

Heatwaves, Homes & Health

Why household vulnerability to extreme heat is an electricity policy issue

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Heatwaves and extreme heat are a significant risk to household health. As electricity costs rise, more households are experiencing difficulty paying energy bills. Householder concerns about energy bills already contribute to self-rationing of heating and negative outcomes for health and wellbeing in cold weather.

During hot weather, the electricity sector aims to reduce peak electricity demand via 'price signals' – higher prices for electricity used at times when many households use air conditioning to cool their homes. To manage the risk of electricity outages at peak times, public messages to reduce consumption are also used.

Little is known about how current electricity costs and messaging impact heat vulnerable households, or how pricing reforms could affect health outcomes during hot weather. The Heatwaves, Homes & Health project sought to address this knowledge gap. The role of electricity costs, price signals and messaging in shaping household cooling practices and strategies during extreme heat, and outcomes for health and wellbeing were investigated.

The full report from this research is available at [online](#).

The project aimed to:

- provide evidence regarding potential financial and health implications of electricity pricing and messaging for heat vulnerable households;
- build knowledge among advocates and industry decision makers; and
- develop strategies to help minimise adverse outcomes for households.

The project was conducted in three stages:

Stage 1 – A critical review of energy sector cost-reflective pricing documents to identify current engagement with household vulnerability, particularly during and as a result of extreme heat. See [Electricity pricing, heatwaves and household vulnerability in Australia](#) briefing paper.

Stage 2 – Research with 'key informants' from health and social services sector who work with heat vulnerable households.

Stage 3 – Research with households who may be more at risk in hot weather.

Methodology

The mixed methods project was conducted between December 2016 and September 2017. The research activities and locations are summarised below. All health data were self-reported.

Key informant research

Key informants: people who work in health and social service agencies assisting households with occupants who may be vulnerable to heat

- Online survey about heat and financial vulnerability in client households (52 responses)
- 18 in-depth interviews

Household research

Householders: (65+ years) and parents of infants (<2 years old)

- 36 in-home interviews with 42 participants
- Including households with chronic illnesses
- Including 25 (70%) low-income households

Cairns, Qld

Medium-sized, tropical coastal city
Climate Zone 1

Hot weather throughout year, including 5 months with average highs around 31°C. Typically high relative humidity adds to thermal stress.

Dubbo, NSW

Small inland city
Climate Zone 4

Average summer high is about 32°C. Area prone to extreme dry heat: In the 2016-17 summer 49 days reached over 35°C, 14 days were over 40°C (highest 46°C).

Melbourne, Vic

Large coastal capital city
Climate Zone 6

Average summer high is about 25°. Occasional periods of extreme heat with highs over 35°C (and less often 40°C). Hot nights during heatwaves add to thermal stress.

Key Findings & Implications

These findings refer specifically to the heat vulnerable households targeted by our research.

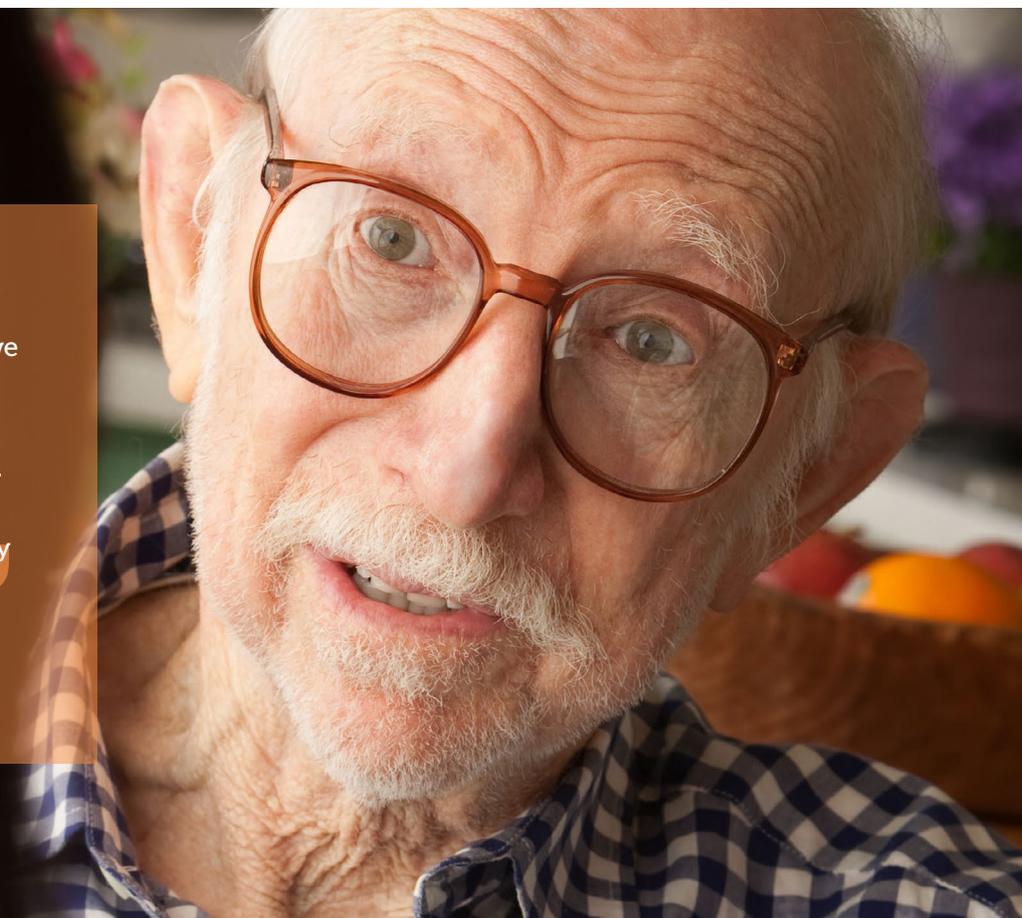
Exposure to heat and health impacts

- **Households living in poor quality housing have limited capacity to reduce their exposure to extreme heat – particularly renters.**
 - Poor quality housing exacerbates discomfort and potential health risks during extreme heat.
- **What's 'hot' differs between climate zones.**
 - Differences in experiences of heat between regions are important for understandings of vulnerability and equitable energy policy.
- **Older households may underestimate their own vulnerability in extreme heat despite experiencing health and wellbeing impacts.**
 - Underestimation of own vulnerability increases the risk of adverse health outcomes.
- **Chronic health conditions exacerbate the impacts of extreme heat and reliance on air conditioning.**
- **Staying home in very hot housing can exacerbate vulnerability during extreme heat.**
- **Leaving the home to seek cooler places may not be viable and can exacerbate financial vulnerability, but can also have co-benefits.**
 - Both staying at home and leaving the home present health and financial risks for some households.

Practices to manage the heat at home

- **Parents' understandings of their infants' vulnerability contribute to a reliance on air conditioning.**
- **Concern about high electricity bills contributes to potentially unhealthy self-rationing, particularly in older households.**
 - Unhealthy self-rationing of air conditioning and fan use is likely to be exacerbated by rising electricity costs.

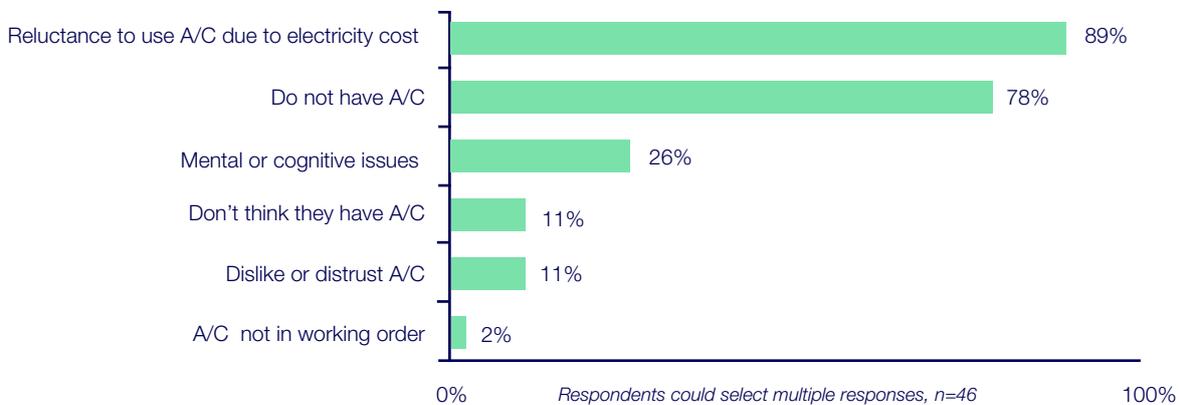
- 11/16 older household participants who had air conditioning severely restricted or carefully managed use due to electricity costs.
- 88% of key informant survey respondents were 'aware of at risk clients that do not use air conditioners during heatwaves' and electricity cost was the main reason.
- Half of key informants were also aware of clients who did not use fans during heatwaves and electricity cost was the main reason.
- Most key informants were aware of households experiencing adverse physical health impacts and/ or declining mental health, as a result of restricting use of fans or air conditioning.



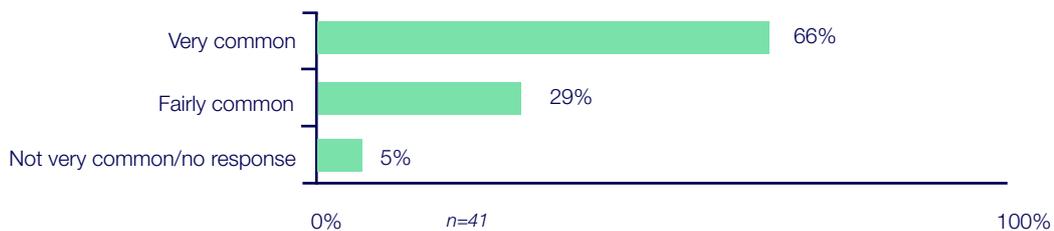
“We were brought up that way that we save money whenever we can... the government is telling us to do something which will save energy and electricity and... save us money too, we tend to do it without thinking necessarily about our health.”

Householder

Main reasons survey respondents' clients do not use air conditioning during heatwaves



How common is it for electricity costs to contribute to client reluctance to use air conditioning?



- **Households rarely rely on air conditioning alone to stay cool.**
→ Low-/no energy practices can be under- or over-utilised in households and can both alleviate or contribute to financial or health risks.
- **Ceiling fans reduce discomfort in hot weather and reliance on air conditioning.**
- **Caring for pets in hot homes can increase air conditioning reliance.** Half of the households with pets said they left the air conditioning on exclusively for their pets.

Financial and health considerations for energy policy

- **Households are struggling to pay high electricity bills associated with air conditioning use.**
→ Tariff changes that result in higher bills for financially constrained households who rely on air conditioning will exacerbate existing financial stress.

- 14/36 households interviewed were financially stressed and 9 of these were either behind on their bills or on energy hardship programs.
- Three quarters of key informant survey respondents said it was either 'very common' (34%) or 'fairly common' (41%) for households to be experiencing financial stress as a result of using air conditioning for health and wellbeing reasons.

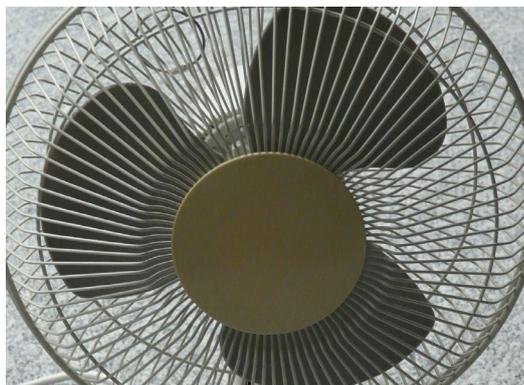
- **Financial stress associated with high electricity bills is impacting household wellbeing.**
- **Medical cooling concession arrangements are not sufficiently addressing the health and financial risks for those reliant on air conditioning.**
- **Peak pricing is likely to exacerbate unhealthy self-rationing of air conditioning and fans in some households.**
→ Peak pricing is likely to encourage demand responses which could be detrimental for household health but not necessarily of significant help to the electricity grid at peak times (because the households who are most likely to respond are already conservative with energy use).
- **Peak pricing is unlikely to substantially impact air conditioning use in households who consider it integral to daily life (regardless of the financial impact).**
→ Peak pricing is unlikely to encourage a substantial demand response from higher users of air conditioning and may exacerbate financial hardship for some of these households.
- **Household responses to peak demand issues and public messaging are undermined by distrust and confusion arising from recent public debates about energy issues in Australia.**
→ Households' trust and fairness concerns limit the effectiveness of public messaging and current demand management initiatives.
- **Some of the most vulnerable people may further restrict cooling in response to public messaging to reduce electricity use in extreme heat.**
→ There are risks associated with public messaging that does not differentiate between differing health needs for cooling.
- **Electronic billing and direct debit arrangements may further reduce household engagement with energy bills and communications.**
→ Technological shifts to electronic billing and direct debit payment may undermine energy literacy aims and potentially compromise outcomes for households and the energy sector.
- **Culturally and linguistically diverse (CALD) households have diverse responses to extreme heat and face extra challenges navigating electricity costs and tariff reform.**
→ CALD communities are likely to face additional challenges when navigating extreme heat, cost-reflective pricing and public messaging. These challenges are insufficiently understood.

Recommendations

Mitigating the impact of future heatwaves on household health is a complex social problem which calls for cross-sectoral policy attention. The Heatwaves, Homes & Health study focused on the role of electricity policy and demand management in heatwave vulnerability.

Most of these recommendations require the electricity sector to engage and collaborate with other relevant sectors and jurisdictions, particularly the housing, urban planning, community development and health sectors. Engagement with households, communities and other sectors is also necessary to build trust, identify widely acceptable approaches, and build support for, and productive responses to, demand management initiatives.

Further discussion on these recommendations, along with suggested programs and actions needed to implement them, are provided in the main report.



Messaging about hot weather and electricity

1. Consistently embed messaging about health inequities in public communications about hot weather peak demand and electricity conservation.
2. Promote climate-appropriate low-/no energy ways to stay cool and minimise messaging that positions air conditioning as a necessity regardless of age and health.
3. Raise public awareness regarding the role of peak demand and household air conditioning in contributing to electricity price rises.

Cost-reflective pricing and alternatives to tariff-based demand management in extreme heat

4. Expand understandings of vulnerability in energy policy and explicitly include heat vulnerability as a key consideration in hot weather demand management strategies.
5. Develop a strategy to minimise adverse health and financial outcomes on heat vulnerable households as a result of cost-reflective pricing.
6. Ensure medical cooling concessions are able to assist people with a range of heat health needs – both in terms of eligibility and accessibility.
7. Undertake research into the impacts of electronic billing and direct debit on household engagement and tariff understandings.
8. Prioritise demand initiatives that are less likely to have adverse health and financial impacts on heat vulnerable households.
9. Collaborate with state and local governments to engage communities and develop local demand and supply solutions.
10. Increase access to cool public places and conduct research into the needs and delivery of heat refuges.





Housing stock, appliances and retrofits

11. Improve housing quality and energy efficiency for heat vulnerable households, including strategies for public and private rental housing.
12. Integrate heat vulnerability assessments into existing housing programs and services such as energy efficiency assessments and public housing maintenance inspections.
13. Improve access to home air conditioning for households in extreme circumstances e.g. poor quality public housing, elderly and frail residents, chronic conditions exacerbated by extreme heat.

Integrating energy into health service-based approaches

14. Increase capacity of health and community organisations to deliver hot weather reminders and welfare checks for heat vulnerable households.
15. Develop resources which raise awareness of healthy and energy efficient ways to stay cool.
16. Upskill service providers in energy efficiency and heat health.



Many people will use the air conditioning but then have to deal with the stress of not being able to keep up with their bills. I have seen some parents with children with medical conditions impacted by heat so they won't let their children suffer. They then deal with the stress of the financial cost.

Key Informant



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