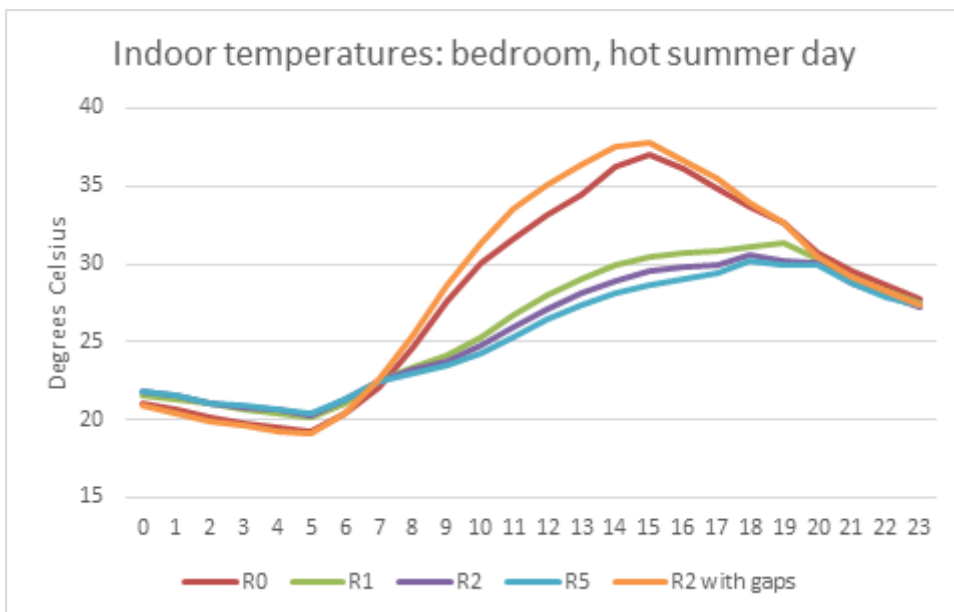
This submission focuses on the resilience of Victorian homes to a changing climate and the growing threat of extreme heatwave conditions.

All homes should be safe and should be affordable to run at healthy indoor temperatures. However, Victoria's housing stock is not equipped to protect vulnerable households in conditions of extreme heat. The growing frequency and intensity of heatwaves threatens to have major impacts on the health and wellbeing of Victorians, with effects disproportionately felt by the most vulnerable households.

The impacts of a changing climate on home resilience and energy usage

Many older homes built before the introduction of minimum energy efficiency standards in 2003 lack basic thermal efficiency features such as insulation, sealed draughts, shading, or quality glazing and materials, as well as lacking mechanical cooling devices such as air conditioning and fans. While data on the energy performance of homes across Victoria is limited, it is likely that the average older home has a NatHERS energy efficiency rating of under 2 stars out of 10. Renters and low-income owner-occupiers are particularly likely to be living in poorly performing homes and face the highest barriers to conducting upgrades.

Homes without insulation and other thermal efficiency measures already experience significantly higher temperatures under hot summer conditions. Renew has modelled the indoor temperatures on a hot summer day (maximum outdoor temperature 39.3 degrees) of a bedroom in a typical older Melbourne home depending on levels of insulation; scenarios below range from no insulation to the R5 standard required in most new homes.

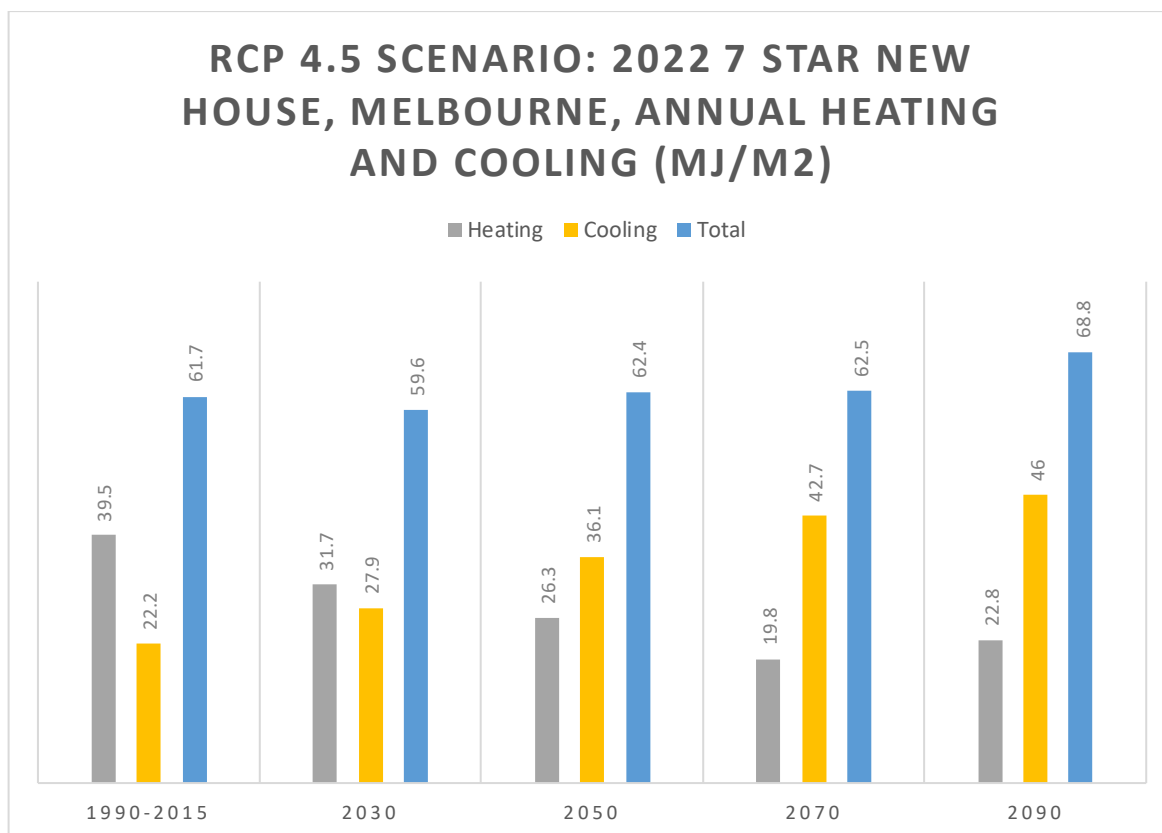


Recent research conducted by Renew and Sweltering Cities¹ has found that **a changing climate is expected to significantly impact** on home energy usage for heating and cooling, while furthermore increasing exposure to high indoor temperatures.

Climate data used to calculate NatHERS energy ratings is drawn from the period 1990-2015. The use of historical climate data to generate a *Typical Meteorological Year* would generally be considered best practice, however the impacts of climate change mean that this data is not fit for purpose. Homes are being built for a 1990s climate rather than a 2050s climate.

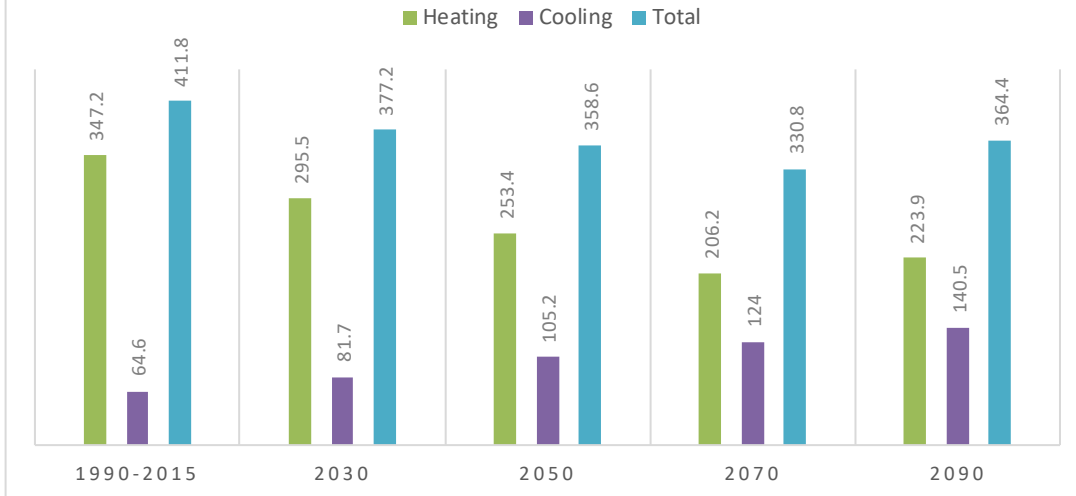
The analysis of Renew and Sweltering Cities uses projected CSIRO climate data to model the heating and cooling loads for two case study homes in Melbourne: an uninsulated older home with a current NatHERS rating of 1.1 stars; and a new home built in 2022 with a NatHERS rating of 7 Stars (complying with the 2022 National Construction Code). We modelled heating and cooling loads and indoor temperatures for 2030, 2050, 2070 and 2090 according to three climate scenarios: low emissions (RCP 2.6); moderate emissions (RCP 4.5); and high emissions (RCP 8.5). Some key findings for Melbourne homes are as follows.

Melbourne homes as built today are set to become more dependent on air conditioning to maintain comfortable indoor temperatures during summer. Our modelling found that under moderate and severe climate scenarios, energy use for heating is projected to decline while energy use for cooling is projected to increase.



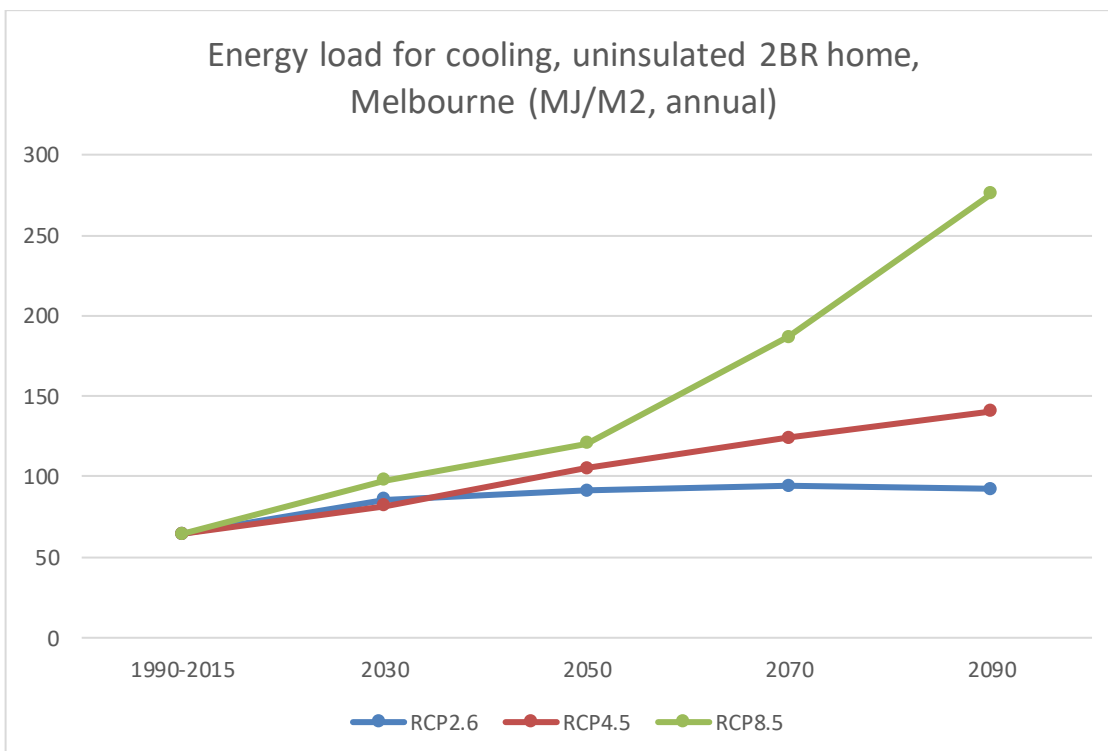
¹ <https://renew.org.au/advocacy/future-proofing-australias-homes/>

RCP 4.5 SCENARIO: 1.1 STAR OLD UNIT, MELBOURNE, ANNUAL HEATING AND COOLING (MJ/M2)

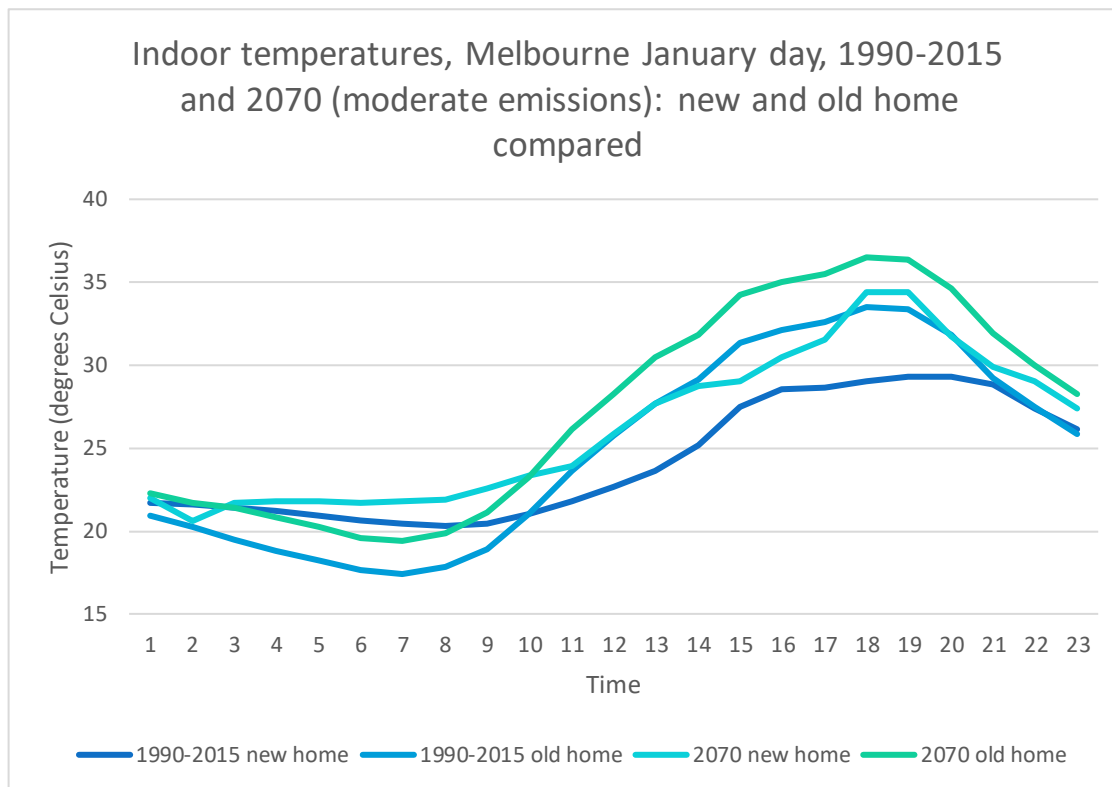


The degree to which cooling loads are projected to increase is highly determined by the level of global emissions and the consequent intensity of global temperature increases. An ambitious low-emissions trajectory (broadly in line with a 1.5 degree warming scenario) leads to limited increases in cooling loads for Melbourne homes this century, while a business-as-usual emissions scenario would see the energy required to cool an uninsulated Melbourne home more than quadruple by 2090. Because of warming that has already occurred since the reference period of 1990-2015, an increase in cooling loads by 2030 was expected to be already locked in.

Energy load for cooling, uninsulated 2BR home, Melbourne (MJ/M2, annual)



Homes that are well built to current National Construction Code standards experience better indoor thermal comfort than older unrenovated homes. However, climate change threatens to impact on healthy indoor temperatures, particularly under summer heat conditions. Our modelling found that under even a moderate climate scenario, a home built in 2022 to 7-Star standards would experience similar indoor temperatures during summer conditions in 2070 to those experienced today in a 1.1-Star older home. Meanwhile, if not repaired, that older home would be exposed to even more intense indoor temperatures.



Recommendations

- 1) Prioritise retrofits of existing homes for energy efficiency and climate resilience

Sustained policy measures are required to ensure the upgrading of Victorian homes for energy efficiency and climate resilience. Key measures include minimum standards for rental homes; mandatory ratings and consumer information; assessments using the Residential Efficiency Scorecard or other NatHERS tools; funding and rebates for retrofits; and consumer assistance.

- 2) Adopt proposal to require insulation and mechanical cooling in rental homes

The Victorian government has recently consulted on new proposed minimum standards for rental homes including the provision of air conditioning, draught sealing and insulation. It is critical that these measures are adopted and strengthened over time, with appropriate compliance and support measures.

- 3) Embed climate resilience as a performance requirement for new homes

Performance requirements should be adopted for building practices under the National Construction Code or other planning mechanisms for resilience under heatwave conditions. The June 2024 Building Ministers Meeting has agreed to include climate resilience as a specific objective of the Australian Building Codes Board from 2025, in response to the recommendations of the Royal Commission into National Natural Disaster Arrangements. This objective should include the impacts of extreme heat alongside other extreme

weather events driven by climate change. Victoria should ensure that new homes maintain safe indoor temperatures during heatwave events by requiring appropriate thermal efficiency measures in construction.

4) Plan for impacts on energy systems of increased dependence on air conditioning

Further research and planning are required to understand the impacts of greater air conditioning dependence in homes on energy systems. Increasing demand on electricity networks at times of extreme heat pose a threat to energy system resilience, with potential severe community consequences in the event of system failure. Planning for heatwave resilience must focus not only on air conditioning but also thermal efficiency and resilience.

5) Adopt a statewide heatwave response strategy, with a focus on the needs of vulnerable households and communities

A statewide strategy for heatwave responses should be adopted, including immediate responses and longer-term planning and monitoring. Lower income households, older people and people with pre-existing conditions are most vulnerable to the health impacts of heatwaves and must be centred in state responses. The strategy should include coordination for existing local strategies, long term adaptation planning, and clear communications on heatwave health and safety.

6) Communicate clearly on heatwave health risks by naming heatwaves

We recommend Victoria should adopt the model initiated in Seville, Spain, of naming heatwaves, as part of a broader strategy to inform and support Victorians on the growing health impacts of extreme heat.²

7) Measure and assess the resilience of households and communities to extreme heat

A lack of comprehensive data on Victorian home energy performance and thermal efficiency limits the effectiveness of policy measures to retrofit Victorian homes. There is furthermore a need for consistent evaluation of health impacts, social factors and mortality in heatwave conditions.

Thank you for your consideration of this submission. Please do not hesitate to contact Renew at info@renew.org.au should you wish to discuss any matter referred to. We would welcome any opportunity to provide further information or to engage with the consultation process.

Yours faithfully,



Rob McLeod

Policy and Advocacy Manager
Renew

² Further recommendations from the Spanish response to extreme heat impacts are available at: <https://renew.org.au/research/extreme-heat-resilience-lessons-from-spain-for-australia/>