



Minimum Standards for Rental Properties and Occupancy Law Reform

Justice and Community Safety Directorate, Australia
Capital Territory (ACT)

Asthma Australia Submission, August 2024

ABOUT ASTHMA AUSTRALIA

Asthma is a respiratory condition that affects nearly 2.8 million Australians, with children being the most impacted. Asthma is responsible for at least one Australian death every day, making it a serious health concern. More than 30,000 people are hospitalised each year due to asthma, yet at least 80% of these hospitalisations are considered potentially avoidable.

Despite the prevalence of asthma, it is often misunderstood, causing fear and anxiety for those living with the condition. Asthma Australia has been the leading charity for people with asthma and their communities for over 60 years.

The challenges of climate change, unhealthy air, and health inequity make it more important than ever for people with asthma to have a voice. We search for new and progressive approaches to challenge the status quo. Our work is grounded in evidence and centred on the experiences of people affected by asthma. We believe by listening to those living with asthma, designing solutions with them, and influencing change, people with asthma can live freely, unrestricted by their asthma.

INTRODUCTION

Asthma Australia welcomes the opportunity to provide feedback to the Consultation Paper (the Consultation Paper) on the Minimum Standards for Rental Properties and Occupancy Law Reform: Proposed Reforms to the Residential Tenancies Act 1997 (the Proposed Standards). The Consultation Paper responds to point nine of the Better Deal for Renters reform package, agreed by National Cabinet in 2023, to phase in minimum quality standards for rental properties across the country.¹ We strongly welcome the ACT's commitment to improving housing conditions for renters.

Many ACT renters live in homes that fail to provide thermal comfort, healthy indoor air quality or energy efficiency. The housing shortage, competitive rental housing market and high cost of living limit the ability of renters to choose homes that provide a healthy living environment, while also requiring them to manage escalating rents and energy bills. This means many renters are not only exposed to unhealthy housing conditions, but their ability to afford health care may also be constrained. Renters also have limited agency to make changes to improve their homes as they do not own them. For people with asthma, poor rental housing conditions increase the risk of developing asthma and of triggering asthma symptoms. Asthma Australia's research into asthma and allergy triggers in homes found that 41% of people with asthma or allergies who rent privately report worse symptoms after spending time in their home.²

While the Proposed Standards have the potential to significantly improve the liveability of rental properties, they reflect the low starting point of the ACT in relation to its current tenancy laws. The ACT was the first jurisdiction to introduce a minimum energy efficiency standard for rental homes for ceiling insulation in 2023.³ However, and as acknowledged by the ACT Government, the ACT's current tenancy laws are too general and therefore subjective, preventing them from being consistently applied.⁴ In their current form, the Proposed Standards do not go far enough in terms of measures to improve energy efficiency and the thermal comfort of rental homes to sufficiently improve home health for renters. They also lack the detail needed to ensure the legislation is applied consistently and objectively.

Consequently, Asthma Australia recommends adding further detail on measures in the Proposed Standards and additional minimum standards to ensure rental housing conditions support the health and wellbeing of renters.⁵ Minimum standards for heating and cooling to improve thermal comfort and other measures to improve energy efficiency are critical measures for people with asthma, as well as for people with other chronic conditions. Their inclusion in the Proposed Standards would introduce a holistic approach to improving rental conditions that avoids unintended consequences. For example, additional cooling measures as well as more detail on the Proposed Standard for Ventilation are required when improving draught sealing to ensure renters are not exposed to increased indoor heat during hot weather or to poorer indoor air quality. Additionally, the Proposed Standards should require the replacement of all gas appliances, including flued gas heaters and open flued gas cookers, and wood heaters with efficient, electric alternatives.

In our submission, Asthma Australia briefly sets out the importance of a healthy home to people with asthma, key findings from our research on this issue and the importance of a holistic approach to improving housing conditions through minimum standards. We then respond to consultation questions relating to the Proposed Standards and the Other Property Requirements discussed in the Consultation Paper. We recommend additional measures that would ensure ACT rental homes provide a healthy living environment, particularly for people with asthma.

ASTHMA AND HOUSING

Housing is a key social determinant of health. More than 90% of our time is spent indoors, mostly inside homes.⁶ Homes should provide residents with safe and secure spaces that support their health and wellbeing by providing shelter, sufficient space, healthy indoor air quality, thermal comfort and affordable, efficient and healthy energy sources.

Certain housing conditions can increase the risk of developing asthma and, in people with the condition, trigger symptoms and exacerbations. For example, hot and cold temperatures can trigger asthma, while indoor airborne hazards such as gas cooktop emissions and mould can contribute to the development of asthma and trigger symptoms. Housing conditions associated with asthma can also cause other health problems. For example, cold homes contribute to increased sickness and death from cardiovascular illnesses in winter. This means a healthy home environment is not only important for asthma prevention and management, but also supports broader health and wellbeing.

The importance of housing conditions is also increasing as climate change causes hazards that require people to shelter in their homes. Currently, conditions within Australian homes can too often become unhealthy from bushfire smoke entering leaky homes, extreme heat or mould caused by heavy rainfall and flooding. Policies to improve housing conditions should consider the needs of those people who are highly vulnerable to climate change impacts, including people with asthma.

OUR RESEARCH: HOMES, HEALTH AND ASTHMA

In 2022, Asthma Australia undertook a nationally representative survey of 5,041 people to understand how healthy Australian homes are for people with asthma or allergies, and those at risk of developing asthma.⁷ The key findings from this research include (access the full [Homes, Health and Asthma Report](#)):

- **Homes are not healthy places for all Australians**, particularly people with asthma or allergies. Among respondents with asthma and allergies, three in ten reported that their symptoms were worse after spending time in the home.
- **Many people were exposed to asthma triggers** in their home in the previous 12 months:
 - 70% of respondents had pests (e.g. cockroaches, dust mites and mice).
 - 50% of respondents had mould or dampness.
 - 48% of respondents used a gas cooktop,
 - 13% of respondents used wood heaters, and
 - 7% of respondents used unflued gas heating.
- **Some population groups were also more likely to report greater exposure to triggers** in their homes than other respondents, including people with asthma and allergies, people with children, people living in social housing and Aboriginal and Torres Strait Islander people.
- **Many respondents reported the following barriers to reducing triggers within the home:**
 - Lack of autonomy over property. Half of respondents who rent or live in social housing said they were unable to protect themselves from cooking emissions, mould and pests because they do not own their home. They were frustrated with their landlord's lack of action and feared rent increases/eviction if they requested action.
 - Cost. One quarter of respondents said it is too expensive to purchase or use equipment, like air purifiers, to help reduce triggers while cooking or to tackle mould and pests.
 - Lack of concern or knowledge. 38% of respondents stated that they were not concerned about taking action to address a trigger/s and 18% reported that they do not know what to do to protect themselves against a trigger/s. This highlights the need for a public health approach to healthy housing, including improved regulations.

A HOLISTIC APPROACH

Asthma Australia supports holistic approaches to improving housing conditions. As set out in our [Housing and Asthma Position Statement](#), the housing features needed to reduce asthma risk and support broader health and wellbeing include adequate and appropriate ventilation, draught sealing, insulation, internal and external window shading, cooling and heating, and electric power sources. Collectively, these measures are likely to improve air quality and support thermal comfort. Conversely, housing modifications made in isolation can have unintended consequences that harm health. For example, draught proofing without improving ventilation and cooling concurrently may prevent the dispersal of air pollution, promote indoor airborne hazards such as mould, reduce thermal comfort during hot weather, and increase energy costs.

In addition, ensuring rental properties are equipped to keep people safe from heat should be a priority given climate change is increasing temperatures and heatwaves in Australia.⁷ To this end, electric room cooling appliances are required throughout rental properties, alongside low-cost measures that can keep homes cooler during hot weather and reduce the need for air conditioning. These measures include installing ceiling fans and window shading and screens so that residents can open windows and doors to cool their homes.⁸

Finally, a holistic approach to improving housing conditions requires the replacement of appliances that emit harmful pollutants, such as gas cooktops and gas and wood heaters, with efficient, electric alternatives to ensure healthy indoor air quality. Gas cooktops and gas and wood heaters emit harmful gases such as fine particulate matter and nitrogen dioxide into the home. Cooking with gas is estimated to be responsible for up to 12% of the childhood asthma burden in Australia. The electrification of all appliances in rental properties is essential to support health and wellbeing.

PROPOSED MINIMUM STANDARDS

Asthma Australia's response to the Proposed Standards focuses on measures that have the potential to impact asthma.

Would you support the above list of minimum standards being introduced in the ACT?

Asthma Australia supports the introduction of the measures listed as Proposed Standards in the Consultation Paper. However, as explained in more detail below, the measures do not have sufficient detail to ensure their consistent and adequate implementation and omit key minimum standards needed to ensure rental housing conditions support good health and wellbeing.

- **Lack of detail**

The Consultation Paper provides very little detail about the Proposed Standards, which is likely to lead to inconsistent application or a failure to apply the standards. Sufficient detail must be provided about each Proposed Standard so that landlords, agents and renters understand the specific requirements. The level of detail provided in the Proposed Standards also is likely to result in inadequate measures being implemented to improve housing conditions for renters. The ACT Government must specify the level of quality and type of fitting, appliance or material that must be used to meet each Proposed Standard. The recently proposed Victorian Minimum Rental Standards provide a good example of the level of detail that is needed.⁹

- **Failure to take a holistic approach**

As discussed above, a holistic approach to improving housing conditions is needed to minimise the many potential health risks in rental properties. A holistic approach to air quality and thermal comfort can also reduce unintended consequences from housing modifications made in isolation, such as sealing draughts without addressing ventilation needs (discussed in more detail in our response to the following question). The Proposed Standards do not include heating and cooling, a transition to electric-only home appliances or appropriate window coverings. These minimum standards, together with greater detail on the Proposed Standards, would holistically improve health outcomes and avoid unintended consequences. We note that these areas are covered in the Consultation Paper under 'Other Property Condition Requirements' and we strongly recommend inclusion of these measures as minimum standards.

RECOMMENDATION 1: Ensure that the Proposed Standards provide an adequate level of detail so that landlords, renters and agents can share a consistent understanding of them, thereby enabling their effective implementation and monitoring.

RECOMMENDATION 2: Take a holistic approach to improving rental property conditions by including heating and cooling, energy efficient appliances and thermal efficient window coverings in the Proposed Standards alongside measures to improve draught proofing, ventilation and mould and damp.

Which standards would you support and why?

Asthma Australia supports the Proposed Standards on Draught Proofing, Ventilation, Windows-flyscreens, and Mould and Damp.

Draught proofing can minimise the infiltration of outdoor airborne hazards into homes, increase thermal comfort during cold weather and reduce energy costs. This is particularly important for individuals with asthma whose symptoms are triggered by air hazards from outdoor sources such as bushfire and wood heater smoke, pollen and dust, as well as temperature extremes. However, in the absence of adequate ventilation, increasing home air tightness can worsen indoor air quality, for example, by promoting mould growth and preventing the dispersal of pollution from indoor sources, such as gas cooktops, gas and wood heaters. Increasing air tightness can also increase indoor heat during hot weather.¹⁰ These airborne hazards and heat are triggers for asthma symptoms. **Asthma Australia therefore supports the inclusion of Standards for both Draught Proofing and Ventilation, noting that these Standards must be rolled out concurrently.**

However, while some detail is provided about what is expected under the Standard for Draught Proofing, the Standard for Ventilation just states that ventilation must be ‘adequate’ in all habitable rooms in rental properties. **We would like to see further detail about the ventilation requirements**, which should include installing ceiling fans,¹¹ rangehoods in kitchens, and exhaust fans in bathrooms and laundries. Rangehoods in kitchens should be fitted above all types of cook tops as the cooking process generates significant pollutants harmful to human health.¹² Gas cooktops are particularly harmful and cooking with gas is estimated to be responsible for up to 12% of the childhood asthma burden in Australia.¹³ Rangehoods vented to the outside are more effective at removing cooking pollutants than recirculating rangehoods and should be fitted as a preference to recirculating rangehoods, where possible.¹⁴ Additionally, as a key low-cost, high-impact ventilation measure, the Proposed Standard for Windows - flyscreens should also require fitting screens to doors, as well as windows.

Mould can worsen a range of respiratory conditions, including asthma.¹⁵ Mould produces tiny spores that can be easily inhaled and can irritate airways or trigger an allergic response, leading to asthma flare-ups and a range of other and potentially serious health issues. Mould can grow anywhere but is particularly common in older, damp and poorly ventilated homes or after periods of heavy rain. It is very common in bathrooms and damp areas like around showers, sinks and leaky pipes and after flooding. Consumer research by Asthma Australia in 2022 found that 50% of respondents had mould or dampness in the last 12 months, and that most respondents took action to reduce their exposure to mould in their homes. In addition, climate change is increasing extreme weather events and conditions that promote mould growth in our homes.¹⁶ While **Asthma Australia would therefore support in principle the Proposed Standard for Mould, more detail is needed to support its effective implementation.** For example, the Proposed Standard excludes ‘mould and damp caused by the tenant’ but it is not clear if landlords will need to provide rental properties with the additional features (e.g. extractor fans or windows that open in bathrooms or laundries) for renters to be able to effectively manage mould issues. Given the link to **adequate ventilation in the prevention of mould growth**,¹⁷ we also reemphasise the importance of the Proposed Standard for Ventilation and the need to provide further detail about what ‘adequate’ means within the Standard to ensure it can be effectively implemented by landlords and agents.

RECOMMENDATION 3: Roll out the implementation of the Standard for Draught Proofing and Ventilation concurrently.

RECOMMENDATION 4: Detail the requirements for ‘adequate ventilation’ in the Proposed Standard for Ventilation, including ceiling fans, flyscreens on doors and windows, rangehoods in kitchens (vented to outside where possible) and exhaust fans in bathrooms and laundries.

RECOMMENDATION 5: Optimise low-cost ventilation by making the Proposed Standard for Windows-flyscreens, a Proposed Standard for Windows and Doors, thereby requiring doors in rental properties to be fitted with flyscreens also.

If the list of minimum standards were to be introduced, do you think that any of them should be subject to exemptions?

Asthma Australia has serious concerns about the Consultation Paper’s proposed approach to dealing with airborne hazards produced by flued gas space heaters and open flued gas cooking appliances¹ of exempting properties with these appliances from the Proposed Standard for Draught Proofing. Unintentional draughts in rental properties do not provide adequate protection from the health risks of gas appliances and should not be relied upon to keep people safe (please see our response to the previous question relating to ventilation and draught proofing, and ventilation and the importance of fitting rangehoods above all cooktops, particularly gas cooktops).

Cooking with gas is a significant source of household air pollution. Gas cooktops produce a variety of air pollutants, including fine particulate matter, nitrogen dioxide, carbon monoxide, and formaldehyde. Similarly, gas heaters produce a variety of harmful air pollutants. Exposure to the pollutants produced by gas cooktops and heaters can trigger asthma flare-ups and contribute to the development of asthma. Cooking with gas is estimated to be responsible for up to 12% of the childhood asthma burden in Australia.¹⁸ Rather than providing an exemption to the Proposed Standard for Draught Proofing for rental properties with flued gas space heating and open flued cooking appliances, the minimum standards should require the removal of all gas appliances in rental homes.

RECOMMENDATION 6: Do not provide an exemption from the Proposed Standard for Draught Proofing for rental properties with an existing flued gas space heater or an open flued gas appliance (including cooking appliances without range hoods) and instead ensure the minimum standards require the removal of all gas heating and cooking appliances from all rental properties in the ACT.

Would you suggest any different or additional minimum standards being introduced? If so, what standards would you propose and why?

There should be a minimum standard for heating and cooling. Noting that the Consultation Paper refers to these areas under ‘Other Property Condition Requirements’, we set out why these minimum standards are needed and what they should consist of in response to the questions posed in ‘Other Property Condition Requirements’.

¹ Defined in the Regulatory Impact Statement as not having a rangehood.

OTHER PROPERTY CONDITION REQUIREMENTS

Do you think the ACT should introduce a minimum standard which requires rental properties to have a fixed heater and cooler (or reverse cycle air conditioner) in the main living area of a rental property (with appropriate exemptions for circumstances where this may not be feasible)?

Asthma Australia supports the introduction of a minimum standard for heating and cooling, which would include measures to improve thermal comfort in rental homes. Both cold and hot temperatures can trigger symptoms in people with asthma.¹⁹ Reducing heat in homes is becoming more important as climate change is increasing temperatures and heatwaves in Australia.²⁰ Research by Better Renting has found people living in rental properties and people on low incomes are particularly exposed to the harmful health effects of heat and face barriers to improving the thermal comfort of their homes.²¹ Other research has found that renters in Australia are exposed to temperatures below the level considered healthy by the World Health Organisation in winter, and above the healthy limit in summer.²² Having a comfortable indoor environment at home is particularly important during extended periods of poor air quality, such as bushfire smoke events, as extreme heat can amplify the adverse effects of air pollution on health.²³

However, a requirement for a fixed heater and cooler (or reverse cycle air conditioner) in the main living room alone is not adequate and would likely leave many rooms in rental properties exposed to unhealthy temperatures, including bedrooms.² Hot temperatures adversely affect sleep, which can lead to a range of adverse health and wellbeing outcomes.²⁴ Adequate requirements for efficient heating and cooling appliances in rental properties are particularly important for large families or people in shared houses who have limited space to escape the heat or cold. **Asthma Australia recommend that all habitable rooms of rental properties should be required to be fitted with a fixed heater and cooler.**

Should the ACT introduce energy efficiency requirements for any heaters, coolers and hot water heating systems at rental properties? Why/Why not?

Energy efficiency and affordability must be key considerations for the type of heating and cooling appliances and hot water systems required in rental homes to ensure that renters can afford to run them. We know that many renters are unable to use costly appliances with, for example, research by Sweltering Cities finding that 72% of renters reported concerns about costs stopping them from turning on their air conditioner.²⁵ In addition, inefficient energy sources, such as wood and gas,²⁶ are harmful to health. The risks of gas to human health, as discussed previously in relation to our response to the question on exemptions, support a requirement in the Proposed Standards to remove all gas appliances from rental properties. Their relative inefficiency to electric appliances make the replacement of gas appliances even more important, while their complete removal would also result in an additional saving on the gas connection fee for renters.

Asthma Australia strongly supports the ACT's policy to phase out wood heaters by 2045. We recommend including a requirement to remove all wood heaters from rental properties in the minimum standards in line with this commitment. Wood heaters are an inefficient and, for most users, expensive form of heating.²⁷ Wood heater smoke contains harmful pollutants, including fine particulate matter and known carcinogens, with smoke polluting indoor air and the local neighbourhood.²⁸ Wood heater smoke can trigger asthma symptoms and flare-ups²⁹ and is also a risk factor for other respiratory illnesses, certain cancers, cardiovascular disease, premature birth

² This reflects our response to the same

and premature death.³⁰ Each wood heater is estimated to cause more than \$4,000 in annual health costs.⁸²

Asthma Australia therefore supports the introduction of energy efficiency requirements for heaters, coolers and hot water systems at rental properties, **which should include the replacement of all gas appliances and wood heaters with efficient electric alternatives** in all rental properties in the ACT to improve both health outcomes and energy efficiency.

If energy efficiency requirements for appliances are introduced, do you think they should:

- **apply as part of a minimum standard for the property after a certain date; or**
- **only be required for end-of-life replacement of items?**

Please provide reasons for the option you support.

Asthma Australia supports the introduction of energy efficiency requirements after a certain date to optimise the benefits in doing so in terms of health and environmental outcomes.

In view of the ACT's commitment to electrify, do you think landlords should be required to replace existing gas appliances (e.g. heaters, hot water heaters and cooking appliances) with electric appliances when the gas appliance reaches end of life (with appropriate exemptions when this may not be feasible e.g., unit complexes where the transition may be more complicated or expensive)?

To improve home health and energy efficiency and as indicated previously in our responses above, Asthma Australia supports a requirement to replace existing gas appliances, including heaters, hot water heaters and cooking appliances, with energy efficient electric appliances. This requirement should expect gas appliance replacement by a set date to ensure that all renters are able to benefit from this measure equally in terms of reduced health risk exposure and reduced energy costs (including the gas connection fee) and to optimise the reduction in greenhouse gas emissions derived from their removal.

RECOMMENDATION 7: Introduce minimum standards for heating and cooling in rental properties that require:

- a. The installation of efficient, electric heating and cooling appliances in all habitable rooms.**
- b. The installation of efficient, electric hot water systems.**
- c. The removal of all gas appliances by a set date and their future installation prohibited.**
- d. The removal of all wood heaters by a set date and their future installation prohibited.**

Should the ACT consider minimum standards for thermally efficient window coverings? Why/why not?

Asthma Australia supports the inclusion of minimum standards for thermally efficient window coverings. The ACT should consider the incomes of people who rent, and efforts should also be made to equip homes with affordable, high-impact measures to help keep homes cool and to

reduce the need to use air conditioning. To this end, the minimum standards should include appropriate internal and external window shading, which support thermal comfort and reduce energy costs.³¹ These could include window shutters, treatments and shades. External shutters are particularly effective at reducing heat,³² with a modelling study from the United Kingdom estimating that external shutters reduce heat-related mortality risk by 30-60%.³³

Other affordable, high-impact thermal comfort improvements include:

- **Ceiling fans**, which can reduce indoor heat and increase air movement, thereby reducing the need for air conditioning.³⁴
- **Flyscreens on windows and doors**, which enable renters to ventilate their homes and reduce indoor heat by reducing solar penetration.³⁵

RECOMMENDATION 8: Introduce a minimum standard for thermally efficient window coverings that include external shutters, where possible.

REFERENCES

- ¹ Prime Minister of Australia (2023) Meeting of National Cabinet – Working together to deliver better housing outcomes. Media Release. Available from: <https://www.pm.gov.au/media/meeting-national-cabinet-working-together-deliver-better-housing-outcomes#a2>
- ² Asthma Australia (2022). Homes, Health and Asthma in Australia. n=5,041. https://asthma.org.au/wp-content/uploads/2022/11/AA2022_Housing-Survey-Report_full_v4.pdf
- ³ ACT Justice and Community Safety Directorate. Minimum energy efficiency standards for rental homes. [Internet]. Available from: <https://www.justice.act.gov.au/renting-and-occupancy-laws/energy-efficiency-standards-for-rental-homes>
- ⁴ Available from: <https://yoursayconversations.act.gov.au/minimum-standards-rental-properties-and-occupancy-law-reform>
- ⁵ Ibid.
- ⁶ Institute of Medicine (2011). Climate Change, the Indoor Environment, and Health. <https://nap.nationalacademies.org/catalog/13115/climate-change-the-indoor-environment-and-health>
- ⁷ Intergovernmental Panel on Climate Change (2022). Sixth Assessment Report Working Group II – Impacts, Adaptation and Vulnerability; Fact sheet – Australasia: Climate Change Impacts and Risks <https://www.ipcc.ch/report/ar6/wg2/about/factsheets/>
- ⁸ See e.g. Alidoust S., Huang W. (2021). A decade of research on housing and health: A systematic literature review. *Rev Environ Health*. 38(1):45–64; Loughnan M., Carroll M., Tapper NJ. (2015). The relationship between housing and heat wave resilience in older people. *Int J Biometeorol*. 59(9):1291–8; Taylor J. et al. (2018). Comparison of built environment adaptations to heat exposure and mortality during hot weather, West Midlands region, UK. *Env Int*. 111:287–94; Kownacki K. et al. (2019). Heat stress in indoor environments of Scandinavian urban areas: A literature review. *Int J Env Res Public Health*. 16(4); Vardoulakis S. et al. (2015). Impact of climate change on the domestic indoor environment and associated health risks in the UK. *Env Int*. Dec;85:299–313; Fisk W.J. (2015). Review of some effects of climate change on indoor environmental quality and health and associated no-regrets mitigation measures. *Build Environ*. Apr;86:70–80.
- ⁹ Available from: <https://engage.vic.gov.au/new-minimum-standards-for-rental-properties-and-rooming-houses>
- ¹⁰ Gronlund C.J., Sullivan K.P., Kefelegn Y., Cameron L., O’Neill M.S. (2018). Climate change and temperature extremes: a review of heat- and cold-related morbidity and mortality concerns of municipalities. *Maturitas*. 2018;114:54–9.
- ¹¹ Sy I., Cissé B., Ndao B., Touré M., Diouf A.A., Sarr M.A., et al. (2019). Heat waves and health risks in the northern part of Senegal: analysing the distribution of temperature-related diseases and associated risk factors. *Env Sci Pollut Res Int*. 2022;29(55):83365–77; Swain S., Bhattacharya S., Dutta A., Pati S., Nanda L. (2019) Vulnerability and adaptation to extreme heat in Odisha, India: a community based comparative study. *Int J Env Res Public Health*. 2019 Dec 12;16(24).
- ¹² Guo, Z., Li, H., Feng, G., Huang, K., Yu, T. (2024). Analysis and research on inherent angle ventilation control of residential kitchen range hoods. *Energy and Built Environment*. Available from: <https://www.sciencedirect.com/science/article/pii/S2666123324000072>
- ¹³ Knibbs, W., Marks, C. (2018). Damp housing, gas stoves and the burden of childhood asthma in Australia. *MJA*. 208(7):299–302.
- ¹⁴ CHOICE. How to buy a rangehood that works. [Internet]. Available from: <https://www.choice.com.au/home-and-living/kitchen/rangehoods/buying-guides/rangehoods>
- ¹⁵ Mould, damp and the lungs. *Breathe* (Sheff). 2017 Dec;13(4):343-346. doi: 10.1183/20734735.ELF134.
- ¹⁶ The Australian Housing and Urban Research Institute (AHURI, 2021) Climate change and low-income housing. [Internet]. Available from: <https://www.ahuri.edu.au/research/brief/Climate-change-and-low-income-housing#:~:text=In%20areas%20expected%20to%20receive,proliferation%20and%20associated%20health%20impacts.>
- ¹⁷ Fisk W.J. (2015). Review of some effects of climate change on indoor environmental quality and health and associated no-regrets mitigation measures. *Build Environ*. Apr;86:70–80; Vardoulakis S et al. (2015).
- ¹⁸ Knibbs, W., Marks, C. (2018). Damp housing, gas stoves and the burden of childhood asthma in Australia. *MJA*. 208(7):299–302.
- ¹⁹ Han A., Deng S., Yu J., Zhang Y., Jalaludin B., Huang C. (2023). Asthma triggered by extreme temperatures: From epidemiological evidence to biological plausibility. *Environ Res*. 2023 Jan 1;216(Pt 2):114489. doi: 10.1016/j.envres.2022.114489. Epub 2022 Oct 5.
- ²⁰ Intergovernmental Panel on Climate Change (2022). Sixth Assessment Report Working Group II – Impacts, Adaptation and Vulnerability; Fact sheet – Australasia: Climate Change Impacts and Risks. Available from: <https://www.ipcc.ch/report/ar6/wg2/about/factsheets/>
- ²¹ See e.g. Better Renting (2024). Cruel Summers. N=109 Available from: https://assets.nationbuilder.com/betterrenting/pages/469/attachments/original/1710468131/Cruel_Summers_SRR24_v1.2_embargoed_to_March_19.pdf?1710468131; Barrett B et al (2023). Sweaty and Stressed: Renting in an Australian Summer. Available from: https://assets.nationbuilder.com/betterrenting/pages/364/attachments/original/1677534064/Sweaty_and_Stressed_v1.4.2.pdf?1677534064

- 22 See e.g. Better Renting (2024). Cruel Summers; Barrett B et al. (2023). Power Struggles: Renting in Winter. Available from: https://drive.google.com/file/d/103Mw5mO8fM8QGGV_GER2n8tlqYTNZDID/view;
- Barrett B et al. (2023). Sweaty and Stressed: Renting in an Australian Summer. Available from: https://assets.nationbuilder.com/betterrenting/pages/364/attachments/original/1677534064/Sweaty_and_Stressed_v1.4.2.pdf?1677534064; Barrett B. (2022). Cold and costly: Renter Researchers' Experiences of Winter 22. Available from: https://assets.nationbuilder.com/betterrenting/pages/345/attachments/original/1661403951/Cold_and_costly_-_Winter_Renter_Researchers.pdf?1661403951
- 23 Vardoulakis S et al. (2015).
- 24 Minor, K., Bjerre-Nielsen, A., Jonasdottir, S.S., Lehmann, S., Obradovich, N. (2022) Rising temperatures erode human sleep globally. *One Earth*, Volume 5, Issue 5, 2022, 534-549. doi.org/10.1016/j.oneear.2022.04.008.
- 25 Sweltering Cities and Healthy Homes for Renters (2022). Summer Survey 2022 Report. n=2,147. Available from: <https://swelteringcities.org/wp-content/uploads/2022/04/FINAL-Summer-Survey-2022-Report.pdf>
- 26 CHOICE (2022). The most eco-friendly heating options. Keep your home warm without cooking the planet. [Internet]. Available from: <https://www.choice.com.au/home-and-living/heating/home-heating/articles/most-eco-friendly-heating-options>
- 27 CHOICE (2023). How wood fires compare to other forms of heating. [internet] Available from: <https://www.choice.com.au/home-and-living/heating/home-heating/articles/should-you-switch-from-a-wood-fired-heater>; CHOICE (2023). What's the cheapest way to heat your home this winter? Available from: <https://www.choice.com.au/home-and-living/heating/home-heating/articles/what-is-the-cheapest-way-to-heat-your-home-this-winter>
- 28 Australian Department of Climate Change, Energy, the Environment and Water (2023). Wood heaters and woodsmoke. Available from: <https://www.dceew.gov.au/environment/protection/air-quality/woodheaters-and-woodsmoke#:~:text=Woodsmoke%20contains%20a%20range%20of,particulates%20and%20formaldehyde%2C%20are%20carcinogenic>.
- 29 Australian Government Department of Health (2018). National Asthma Strategy 2018. Available from: <https://www.health.gov.au/resources/publications/national-asthma-strategy-2018>.
- 30 Australian Government Department of Agriculture, Water and the Environment (2005). Wood heaters and Woodsmoke. [Internet]. Available from: <https://www.environment.gov.au/resource/woodheaters-and-woodsmoke>; Borchers-Arriagada N et al. (2020). Health Impacts of Ambient Biomass Smoke in Tasmania, Australia. *International Journal of Environmental Research and Public Health*. 17(9): 3264. Bothwell, J.E., Mcmanus, L., Crawford, V. L. S., Burns, G. Stewart, M.C., Shields, M.D. (2003) Home heating and respiratory symptoms among children in Belfast, Northern Ireland, *Archives of Environmental Health: An International Journal*, 58:9, 549- 553; Naeher, L. et al (2007) Woodsmoke Health Effects: A Review, *Inhalation Toxicology*, 19:1, 67-106.
- 31 Australian Department of Climate Change, Energy, the Environment and Water. Hot Arid Living. [Internet]. Available from: <https://www.energy.gov.au/households/household-guides/energy-saving-guide-northern-australia/hot-arid-living>
- 32 Kownacki KL, Gao C, Kuklane K, Wierzbicka A (2019).
- 33 Taylor J, Wilkinson P, Picetti R, Symonds P, Heaviside C, Macintyre HL, et al (2018). Comparison of built environment adaptations to heat exposure and mortality during hot weather, West Midlands region, UK. *Env Int*. 2018 Feb;111:287–94.
- 34 See e.g. Alidoust S, Huang W. (2021). A decade of research on housing and health: A systematic literature review. *Rev Environ Health*. 38(1):45–64.
- 35 See e.g. Sailor DJ, Anand J, Kalkstein L. (2021). Potential overall heat exposure reduction associated with implementation of heat mitigation strategies in Los Angeles. *Int J Biometeorol*. 2021 Mar;65(3):407–18.