



Making sense of the numbers

Energy wellbeing indicators in Aotearoa New Zealand

A quick look at the numbers

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Energy wellbeing indicators

In 2021, the Ministry of Business, Innovation and Employment (MBIE) opened submissions for consultation on defining energy hardship in Aotearoa New Zealand. MBIE intends to take a wellbeing approach, where households' energy hardship is defined as poor energy wellbeing. This report examines data from the 2018 census, the 2018 and 2021 General Social Survey (GSS), and findings from recently published studies to identify evidence to show how households in Aotearoa New Zealand are measuring on energy wellbeing. The report goes on to discuss the implications of poor energy wellbeing on communities.

Health and comfort come at a high price when incomes are stretched

Energy hardship takes many forms across different types of households and families. A house without adequate insulation often needs to keep its heaters on full-blast all night to maintain a healthy temperature. This presents a dilemma for many households: crank up the heat and dehumidifiers to curb cold, mould and dampness, or try to save money by not using heating when incomes are stretched.

The truth is, insulation in the roof and floor, a strong heater accompanied by wall heaters in rooms, and no 'unreasonable' holes or gaps are not enough to make a home healthy. MBIE has proposed energy wellbeing is when "Individuals, households and whānau are able to obtain adequate energy services to support their wellbeing in their home or kāinga".¹

Currently, the Healthy Homes Standards, the Warm Kiwi Homes programme, the Māori and Public Housing Renewable Energy Fund, and the Winter Energy Payment are the flagship interventions designed to address energy hardship in Aotearoa New Zealand.

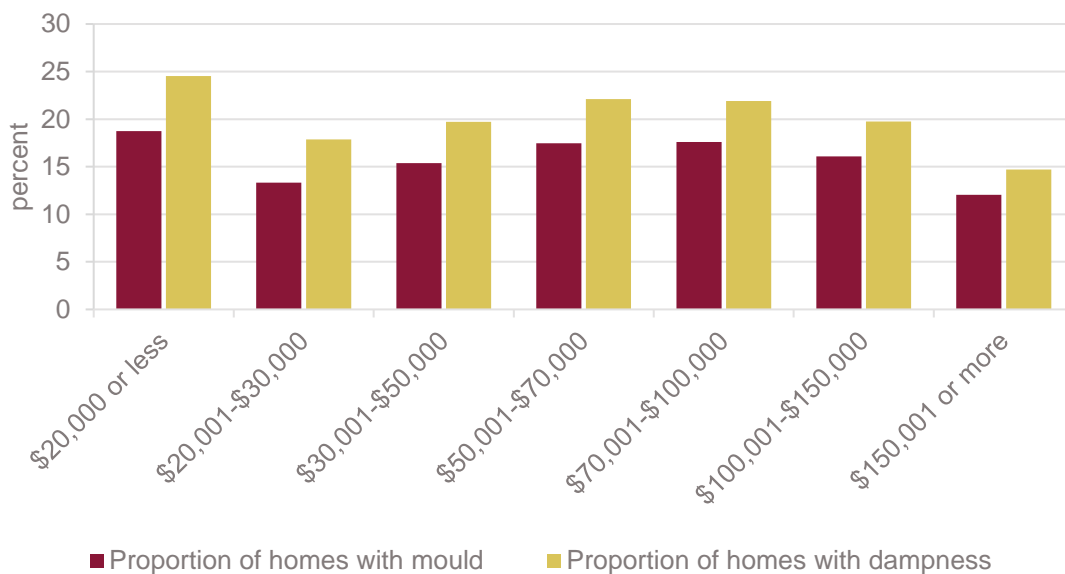
Mould and dampness are not just a problem for low-income households – Census 2018

Mould and dampness in Kiwi households was measured, for the first time, in the 2018 census. The presence of mould and dampness indicate that a home is inadequately supporting its occupants' wellbeing, either through heating, insulation, ventilation, or weather-tightness. The census also measured these indicators by income, and what by kinds of heating the household used.

The results are surprising. As the graph below shows, mould and dampness are not just a problem for low-income households.

¹ MBIE, Defining energy hardship. <https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-hardship/defining-energy-hardship/>

Figure 1 - Proportion of homes with mould or dampness, by income group, 2018



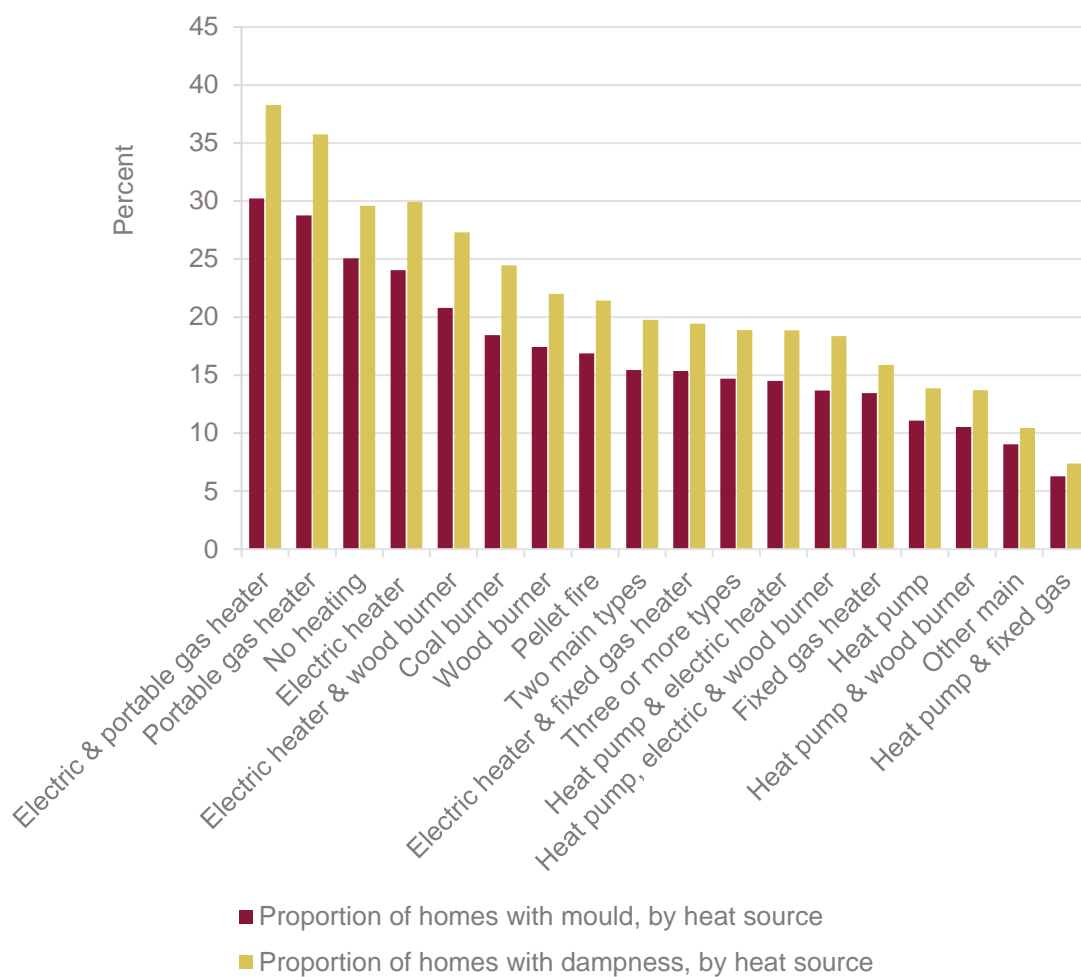
Source: Stats NZ

These results challenge the assumption that energy hardship is purely an income issue. While those who earned lower incomes experienced the highest rates of dampness and mould, middle income households came in a tight second. The proportion of high-income households experiencing mould or dampness is also remarkably large. Mould and dampness is a widespread problem in housing in New Zealand.

Portable heaters do little to improve living conditions

Figure 2 shows the proportion of homes with mould, by heat source. It is evident that portable electric and gas heaters are not effective in curbing mould and dampness. The most efficient heating sources, that also address mould and dampness, are heat pumps and fixed gas heaters.

Figure 2 - Proportion of homes with mould and dampness, by heat source, 2018



Source: Stats NZ

A lack of any heating system is related to high levels of mould and dampness, but it is not the leader. Houses which rely on portable heaters show the highest levels of mould and dampness. The effectiveness of fixed heat sources that use outside air, such as heat pumps, is evident as these systems provide ventilation as well as heating.

Electric heaters are poor at preventing mould and dampness, even though a heater screwed onto a wall is often regarded by landlords as a fixed heat source. In addition, wood and coal burners are also inadequate for addressing the problem.

This data is from 2018, so it was collected before the Healthy Homes Standards and Warmer Kiwi Homes scheme were rolled out. It should be noted that it also does not measure the insulation of homes, or their ventilation methods.

Only half of homes are warm enough - 2021 Wellbeing survey

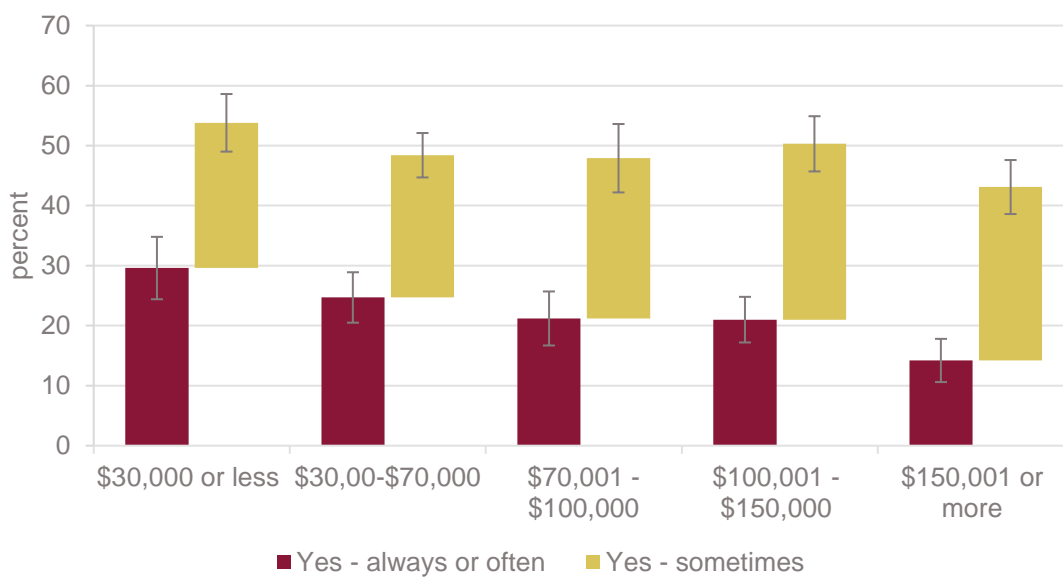
Crucially, the census did not measure if the respondents were able to adequately heat their household. The 2018 General Social Survey (GSS) did, however, and the results indicate that only 47.4 percent of households felt that their home was warm enough during winter.

The results from the 2021 GSS showed that conditions have not improved much. 49.1 percent of households felt their home was warm enough during winter, a measly 1.7 percent increase from 2018. 35.5 percent of households indicated their house was at least sometimes damp, and 35.2 of households indicated their house was mouldy. On both indicators, households that rent were more likely to be damp or mouldy than owner-occupied households. The GSS also sheds more light onto households that are most affected by energy hardship, and who is most likely to be experiencing energy hardship.

The following graphs examine the findings of the 2021 GSS in more detail. It is important to note that the sample size for the 2021 GSS was smaller than the 2018 GSS, due to the impact of COVID-19 containment measures. Error bars have been included in the graphs to represent this limitation: the smaller the sample, the larger the variation.

Figure 3 shows the effect of income on potential energy hardship. Low-income households experienced the highest rates of feeling cold, but similarly to the census results, feeling cold was not only concentrated in low-income households, but prevalent across all incomes. The rate of feeling cold always or often was above 20 percent for households earning between \$100,001 and \$150,000 a year.

Figure 3 - House is too cold during winter, by income group, 2021



Source: Stats NZ

Figure 4 shows households that were renting (not owner-occupied) reported much higher rates of experiencing a cold home most and some of the time, than owner-occupied homes. Homes that were crowded (less bedrooms than occupants) reported the highest rate of sometimes too cold. However, due to sample size, crowded homes possessed more variability than the other tenure types.

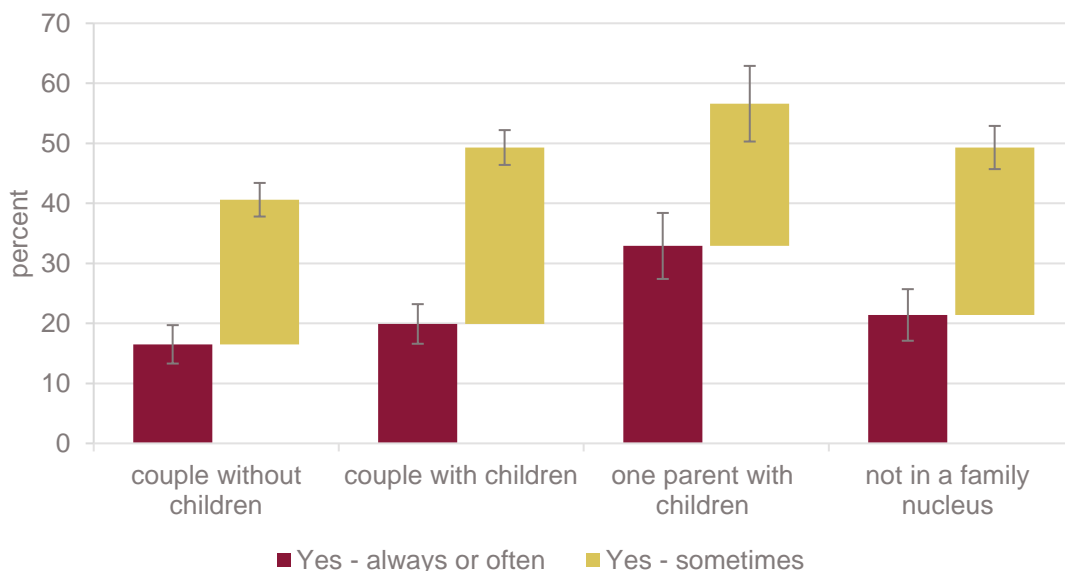
Figure 4 - House is too cold during winter, by housing tenure, 2021



Source: Stats NZ

Figure 5 shows that households with children were likely to be vulnerable to cold homes. Families where children were being raised by a single parent reported the highest rates of homes always or often being too cold during winter.

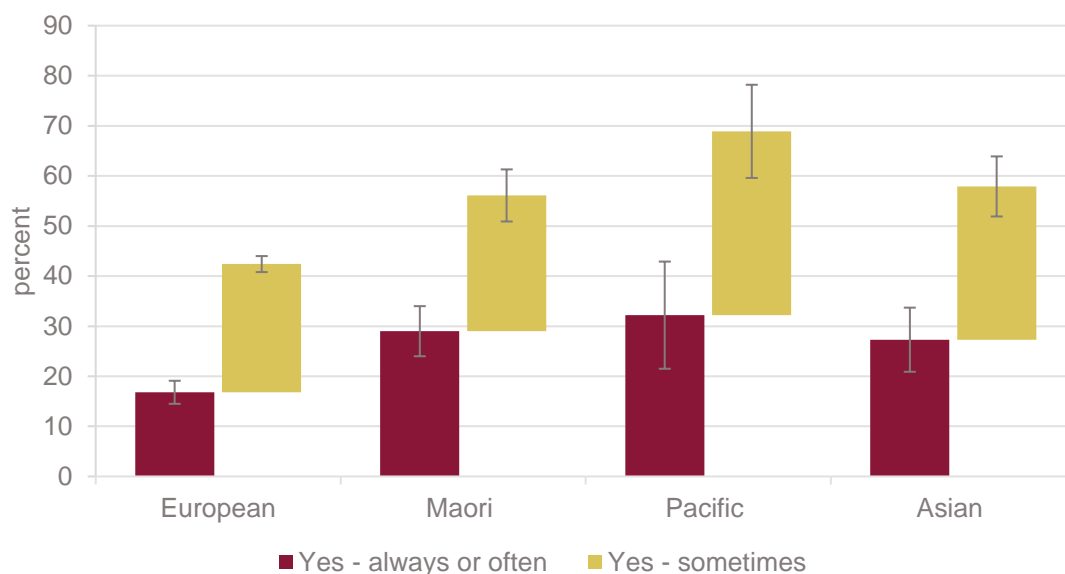
Figure 5 - House is too cold during winter, by family type, 2021



Source: Stats NZ

Figure 6 displays the ethnic dimensions of the cold homes problem. Māori and Pacific households reported the highest levels of cold homes, although Pacific responses possessed high variability. Well over 20 percent of Māori households reported their home was too cold during winter always or often.

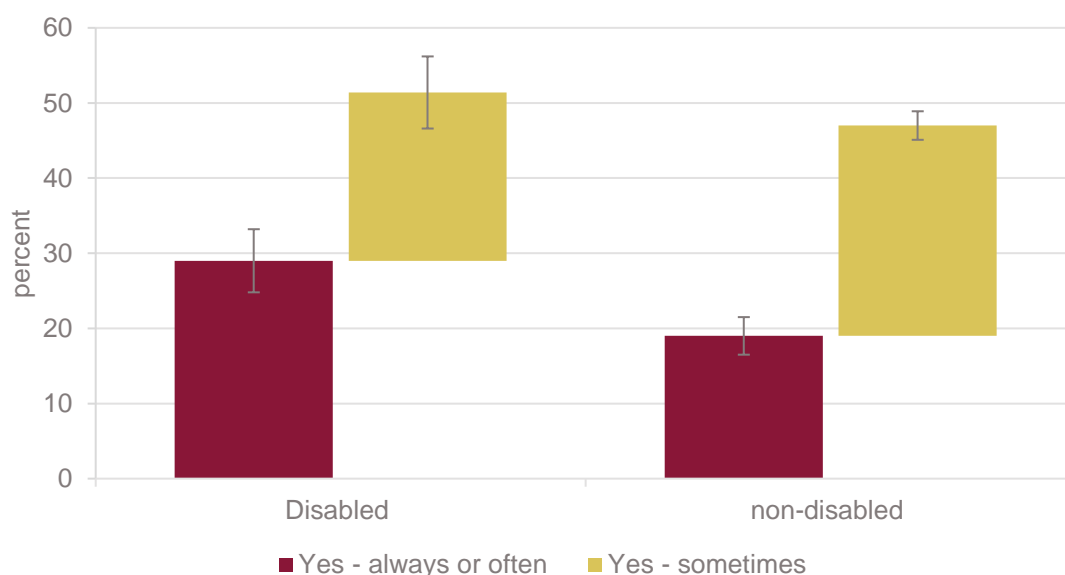
Figure 6 - House is too cold during winter, by ethnicity, 202



Source: Stats NZ

The final dimension from the 2021 GSS of note was the significant difference between disabled and non-disabled respondents, shown in Figure 7. While non-disabled respondents reported their house was sometimes too cold more than disabled respondents, disabled respondents reported their home was too cold always or often at a much higher rate. For classifying disabilities, the Washington Enhanced Set was used as a broad and detailed criterion.²

Figure 7 - House is too cold during winter, by disability status (Washington Enhanced Set), 2021



Source: Stats NZ

² WG Short Set on Functioning – Enhanced (WG-SS Enhanced) - The Washington Group on Disability Statistics (washingtongroup-disability.com)

Drivers and impacts of energy hardship

Various surveys and studies have been completed on energy hardship and wellbeing.

Aotearoa Housing Survey

The Aotearoa Housing Survey, commissioned by Habitat for Humanity and AMI Insurance, was conducted in March 2022 by Camorra Research.³ The study surveyed a sample of 3,039 households in Aotearoa New Zealand to understand their behaviours and concerns surrounding heating and energy use. The results represent a concerning situation:

- 42 percent of respondents were worried about dampness
- 10 percent of respondents were concerned about significant mould
- 60 percent of respondents who were private renters were concerned that their home was too cold
- 39 percent of respondents used electric plug-in heaters to keep their homes warm
- 26 percent of respondents used a wood burner or open fire
- 33 percent of respondents stated their winter power bill was excessive
- 43 percent of respondents reported having both underfloor and ceiling insulation, but the majority had just one form of insulation.

Condition of owned and rented housing in Aotearoa New Zealand

This study, released in 2021 by White, Ferguson, Goodyear, and Saville-Smith, analysed the condition of owned and rented housing in Aotearoa New Zealand, which was drawn from the Pilot Housing Survey (PHS).⁴ The PHS finished in 2019, and was capable of being linked to the 2018 Census and General Social Survey. The analysis, published by the Population Association of New Zealand, found:

- 47.2 percent of houses had roofs in excellent or good condition, and they were more likely to be in better condition for houses that were occupied by owners
- Owner occupied houses were more likely to have better condition cladding than rented houses.
- Rented houses were more likely to have defects with windows, with 58.1 percent of rentals indicating at least one defect compared to 42.1 percent of owner-occupied houses.
- Blocked guttering was found in 17.5 percent of rented houses and 9.3 percent of owner-occupied houses
- 49.2 percent of houses had less than adequate levels of insulation in the roof space, and there was no difference between rented or owner-occupied houses on this measure
- 75.7 percent of houses were entirely single-glazed. Double glazing significantly improves the thermal performance of a house. Owner-occupied houses were twice as likely to be double glazed than rented houses
- 72.5 percent of houses lack any kind of ground moisture barrier
- Rented houses were more likely to have no heating measures, portable electric heaters, or fixed electric heaters (not heat pumps).

Higher power bills will add to increasing financial stress on households

The Department of Medicine and the Department of Public Health at Otago University examined what the impacts of energy hardship were in 2021, from the perspective of what it costs to achieve and maintain a healthy temperature in a child's bedroom.⁵ The study found that occupants do not prefer cooler temperatures, but that the issue is the inability to afford maintaining an adequately comfortable temperature in the home.

³ [Aotearoa Housing Survey - Habitat for Humanity New Zealand](#)

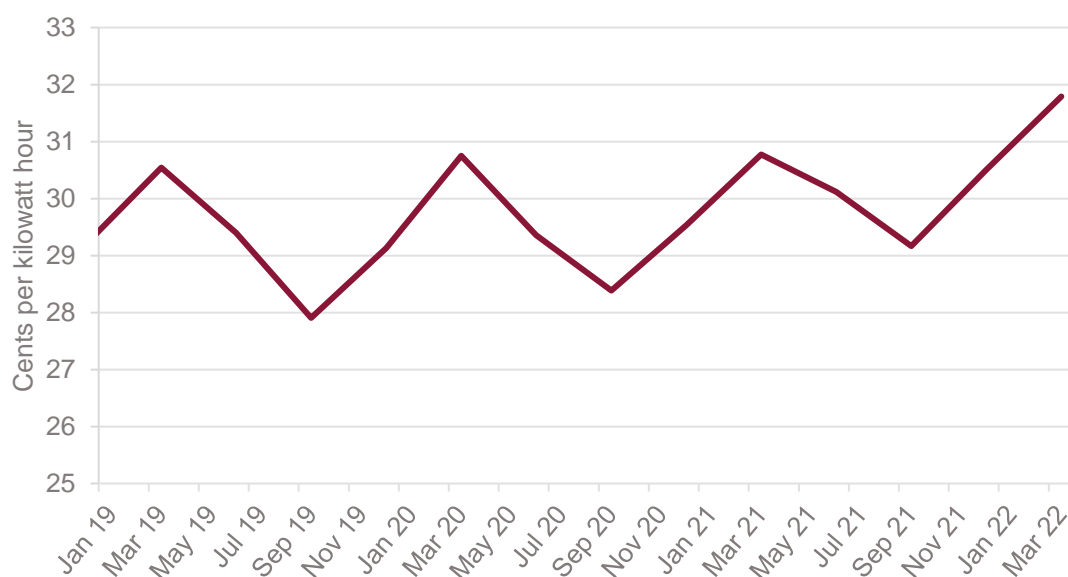
⁴ https://population.org.nz/wp-content/uploads/2021/08/White_etal_Condition_Owned_Rented_Housing.pdf

⁵ [The cost of achieving healthy temperatures in children's bedrooms: Evidence from New Zealand - ScienceDirect](#)

Using a cost of 32.2 cents per kilowatt hour, the average cost to heat a child-size bedroom was \$2.07 a day, or \$58 per month. The study also found that the current Winter Energy Payment rate (\$31.82 a week for people with dependent children) was not high enough to allow for heating the rest of the house, particularly for houses with multiple children’s bedrooms. As the results of the 2021 GSS point out, families with children reported higher rates of having a cold home.

Unfortunately, despite the Winter Energy Payment, heating the home will remain unaffordable for many households, especially with rising inflation eating into household budgets. Further, Figure 8 shows the rising price of electricity. Households paid more for electricity in the 2022 March quarter than in previous quarters. Of course, this rise was nominal, which means this increase does not consider the rise in inflation.

Figure 8 - Residential electricity cost 2019-2022



Source: MBIE

Conclusion

The findings from the census, surveys and research show that renters, low-income families with children, and households with inadequate heating systems will be hit the hardest in winter. While we do not have an official definition for energy hardship yet, it is evident that many households experience hardship heating their home.

The research presented in this article has shown that there are large and widespread problems with mould and dampness in people’s homes, and that a significant proportion of households simply cannot afford to heat their homes due to inadequate insulation, glazing, and heating systems. There is also a wider body of research that indicates mould and dampness in homes comes with a high health cost. There have been some programmes introduced by the government, but it will need a collective effort at many levels to address these problems, and it is likely to take many years for them to be resolved.

Resources that will help to improve the heating performance of homes can be found here: <https://genless.govt.nz/for-everyone/at-home/heat-and-cool-efficiently/heating-and-cooling-tips/>