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Energy Futures Public Forum

Dialling Down The Gas – Fair and
Affordable Electrification for Homes
and Businesses

30 August 2023





Presenters



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Laurence*



MODERATOR:
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Energy System Program Leader
Melbourne Energy Institute



Getting off gas

Why, how and who should pay

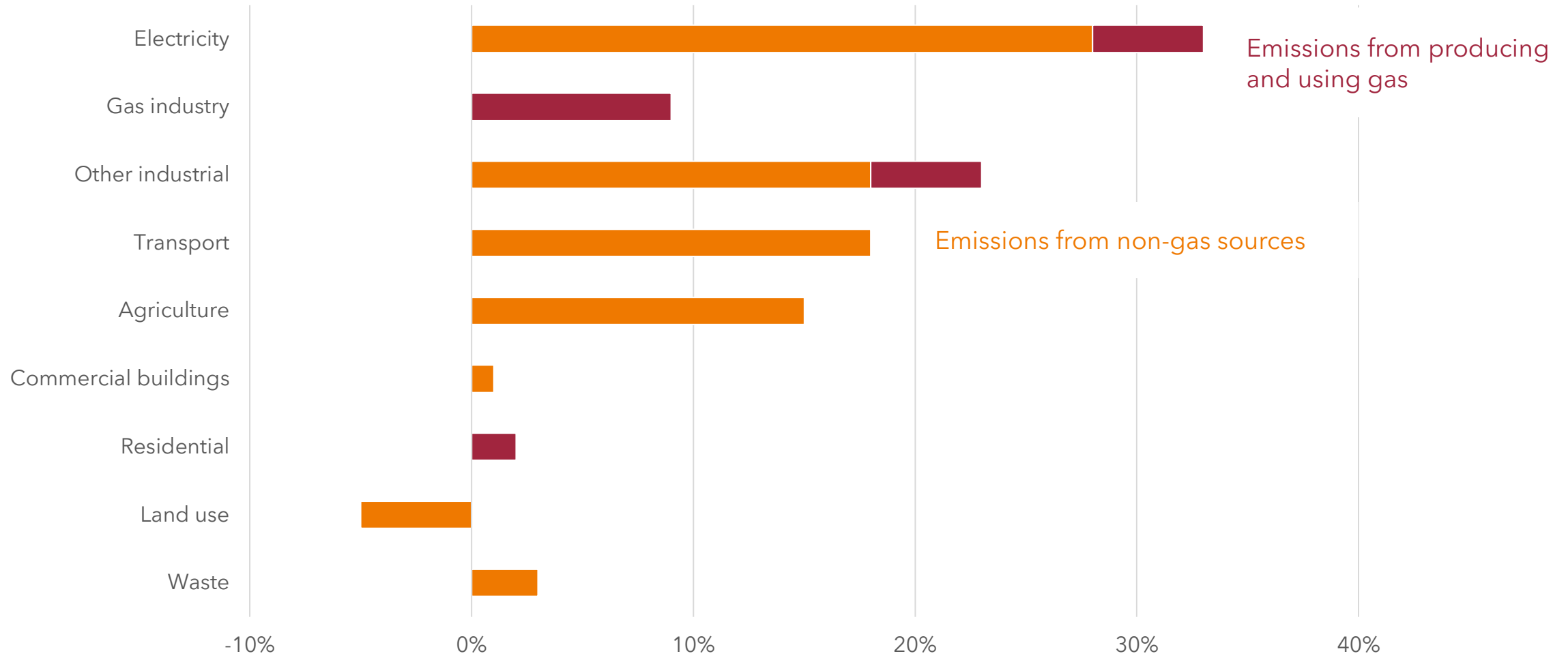


Alison Reeve | Deputy Program Director

Getting off gas at home is a
good idea

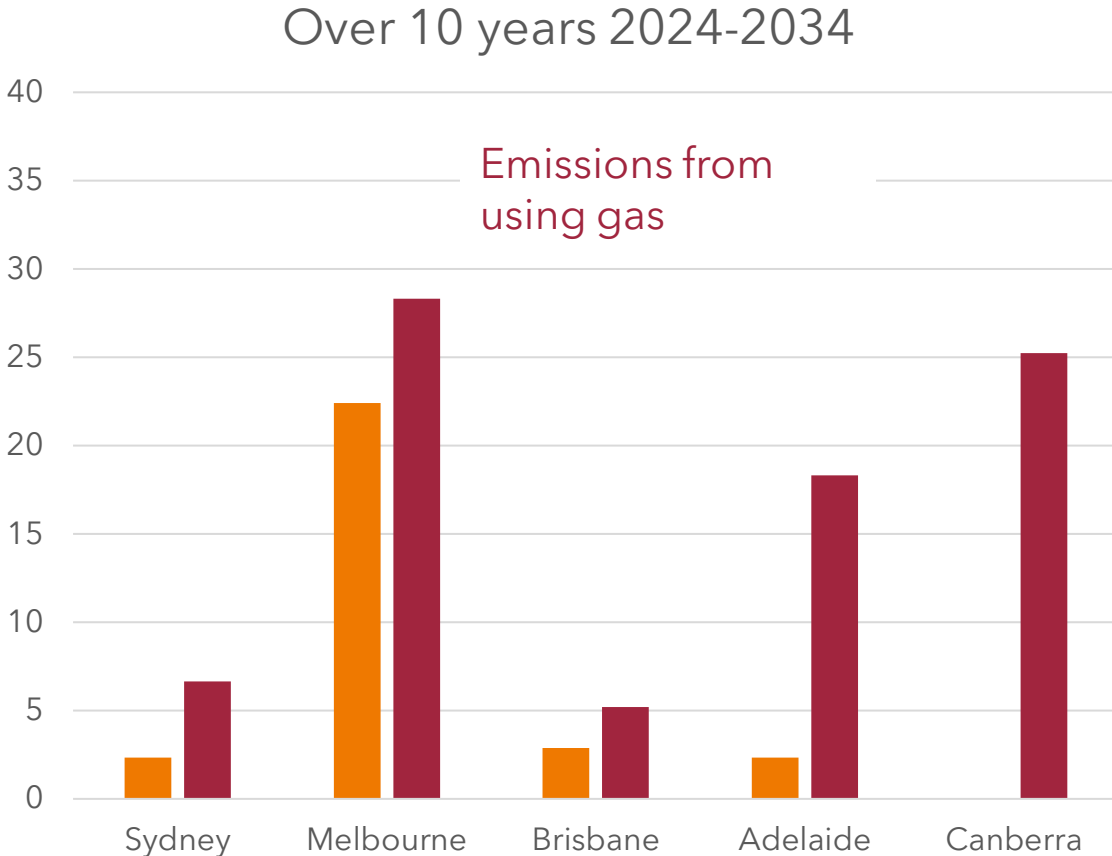
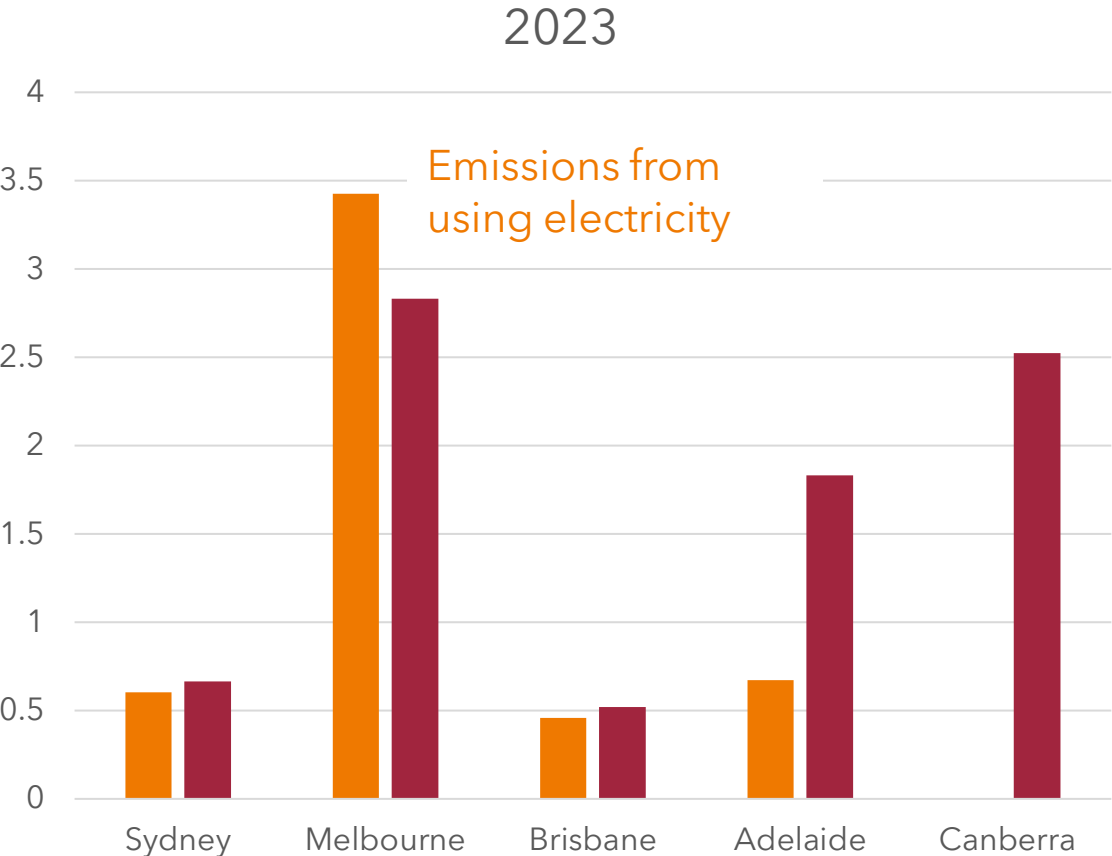
About 22 per cent of Australia's emissions come from producing and burning gas

% national emissions 2020



Greenhouse gas emissions from heating, cooking, and hot water are higher in dual-fuel homes than all-electric homes

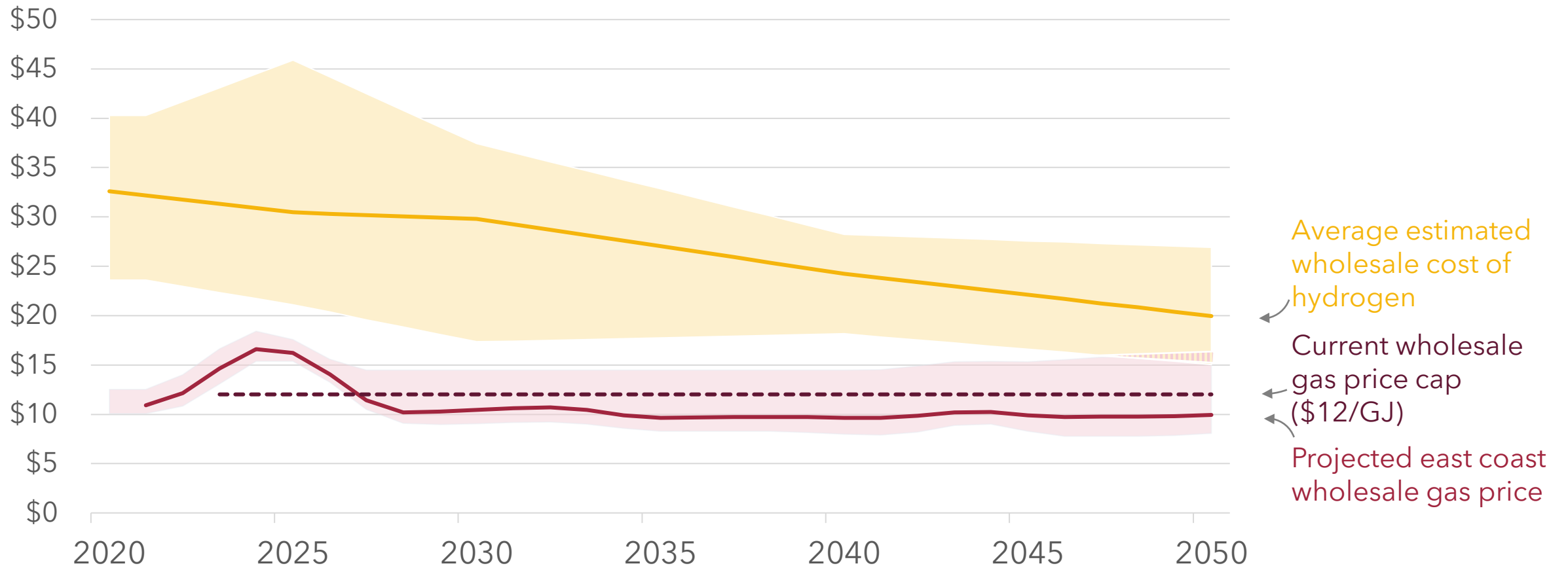
Emissions per household (tonnes of carbon-dioxide-equivalent)



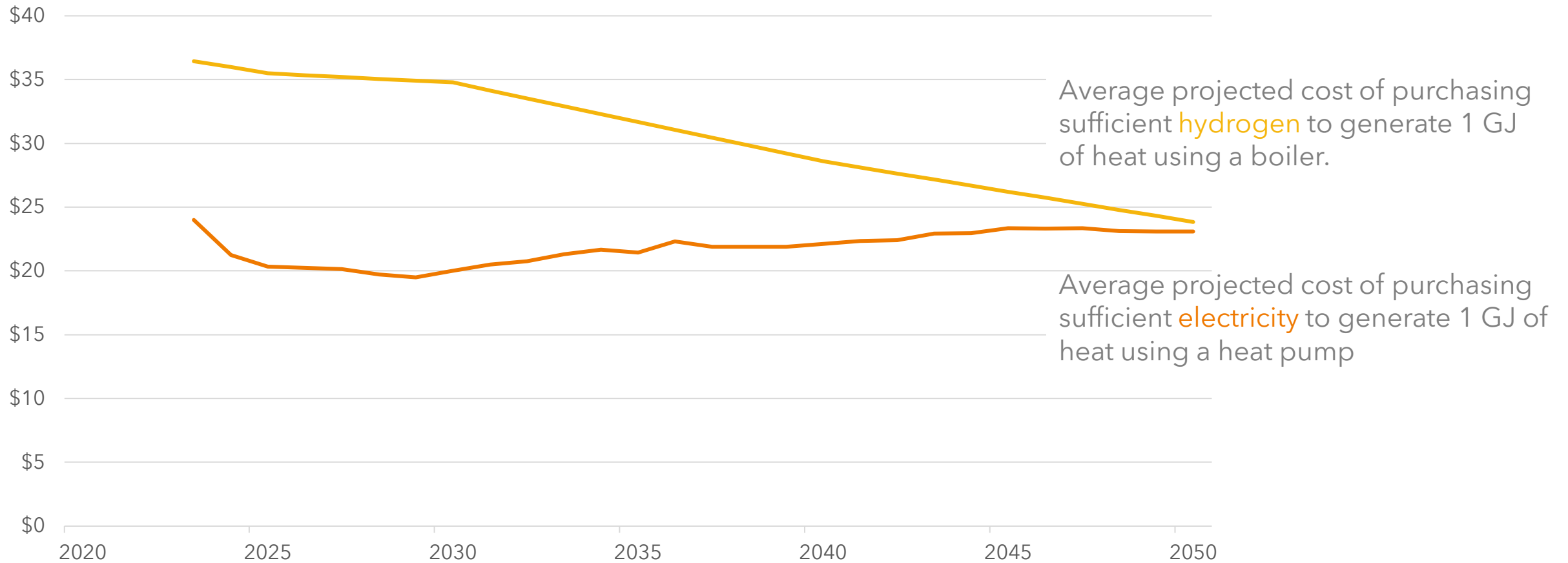
Notes: Dual-fuel homes have gas water heaters and cook-tops. All-electric homes have heat-pump water heaters and induction cooking. Sydney homes assumed to have no heating. Melbourne and Canberra dual-fuel homes assumed to have ducted gas heating, all-electric homes to use reverse-cycle air-conditioning for heating. Adelaide dual-fuel homes have gas furnace heating, electric homes have reverse-cycle air-conditioning. Source: Grattan calculations using Australia's emissions Projections (DCCEEW 2022) and Australian emissions factors (DCCEEW 2023).

Hydrogen can't match gas on price

Wholesale price of natural gas and hydrogen (\$/GJ)

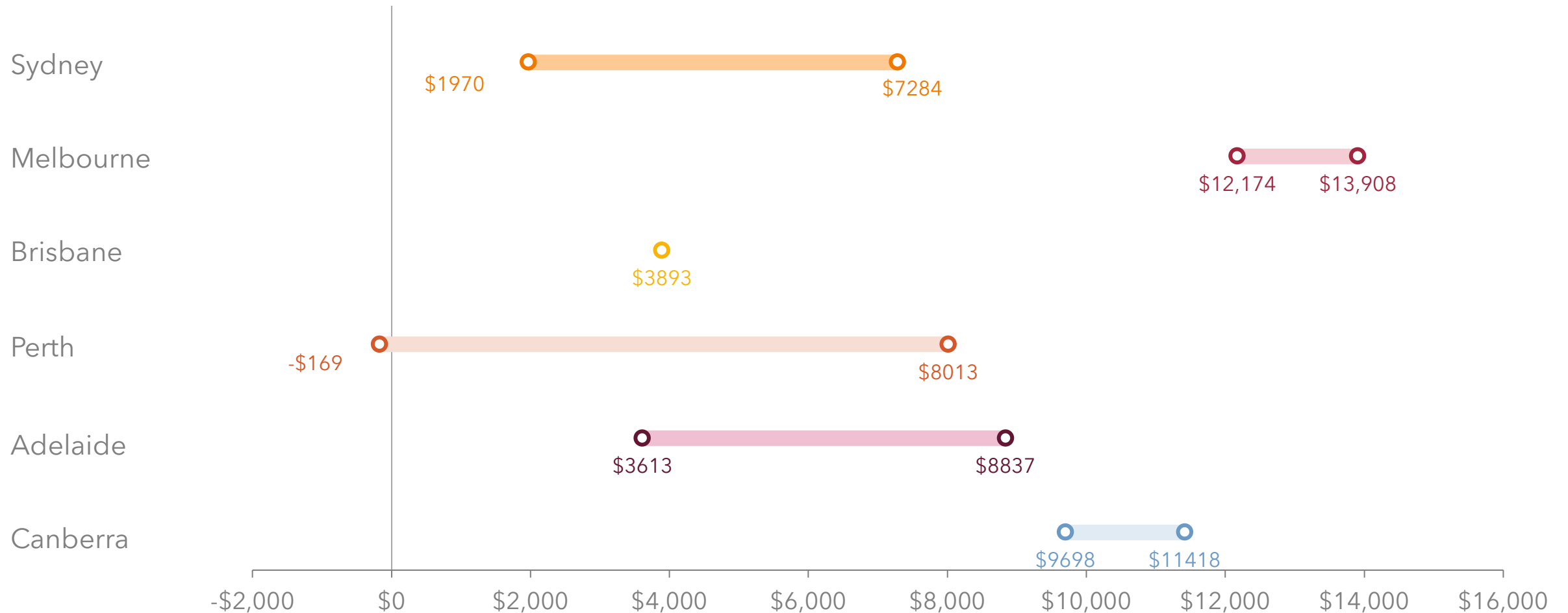


Electricity is cheaper than hydrogen to do the same job



Switching will save early movers money on energy bills

Estimated household savings range from all-electric homes (\$/year)

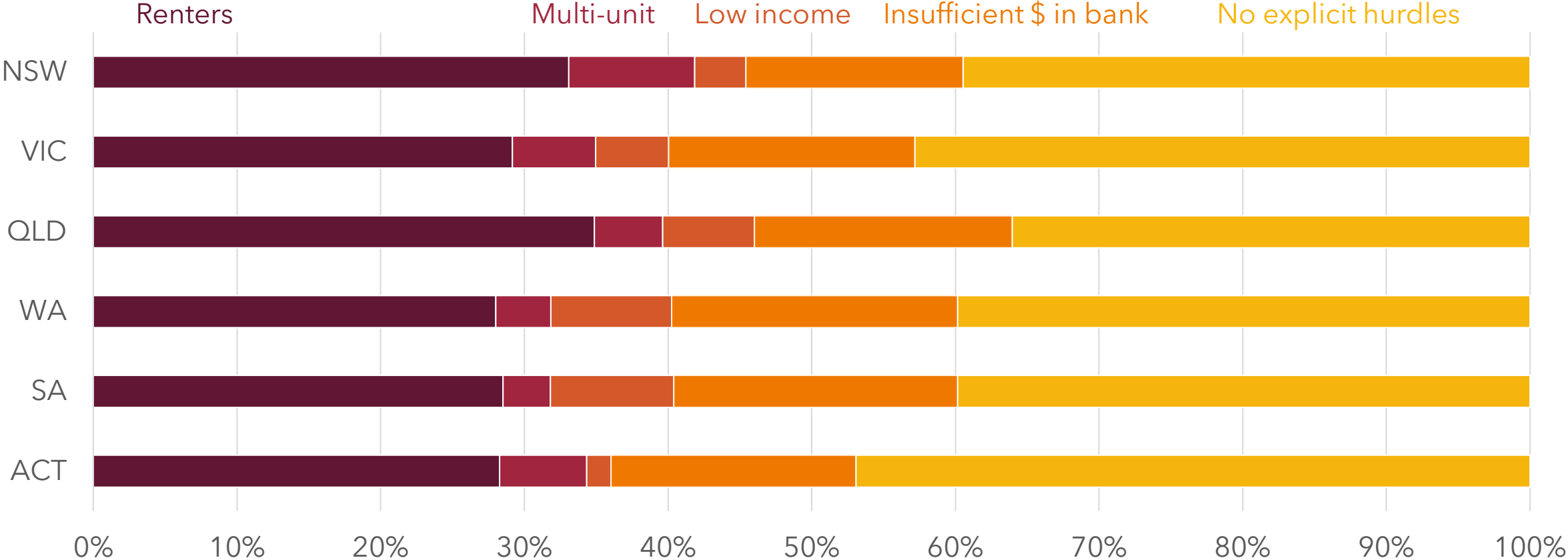


Source: Grattan analysis. See Appendix B

Getting off gas isn't easy

Many Australians face barriers to electrifying

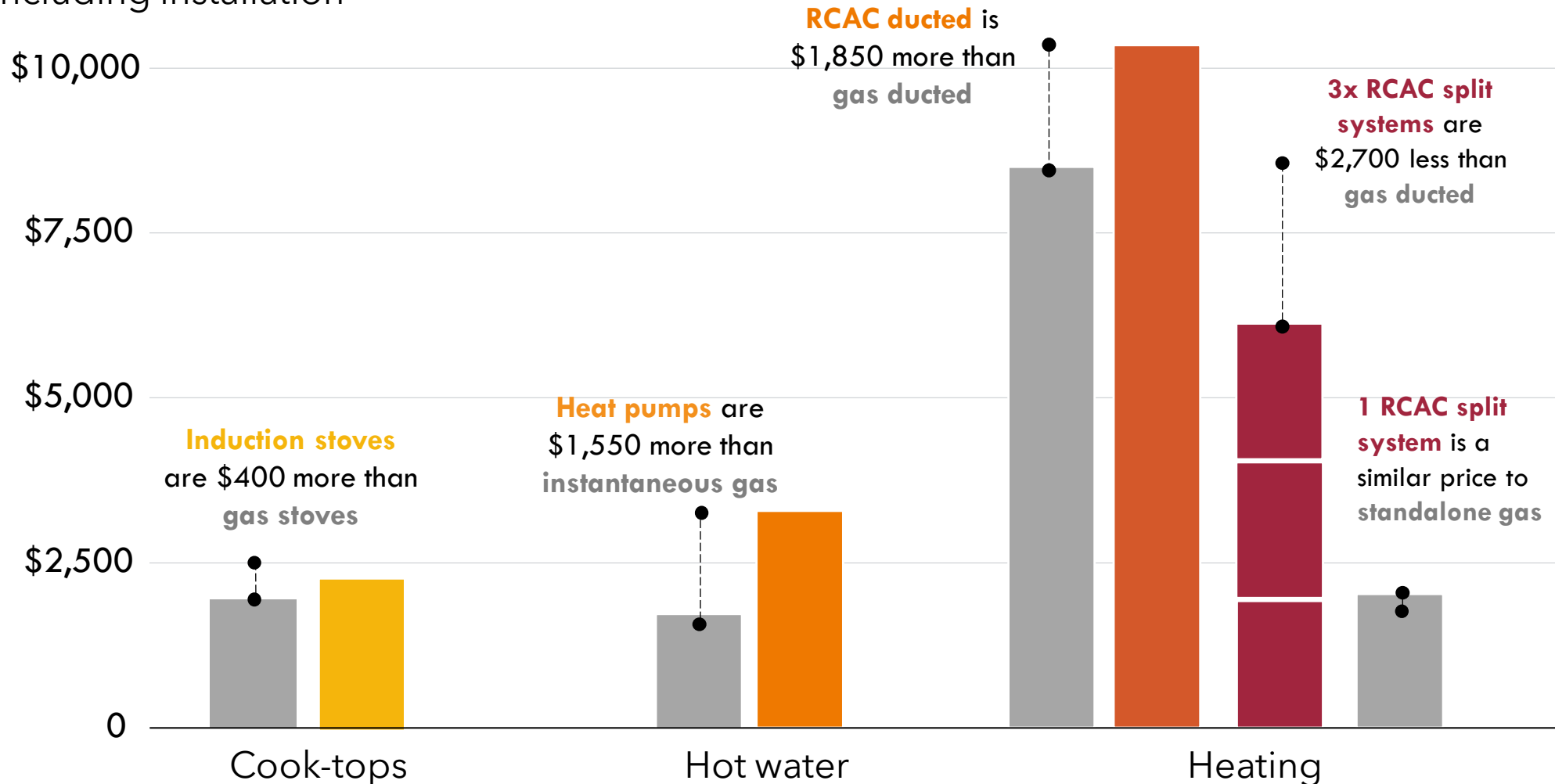
Proportion of households by main barrier to electrification



Notes: assumes households with gas follow a similar distribution by characteristic as all households. There is no publicly available data on the profile of households connected to the gas network. 'Insufficient money in bank' is defined as less than \$15,000 in savings and offset accounts combined. Low income is defined as people who are simultaneously in the lowest 40 per cent of both equivalised disposable household income (including private imputed rent) and equivalised household net worth.

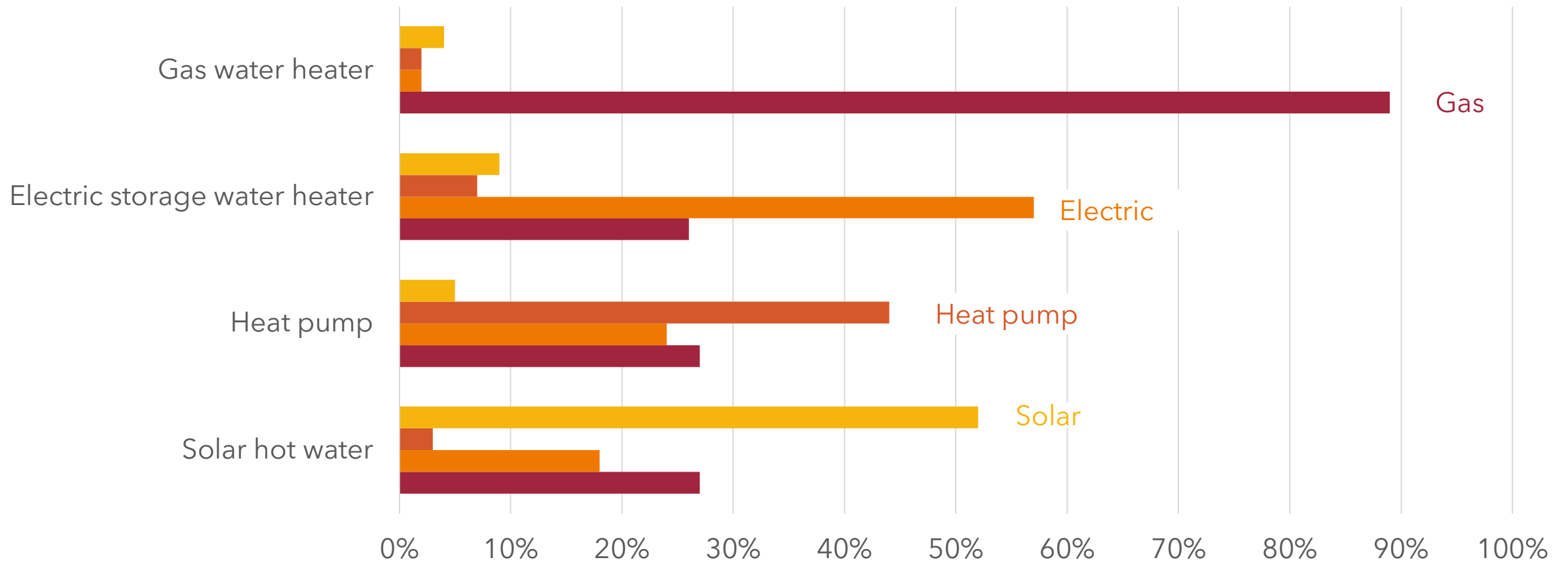
Efficient electric appliances cost more to buy than gas appliances

Cost including installation



People tend to stick with what they know

Percentage of old water heaters replaced with new ones, by type

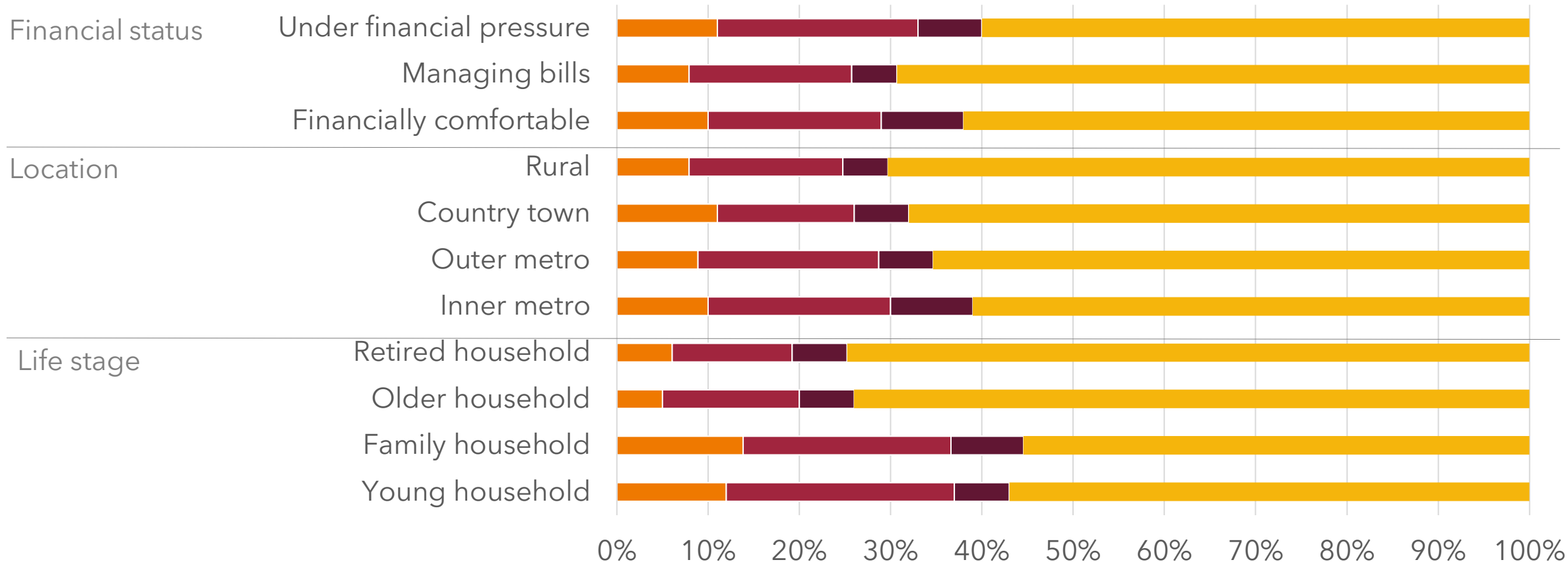


Notes: Survey of 1,500 owner-occupiers in Victoria with mains gas in August 2021, asked 'What type of hot water system do you have in your home' and 'What was your old hot water system, the one that you replaced most recently?'

Most households with gas haven't considered upgrading to electricity

% of respondents

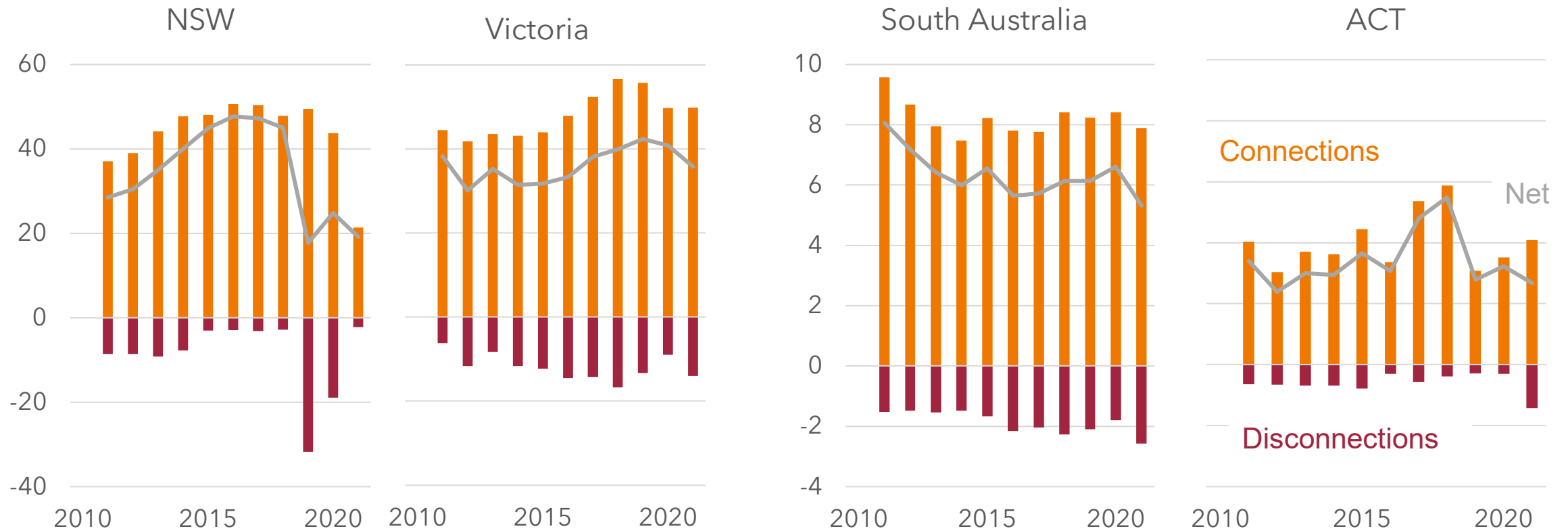
Seriously considering
Thought about it
Decided not to
Haven't thought about it



Notes: Survey of 1,212 households with mains gas in October 2021, asked 'Some Australian households have recently been cancelling their gas supply and converting their home to running on electricity only. Which of the following best describes you?'

More households are joining the gas network each year than leaving it

Residential gas connections ('000s)



Notes: Connections in Albury NSW are included in the Victorian totals. Methodology used to collect data in NSW changed in 2019.

Source: Australian Energy Regulator data

What should governments do?

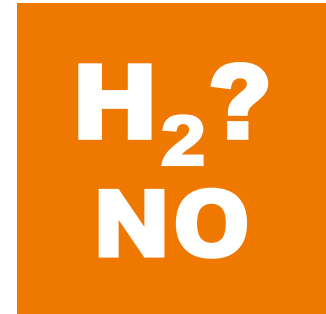
Provide certainty



Set an end date for gas use in homes



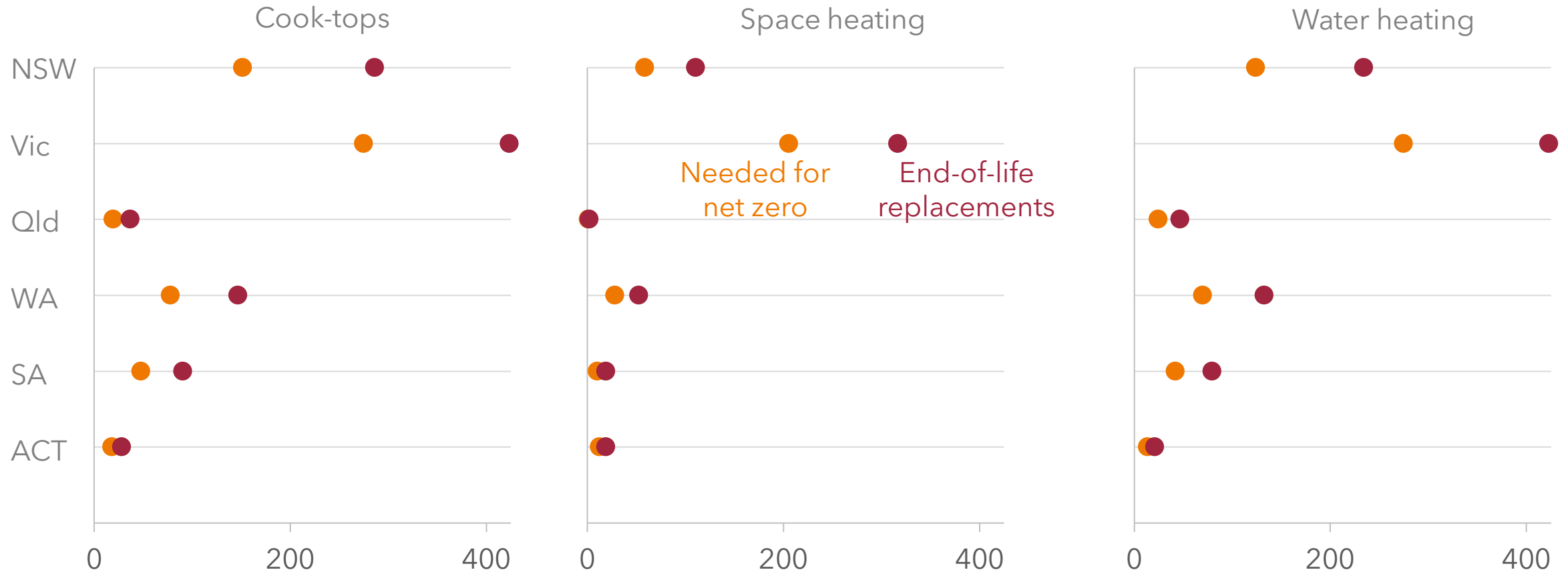
Ban new residential connections



Rule out hydrogen for widespread residential use

Start now

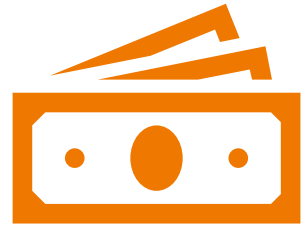
Number of gas appliances retired per day



Notes: 'Needed for net zero' is the number of gas appliances which need to be switched to electric every day to retire all gas appliances by each states' net-zero date. Assumptions: all households with gas connections have a gas stove, 15-year lifespan for all three appliances, no growth in gas homes.

Source: Grattan analysis of Energy Consult (2021).

Use incentives to close the cost gap ahead of regulation



Carrots first...

Financial products
Tax write-offs



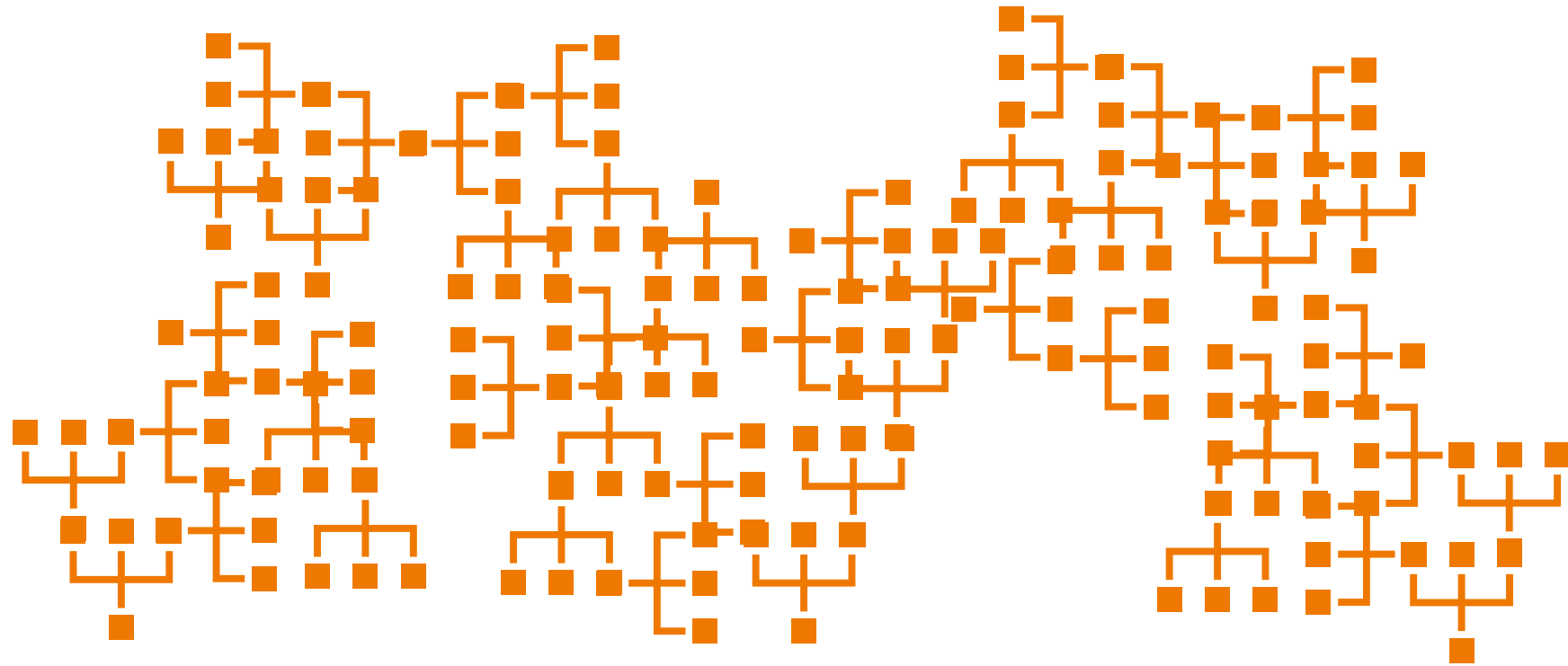
...then sticks

Rental standards
End appliance sales
Building code

Communicate, communicate, communicate



Regulatory reform for a shrinking network



Independent policy research to improve the lives of all Australians



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Enabling electrification: Addressing the barriers to moving off gas faced by lower-income households

Sangeetha Chandrashekeran¹, Julia de Bruyn¹, David Bryant², Damian Sullivan²

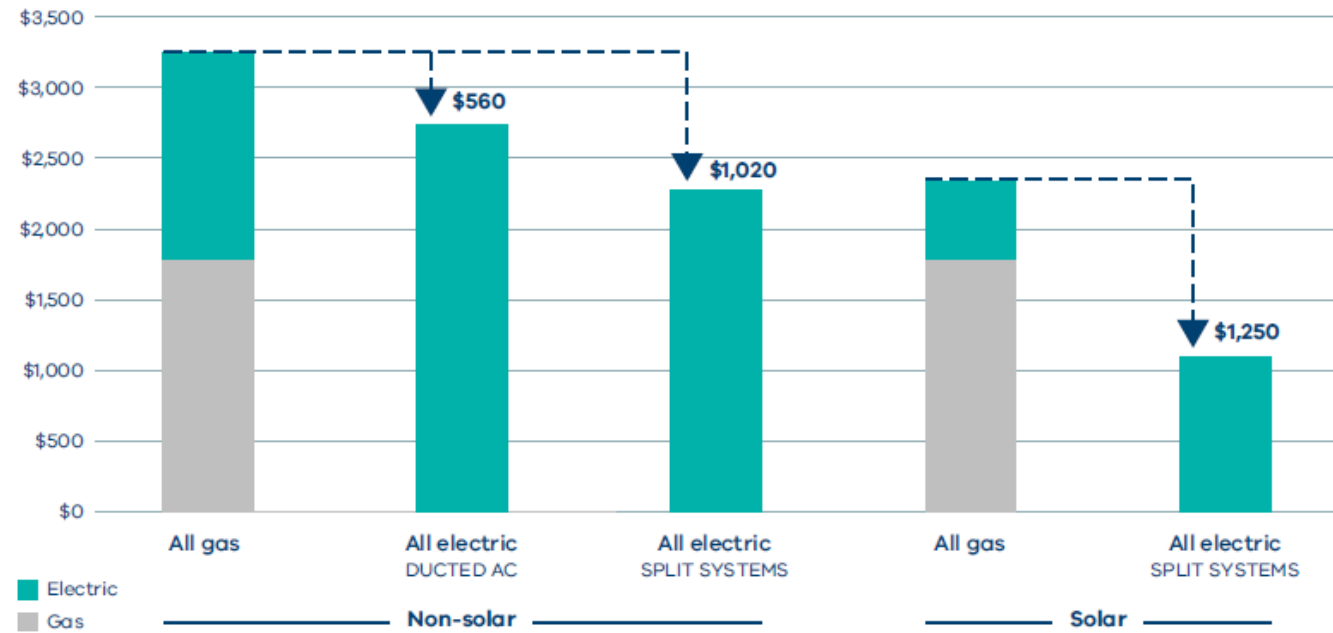
1. ARC Centre of Excellence for Children and Families over the Life Course, University of Melbourne

2. Brotherhood of St Laurence – Social Policy and Research Centre, Climate Change and Energy Program



The University of Melbourne and the Life Course Centre acknowledge this research was undertaken on the lands of the Wurundjeri WoiWurrung and Bunurong peoples and we pay our respect to their elders past, present and emerging leaders.

Savings from switching away from gas, especially with solar panels



Comparison of combined gas and electricity bills for a typical home with different appliance choices

Source: Victorian State Government 2022

Despite savings, many have not switched. Why?

- How do lower income households **perceive the need** to transition away from gas?
- What are the **challenges** that lower income households face to transition away from gas?
- What **program or policy interventions** may enable an affordable and inclusive transition away from gas?



Our research

- Partnership between **Life Course Centre** and **Brotherhood of St Laurence**
 - Institutional trust
 - Recruitment from existing database
 - Follow-up support

Mixed methods study

- **Online survey**

220 responses included in analysis
(of 236 completed surveys)

- **Focus group discussions**

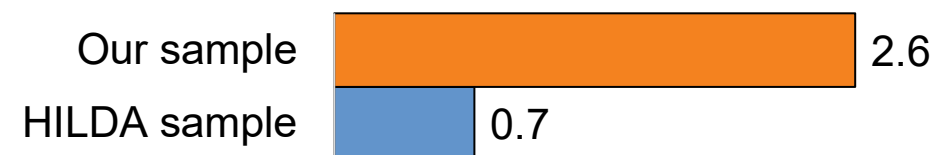
34 participants, at
4 in-person groups (Werribee; Noble Park; Mulgrave)
2 online groups

Our study participants

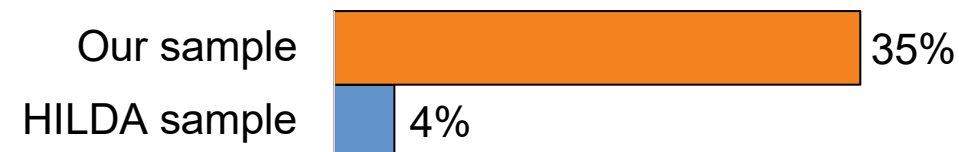
Profile of survey respondents (<i>n</i> = 220)	
Over 60 years of age	49%
Female	68%
Live with children	35%
Born outside Australia	38%
Speak language other than English at home	25%
Annual household income, equivalised	
<\$20,000	31%
<\$40,000	85%
Income support, household-level	87%
Housing tenure	
Social housing	14%
Private rental	35%
Own with mortgage	17%
Own outright	31%
Care responsibilities as main activity	29%
Employment (under 60 years)	
Full-time	9%
Part-time	11%

Financial stress

57% survey households in financial stress
(≥ 2 indicators of 7, past year)



35% Unable to heat home
due to shortage of money



Household, Income and Labour Dynamics in Australia Survey
(nationally representative, ~10,000 households)

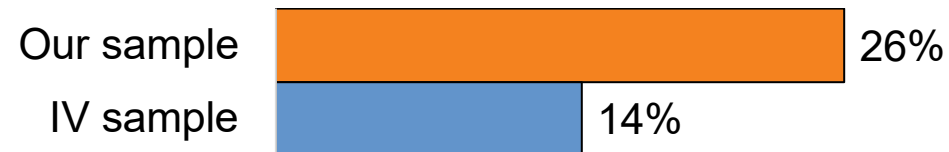
Energy use and hardship

Gas use

88% survey respondents currently use mains gas
Higher use in Greater Melbourne and by owner-occupiers

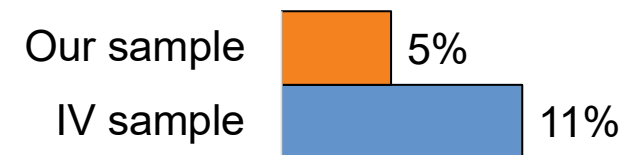
Extent of limiting energy use

Extremely aware of limiting energy use



More common in households without children (33% vs 15%)

Unaware of limiting energy use



IV sample – Infrastructure Victoria's *Gas Infrastructure Community Sentiment* survey, July 2021

Indicators of energy hardship?

Experiences of past twelve months:

- Unable to pay energy or phone bills on time
- Unable to heat home
- Went without meals

64%

- Unable to heat home
- Went without meals

42%

Energy Hardship Experiences

*I'm paying, a month, \$910 (...) you won't get anything cheaper than that... I have no air con at all, so as much as the place is freezing cold, in the summer I will sweat. I've got the dog there as well, and he's getting old now too. You know, **both of us just lying there** in the summer going **"I can't do anything, can't move"** (...) **it's just not comfortable**. Like I say, someone younger and fitter, definitely (could do it).*

Female renter, 50-59 years, private rental

***I don't use anything unless I have to**. The lights don't go on during the day. I have to put the blind up and make do with that. It's **too cold for me**. Ten years ago, I could cop it on the chin no problem, but **at the age I am now, I cannot stand having to wrap up** in the doona, encourage the dog to get underneath the doona to help me stay warm.*

Female in private rental, 50-59 years

*I loved using gas for everything because of how cheap it was, but with the **gas prices rising**, with the **kids not here** and not needing to worry about keeping them as warm, I just put on **jackets and jumpers** and sit under a blanket, because I don't like paying bills.*

Female in private rental, 40-49 years

Attitudes and preferences

Opinion on a transition away from gas

69% support (49% strongly support)

- More likely with higher levels of **education**
- Less likely with a preference for **gas**
- No association with tenure, location, age or financial stress

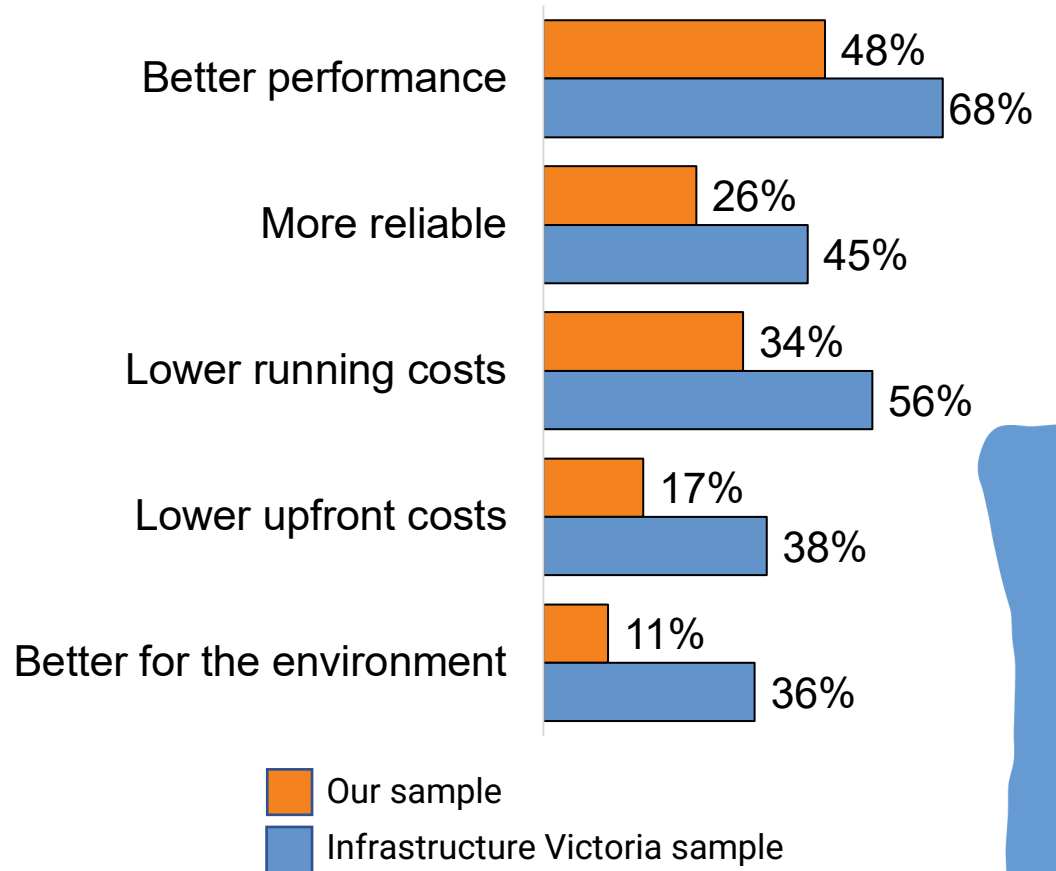
Electricity or gas?

Strong preference for gas for

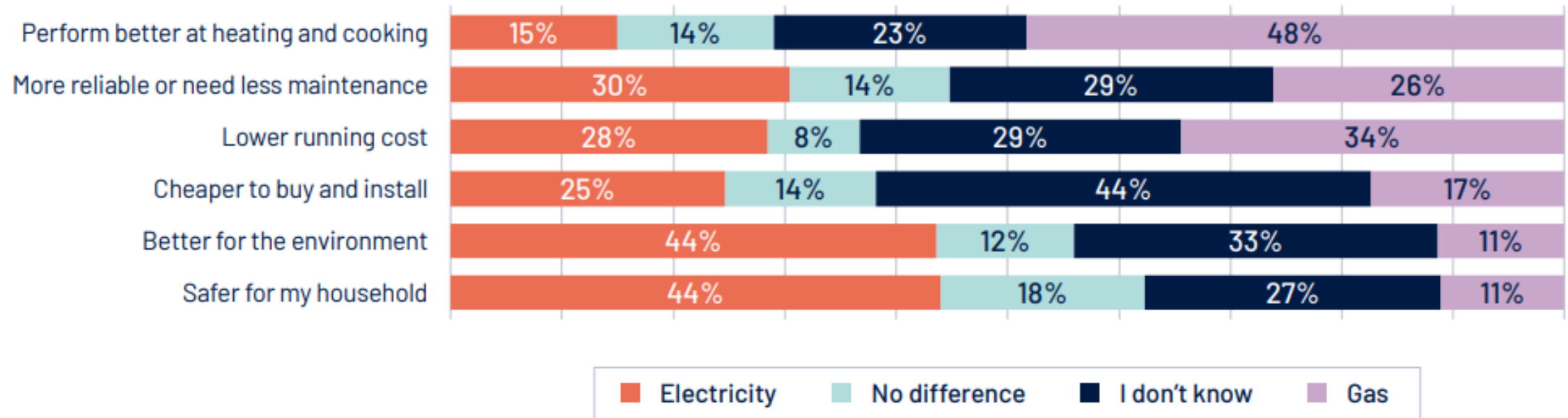
- Stovetop cooking (62 vs. 24%)
- Hot water (45 vs. 24%)

For all categories of energy use, expressed **preferences** are significantly associated with **current energy use**

Positive attitudes about gas appliances

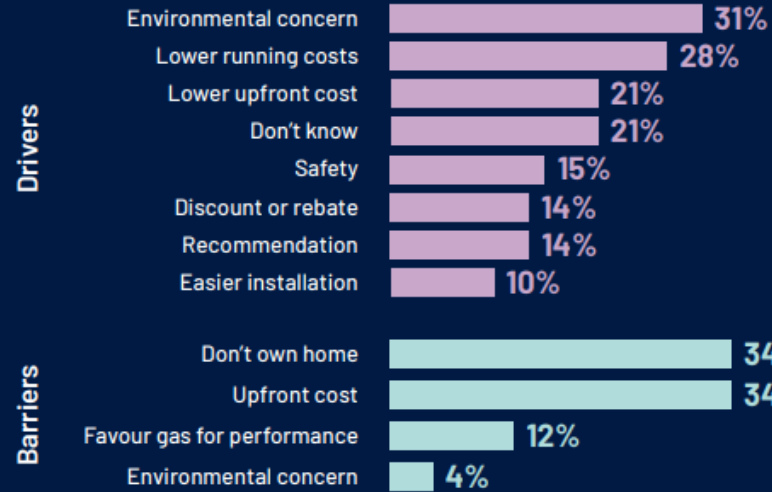


Perceived benefits of gas vs electric appliances

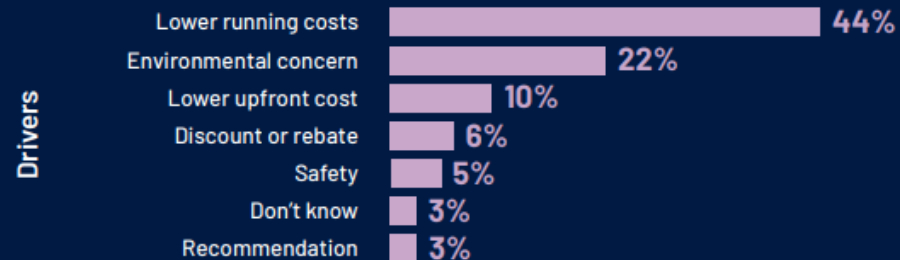


Replacing gas appliances

13% have replaced gas appliances in the past five years



34% would like to replace gas appliances in the next five years



Solar panels, home ownership and electrification

19% currently use solar power

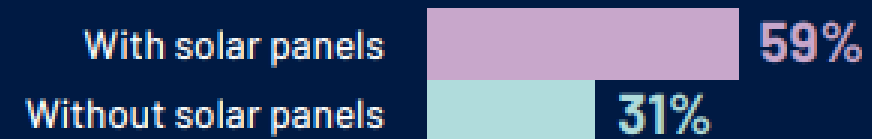
Solar panels significantly associated with housing tenure:

- 30% among home owners
- 13% in social housing
- 5% in private rental

Which households **have replaced** gas appliances?

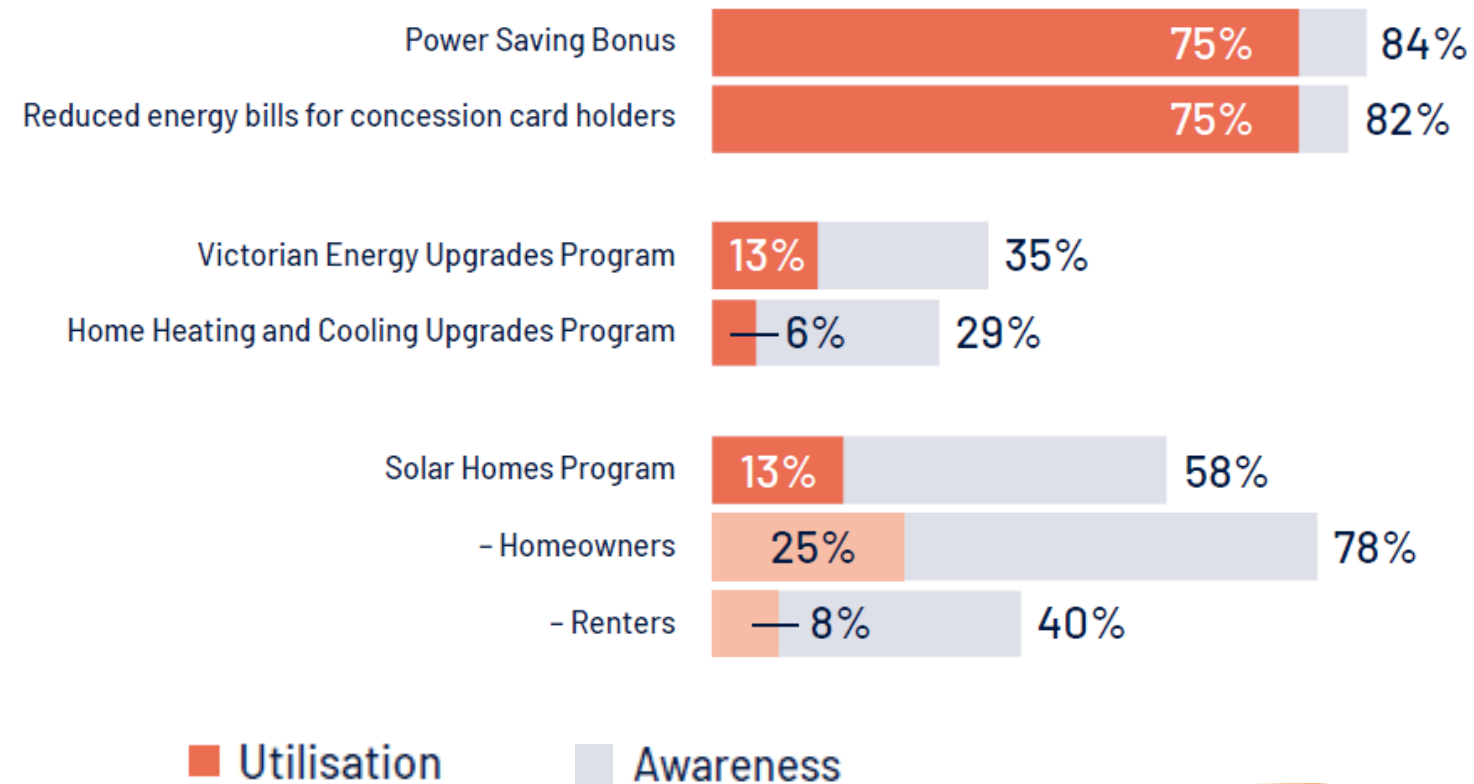


Which households **would like to replace** gas appliances?



Awareness and utilisation of Victorian Government energy-related programs

Awareness and utilisation of Victorian Government energy-related programs



Motivations, agency and trust

*I care about both. **I do care** about the environment, and **if I had the money**, I would have made some changes already.*

Female owner with mortgage, 60-69 years

*Generally, my feeling is, if it will be beneficial to the environment, **I don't mind adjusting** to the changes, switching from gas to electricity.*

Male in private rental, 60-69 years

*...even though the government pay the bonus, I'm so terrified of hiring one of the companies that people complain that they paid and they don't put the panels (in), or they put them in and they don't work. **If I make a mistake, I don't have the resources, being on a pension, to wear that.** I would love to have solar panels.*

Female participant, 60-69 years, owns home outright

I just think it's all about power of decision making.

***When I don't have any say in the decisions, why worry about it? I had no idea.** Didn't even know why they were fussing about it.*

Didn't understand gas was any worse than anything else, to be honest.

Female in social housing, 30-39 years



Customer Journeys

The customer journey for electrification is often a multi-year process , comprising a series of smaller appliance- and technology-specific decision points.

This section presents individual focus group participants' electrification stories, providing illustrative examples of barriers and how decisions are made for the households in the different categories we have identified. All names are pseudonyms.

Considers relationship with rental provider to be positive
(“If I just told him, it's better to install an electric heater, he would do it.”)

Has postgraduate level of education, thinks and cares about environmental issues
(“If it will be beneficial to the environment, I don't mind adjusting to the changes, switching from gas to electricity.”)

Willing to pay more for a product with low environmental impact in future

Energy aspirations
Energy independence: living off-grid in a an energy efficient home in a warmer climate

Key event: Gas heater breakdown


Awareness, research and planning


Engagement with marketing and support opportunities


Purchase


Installation

Identifies self and rental provider as having inadequate information and awareness of support available
(“I didn't know. He didn't know.”)

Purchase decision made by rental provider, without consulting tenant

Reluctance to co-invest in rental property; limited financial capacity
(“I'm a pensioner and surviving is always difficult for me.”)

Two month period without gas heater, reliant on electric column heater, heat generated in kitchen, lower gas bills but high electricity bills

Long-term renter with housing security, high level of education and environmental concern

Diego

Prefers gas cooktop, but willing to change to electric; willing to change time of appliance use to lower energy costs

Would be open to an interest-free loan to enable electrification

Energy aspirations:
Motivated by both affordability and environmental concern, aim to replace gas appliances with electric ones, to make use of solar panels

Strong environmental awareness and concern;
Relatively high level of energy literacy

Part of close cultural community;
Sharing of and trust in information shared within social networks and in familiar language

Trust in installers from within (or recommended by) members of cultural community

Context:
Have solar panels but gas appliances



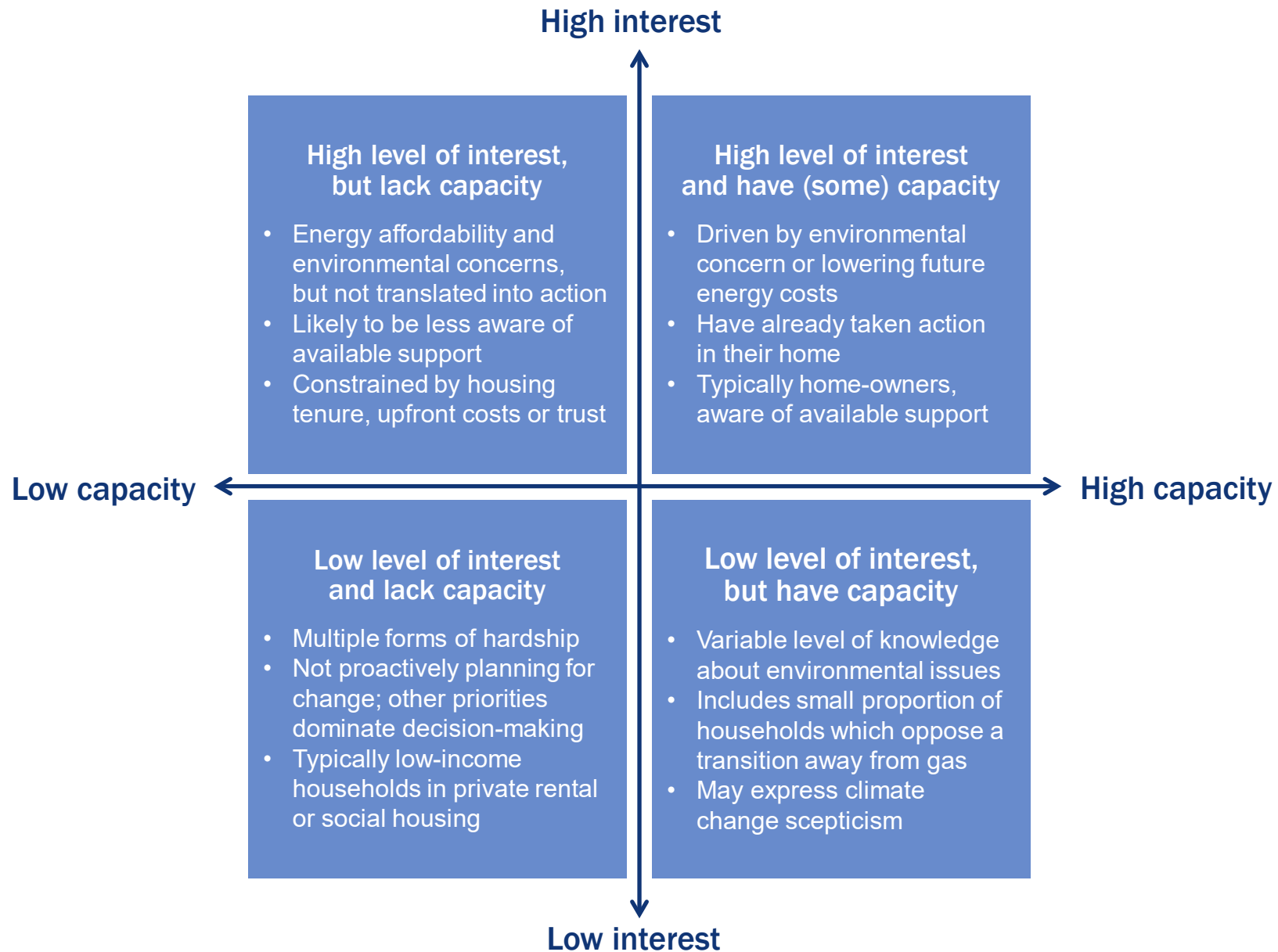
Low level of trust and engagement with information provided in English or from unknown sources, including about appliance decisions or available support

Lacks capital for appliance replacement

Low-income migrant, employed, multi-family household (young children) to achieve home ownership



Variation in interest and capacity to electrify





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Findings



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- **Widespread support for transition** but this has not translated into action
- **Gas preferred for cooking** but strongly linked to the appliances that people are using
- Motivators for electrification were **lower running costs and environmental concern** strongest
- **Upfront costs and rental status** major barriers to electrification
- Solar households more likely to switch
- Uncertainty and **misunderstanding about the benefits** of electric vs gas appliances
- Interest and capacity to electrify varies amongst lower income households: **barriers are not uniform**
- **Low awareness and uptake of current programs** that enable electrification
- **Strong support for subsidies** to lower energy costs; grants to improve energy efficiency; and, for renters, rental provider upgrades to appliances
- Our participants wanted the **perspectives** of lower income households **heard** more in planning process



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Department of Environment, Land, Water and Planning [DELWP](2021) Household energy preferences: Research report, DELWP, Melbourne, <https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap>.

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Thanks to our survey respondents and focus group participants.

This research was undertaken on the lands of the Wurundjeri WoiWurrung and Bunurrong peoples and we pay our respect to their elders past and present.

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Additional financial support was received from the **Melbourne Energy Institute** and in kind support from the **ARC Centre of Excellence for Children and Families over the Life Course**.

Enabling Electrification

Implications for policy

Damian Sullivan, Brotherhood of St Laurence

30 August 2023

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Life Course Centre

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**Let's make
change
that lasts**



Acknowledgment of Country

The Brotherhood of St. Laurence acknowledges the Traditional Custodians of the lands and waterways on which our organisation operates. We pay our respects to Aboriginal and Torres Strait Islander Elders past and present.



Implications for policy

- **Multiple stressors**
- **Information and knowledge**
- **Tenure and control**
- **Capital and finance**
- **Solar and energy efficiency**
- **Inclusive planning processes**



Implications for policy

Multiple stressors

Households facing barriers to electrification also experience many other challenges

- Housing stress – precarious housing, affordability of rent
- Insufficient income

- **Addressing the challenges of inadequate and unaffordable housing and insufficient incomes is necessary. If unaddressed, they will be a barrier to the transition.**



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Information and knowledge

Support for electrification is relatively high but awareness of support services is low

- Around ½ strong support, and more than 2/3 some level of support electrification
- Relatively high awareness of Solar Homes, but lower for some recent targeted programs

- **Co-designed and better targeted information and advice (particularly for those who speak a language other than English at home)**



Implications for policy

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Households facing barriers to electrification also experience many other challenges

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- Co-designed and better targeted information and advice (particularly for those who speak a language other than English at home)

Lower-income households may be deterred by the perceived risks of electrification

- Perceived costs, unknowns of changes
- Fear of possible future rent increases after upgrades
- Risk magnified for those with limited savings, renters
- Enforces status quo bias

- **Addressing the structural barriers such as the split incentive for renters, and providing tailored financial support and information that acknowledges household experiences**



Implications for policy

Information and knowledge

Trusted and tailored advice is needed to help households electrify

- Diverse needs in participant group
- Participants trusted CSOs, councils, government
- Importance of tradespeople and retailers (Bunnings etc) identified, but a lack of trust
- Confusing and mixed messages
- **One-stop shop for tailored advice and support**
- **Ensuring co-design including with culturally and linguistically diverse and people on low incomes.**
- **More evidence-based information on the benefits of electric vs gas appliances (over the appliance life)**
- **Investing in more accredited training**, such as the Plumbing Industry Climate Action Centre
- **Building energy literacy has a role in some households**



Implications for policy

Information and knowledge

Trusted and tailored advice is needed to help households electrify

- Diverse needs in participant group
- Participants trusted CSOs, council, government
- Importance of tradespeople and retailers (Bunnings etc) identified, but a lack of trust
- Confusing and mixed messages

A plan for the future of the residential gas network will build trust and reduce uncertainty

- Avoid lock-in with the long life span of some gas appliances (heating, cooking)
- Give certainty to investments

- One-stop shop for tailored advice and support
- Ensuring co-design including with culturally and linguistically diverse and people on low incomes.
- More evidence-based information on the benefits of electric vs gas appliances (over the appliance life)
- Investing in accredited training, such as the Plumbing Industry Climate Action Centre
- Building energy literacy has a role in some households
- **State and federal governments should develop integrated plans for electrification (In Victoria, further iterations of the Roadmap)**
- **Government regulation should ensure further investment in the residential gas network does not lock in future vulnerability**



Implications for policy

Tenure and control

A strategy to support renters and rental providers to electrify is essential

- Home-owners are better placed to electrify, provided they can wait to recoup the cost
- **Stronger energy efficiency standards for rented homes and appliances including a shift to electrification should be implemented to lower renters' energy cost; alongside information and targeted incentives for rental providers (landlords)**
- **Investment to transform community and public housing to be 100% electric and energy efficient**



Implications for policy

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- Home-owners are better placed to electrify, provided they can wait to recoup the cost
- Stronger energy efficiency standards for rented homes and appliances should be implemented to lower renters' energy cost; alongside information and targeted incentives
- More investment is needed to transform community and public housing to be electric and energy efficient

Capital and finance

Addressing capital barriers is vital for electrification

- Many households, even home-owners, faced some capital constraints
- **Appropriately targeted grants and rebates are needed**
- **Low and no-interest loans have a role to play**



Implications for policy

Rooftop solar and energy efficiency

Access to solar panels is a key step for electrification, and renters and lower-income households need more assistance

Energy efficiency upgrades go hand in hand with electrification

- Lowers overall energy costs, contributes to warmer healthier homes in winter, cooler in summer

- **Increased incentives for low-income renters / landlords**
- **Creative financial instruments**
- **Ensuring information on existing programs is available in relevant formats for different groups (language, culture, geographic)**
- **Integration of support for energy efficiency upgrades and electrification**



Implications for policy

Rooftop solar and energy efficiency

Access to solar panels is a key step for electrification, and renters and lower-income households need more assistance

Energy efficiency upgrades go hand in hand with electrification

Inclusive planning processes

The voices of those facing barriers to electrification need to be heard and included in planning

- Lowers overall energy costs, contributes to
- Increased incentives for low-income renters / landlords
- Creative financial instruments
- Ensuring information on existing programs is available in relevant formats for different groups (language, culture, geographic)
- Integration of support for energy efficiency upgrades and electrification
- There are limited channels to do this at present
- Gas industry led consumer engagement processes have limitations
- **Government needs to play a central role in enabling inclusive planning processes for electrification**




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