

# RELATIVE ENERGY POVERTY IN AUSTRALIA

Australia's national, state and territory governments provide a number of safety nets to ensure households are able to pay their energy bills and remain connected. As energy prices rise, who is most at risk of falling through the nets?

A research report for consumer advocates and policy makers funded by the Consumer Advocacy Panel (Project No. 565)

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## BACKGROUND

This research was originally conceived as “Linking Energy Affordability to Housing Affordability in the National Energy Market” in March 2013. The aim was to examine responses to the Australian Bureau of Statistics (ABS) 2009-10 Household Expenditure Survey (HES) to investigate the relationship between energy and housing expenditure by households on the lowest of incomes.

However, in July 2013, the UK Government released its new approach to tackling Fuel Poverty in England and this changed the context for the research. The UK’s new approach changes the way fuel poverty is defined: combining income and expenditure thresholds to define a *fuel poverty* cohort. This new Low Income, High Cost (LIHC) indicator also incorporates housing costs into the fuel poverty definition. Once it became apparent that the HES data provided much of the income, housing and energy cost information required to apply the LIHC to Australia, a decision was taken to expand the research to a wider scope that examined a range of indicators in an Australian context.

The National Electricity Consumers Advocacy Panel was established in 2001 to grant funds to representatives of domestic and business electricity consumers for advocacy on the development of the national electricity market and the National Electricity Rules. In 2008, as a result of an amendment to the AEMC Establishment Act, the Panel was reconstituted as the Consumer Advocacy Panel with responsibility for granting funding for advocacy and research on electricity and natural gas issues. Further information on the Panel is available at [www.advocacypanel.com.au](http://www.advocacypanel.com.au).

### Acknowledgement and Disclaimer

*This project was funded by the Consumer Advocacy Panel ([www.advocacypanel.com.au](http://www.advocacypanel.com.au)) as part of its grants process for consumer advocacy projects and research projects for the benefit of consumers of electricity and natural gas.*

*The views expressed in this document do not necessarily reflect the views of the Consumer Advocacy panel or the Australian Energy Market Commission*

## ACKNOWLEDGEMENTS

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Thanks also to Kate Nance, Mark Henley, Andrea Pape, Kerry Connors, Gavin Dufty, Jo De Silva, James Brown, Carmen Wouters and Dr Paul Chapman for insightful comments.

**WHAT?** Energy prices for Australian households have increased significantly in recent years. Most commentary has focussed on the causes of the increases; this report is focussed on the effects.

**WHO?** While most people would say they struggle to pay their electricity and gas bills, this project has analysed actual income and expenditure data to identify those households that have the biggest energy bills and the least capacity to pay for them.

**WHY?** Governments are responding to rising energy prices by accelerating energy market reform. Policymakers and consumer advocates can refine their policy responses by understanding characteristics of the households in most need.

**WHEN?** The analysis is based on the Australian Bureau of Statistics **2009-10** Household Expenditure Survey and Survey of Income and Housing and precedes many of the recent price rises. Average energy prices have increased by 40% since the survey but the findings about who is most at risk are considered to remain valid.

**WHERE?** This research has applied lessons from the UK's approach to measuring fuel poverty to the Australian context.

**HOW?** This research has considered five alternative definitions of *relative energy poverty*. The cohorts of households formed by these five alternative definitions have been compared across a range of attributes such as income, housing status, household size and family structure.

## KEY FINDINGS

- There is no need to select a single definition of 'energy poverty' in order to inform policy: all five alternative definitions considered in this research identify similar groups of households.
- Significant proportions of those in relative energy poverty rely on wage and salary income and therefore fall outside of the traditional safety nets of the welfare system.
- Other characteristics that increase the likelihood of being in energy poverty are:
  - Single parent households;
  - People living alone, particularly Aged and Disability pensioners living alone;
  - Low income renters, particularly those who rent privately;
  - Dual Fuel households – those reliant on mains or bottled gas.

## INTRODUCTION

The concept of *fuel poverty* is well developed in public policy in the UK and Europe. The contemporary understanding of *fuel poverty* emerged over 20 years ago<sup>1</sup> and distinguishes those households whose poverty is either due to, or made worse by, high required spending on energy to keep warm.

This terminology and concept has not been widely adopted by public policy in Australia and there is no agreed method for identifying those households most at risk of *not keeping up* with the cost of energy. Chester and Morris<sup>2</sup> prefer the term *energy poverty* for the Australian context and that is the term used throughout this report. Use of the preface *relative* is acknowledgement of a global sustainable development context where access to energy is seen as a way out of absolute poverty in developing economies<sup>3</sup>. In that sense, what is being discussed in relation to the mature economies of the UK and Australia is one of relative poverty.

The consequences of *relative energy poverty* can be considered in two ways. Firstly, some consumers will ration consumption to a point where health can be put at risk. Secondly, other consumers will continue to consume and incur costs that exceed the household's capacity to pay. This can result in increasing debt, compromising on other essentials such as food or medicine and/or, ultimately, disconnection from supply. In both respects, there is a clear risk to social policy objectives around public health, social inclusion and child protection.

The aim of this research project has been to examine responses to the Australian Bureau of Statistics (ABS) 2009-10 Household Expenditure Survey (HES) in order to identify those households considered to meet a range of alternative definitions of *relative energy poverty*: a cohort representing around 5-10% of households that can be considered to be most at risk of not keeping up as energy prices rise.

The distributional impacts of energy market reforms will always need to be assessed: it seems reasonable that it will always be important to continue to test the resilience of the safety nets and using relative energy poverty as a conceptual basis for this appears to be sound.

### Lessons from the UK

The UK Government has been reviewing its approach to measuring and responding to fuel poverty and recently revealed its response to the high profile Hills Fuel Poverty Review of 2011-12<sup>4</sup>. This research project has sought to apply some of the recommendations and lessons from the UK experience to Australia's energy markets.

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<sup>1</sup> The Hills Fuel Poverty review Interim Report acknowledges Dr Brenda Boardman's 1991 book *Fuel Poverty* as the origin of the current conceptualisation of the issue. It also acknowledges earlier studies that contributed to the development of the concept from the 1970's.

<sup>2</sup> Chester, Lynne and Morris, Alan, 2012, 'A new form of energy poverty has become the scourge of liberalised electricity sectors'

<sup>3</sup> See, for example, The United Nations Sustainable Energy For All initiative at <http://www.sustainableenergyforall.org/>

<sup>4</sup> Fuel Poverty: a Framework for Future Action, UK Department of Energy and Climate Change July 2013 <https://www.gov.uk/government/publications/fuel-poverty-a-framework-for-future-action>

The measurement aspect of fuel poverty in the UK has two main public policy purposes. The characteristics of the households in the cohort (such as household size and composition, housing tenure etc.) are used to design interventions that target those most in need – improving the efficacy and efficiency of public expenditure. The size of the cohort is used to indicate both scale and progress.

This project only seeks to match this first aim. Noting the range of views expressed in consultation on the UK’s new approach to measurement<sup>5</sup>, the approach taken here has been to develop multiple alternative definitions of *relative energy poverty* and to see if these cohorts have similar compositions. The rationale being that if a range of definitions suggest similar attributes for those households most at risk then debate over a ‘best’ measure is less important.

This research has not sought to quantify the scale of energy poverty in Australia. The UK government publish estimates of the total number of households and people in fuel poverty. Such an output is inevitably controversial and easily politicised. Instead, this research has examined a number of approaches to defining a *relative energy poverty* cohort in order to understand their attributes for the purposes of informing the design of public policy responses.

### The approach

The five alternative definitions of relative energy poverty include three objective and two subjective measures and produce the following five household cohorts that vary in size from 2% to 14% of the households in the survey:

Cohort name	Description	Weighted Count	% of All households
1. Low Income High Cost	Below income threshold, above median energy expenditure	782,409	12%
2. Low Income and energy > 10%	Below income threshold, energy expenditure > 10% of capacity to pay	386,936	5.7%
3. Energy > 10%	energy expenditure > 10% of capacity to pay	434,054	6.4%
4. could not pay utility bill	Financial Stress Indicator: survey respondent could not pay utility bill in last 12 months due to shortage of money	939,254	14%
5. unable to heat home	Financial Stress Indicator: survey respondent unable to heat home in last 12 months due to shortage of money.	138,520	2.0%

**Table 1:** Five possible energy poverty cohorts for comparison

These five cohorts have been compared and contrasted over a range of household attributes. These are:

- State or territory of usual residence
- The number of adults and children in the household, family composition and ‘lifecycle’ stages

<sup>5</sup> See, for example, Fuel Poverty Advisory Group (for England) Tenth Annual Report (2011-12), page 12

- Housing status in terms of ownership or landlord type
- The source of income and the dominant types of pensions and benefits received
- Eligibility for state based energy concessions
- The use of gas versus 'all electric' homes

In order to obtain more detailed insights, the analysis was also repeated for four discrete household types that emerged from the initial review:

- Aged Pension recipients
- Disability Pension recipients
- Households with children (dependents under 15 years of age)
- Wage and Salary earners

This report includes a Technical Appendix that documents the methodology and detailed results. Comments and suggestions regarding the methodology are welcomed. The author can be contacted at [andrew@stkittsassociates.com.au](mailto:andrew@stkittsassociates.com.au)

## WHY RELATIVE ENERGY POVERTY?

An important aspect of the UK's new fuel poverty target is in the way the Hills Poverty Review reframed the problem of fuel poverty<sup>6</sup>. As acknowledged in the UK Government's response, Professor Hills conceptualised it as a relative and structural issue. This has been interpreted in the government response as requiring a different focus for action to:

*“... one of on-going efforts to mitigate and reduce the extent of fuel poverty, to ensure that the fuel poor do not get left behind, rather than approach concerned with eradication.”*

The notion that fuel poverty is a relative issue that focuses on the plight of those households at risk of getting “left behind” is an appealing one. The UK approach since 2000 has been driven by the WHECA which places an obligation on the Secretary of State to deliver on an objective of ensuring that, as far as reasonably practicable, no person lives in fuel poverty (i.e a household living on a lower income in a home which cannot be kept warm at reasonable cost)<sup>7</sup>.

The consideration of fuel poverty as a relative issue is consistent with the findings of Dilnot and Helm (1987)<sup>8</sup> in relation to energy as a *merit good*<sup>9</sup>. At a time when energy market liberalisation was gaining momentum in the UK, the authors concluded that energy for households was both an absolute and a participation merit good: that there is both an absolute requirement for survival and a relative requirement for ongoing participation and inclusion in society.

The UK government is convinced the new relative indicator<sup>10</sup>:

*“... underpins better policy making and allows us to set a framework to encourage continual action and improvement”*

The pragmatism of *alleviation* instead of *elimination* appears to have been formed on the back of over a decade of initiatives since the original fuel poverty targets were established in 2000. In the contemporary Australian context of price rises and an expansive energy market reform program that will impact on future prices, price structures and total costs, the idea of a method than focuses attention on those most likely to be at risk of getting “left behind” seems like a long-term need for robust policy analysis.

The distributional impacts of energy market reforms will always need to be assessed: it seems reasonable that it will always be important to continue to test the resilience of the safety nets and using *relative* energy poverty as a conceptual basis for this appears to be sound.

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<sup>6</sup> Fuel Poverty: a Framework for Future Action, UK Department of Energy and Climate Change July 2013, p12

<sup>7</sup> A household is defined as being in fuel poverty if it would need to spend more than 10% of its income to achieve an adequate standard of warmth (21°C for the main living room and 18°C for other rooms) – DECC 2013a Fuel Poverty: Government Response to the consultation on the framework for measurement July 2013, p6

<sup>8</sup> Dilnot and Helm *Energy Policy, Merit Goods and Social Security* in Fiscal Studies August 1987 Volume 8, Issue 3 p29-48.

<sup>9</sup> In this context, the relevant attribute of merit goods is that households tend to under-consume even though there is a private or public benefit in them doing so. The most obvious case for energy is that of avoiding the negative health impacts of cold homes. In Australia this would translate to both cold winters and summer heat waves.

<sup>10</sup> Fuel Poverty: a Framework for Future Action, UK Department of Energy and Climate Change July 2013, p13

## THE AUSTRALIAN POLICY CONTEXT

To quote the most recent Australian Government Energy White Paper (2012)<sup>11</sup>:

*“Ensuring that consumers, particularly those who are most vulnerable, are able to manage energy costs effectively is also increasingly important. The continued provision of adequate assistance to vulnerable consumers through a sound general safety net, well-targeted jurisdictional concession regimes and appropriate community service obligations remains critical.*

*Such assistance should be transparent and not undermine competitive pricing structures, which reflect, as efficiently as possible, the underlying costs of supply. It is more efficient for assistance to be provided through properly targeted social policy settings, rather than energy policy settings, to ensure that energy market signals are preserved.”*  
(emphasis added)

Such statements are consistent with the general approach to energy market reform in Australia since the 1990's. In summary, the contemporary energy policy perspective is that markets should do what they do well – pursue efficiencies through cost reflective pricing, competition and/or best practice regulation – and that the equity objectives of social policy should be transparently and publicly funded. In particular, there is a strong message about not distorting prices in order to meet equity objectives. Rather, prices should be allowed to rise to efficient levels and any ‘gap’ in affordability should be met through either income measures (the references to the *safety net*) or community service obligations (such as energy specific concessions).

This research has approached this issue from a perspective that public policy in this area represents an interface between the traditional domains of energy policy and social policy. As energy policy pursues market-led productivity gains and energy prices become more cost reflective, the affordability of energy for the least affluent in the community is under significant pressure.

In Australia, the formal relationship between energy policy and social policy is a fragmented one that spans a number of government departments in each of the Commonwealth, state and territory governments. It encompasses aspects of the tax and transfer system, housing policy, climate change, energy efficiency and renewable energy policy. It is possible to imagine the interface between energy policy and social policy as representing the *safety net* of the energy markets. This net is woven of multiple measures that aim to ensure ongoing access to energy, especially electricity, for households.

In liberalised markets such as in the UK and Australia's National Electricity Market, the principal interface between consumers and the energy markets is the Energy Retailer. In Australia these are largely privately owned enterprises that are licensed under state-based or, for some jurisdictions, by the Australian Energy Regulator (AER) under the expanding National Energy Customer Framework (NECF).

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<sup>11</sup> Energy White Paper 2012 available from [www.ret.gov.au/energy/facts/white\\_paper/Pages/energy\\_white\\_paper.aspx](http://www.ret.gov.au/energy/facts/white_paper/Pages/energy_white_paper.aspx)

The Council of Australian Governments (COAG) Standing Council on Energy and Resources (SCER) is Australia's principal energy policy forum. In relation to the NECF, the SCER states<sup>12</sup>:

*“The NECF has been developed in recognition that energy is an essential service for all Australians and seeks to provide strong protections for Australians struggling to pay their energy bills. It will operate in a complementary way with general consumer protection laws that apply in the energy sectors at both state and Commonwealth level, including privacy laws and the Australian Consumer Law.*

*State and territory energy laws will continue to supplement key customer protection aspects of the NECF through measures such as energy ombudsman and guaranteed service level schemes, and social policy initiatives such as community service obligations<sup>13</sup>.”*

The NECF incorporates a concept of *customer hardship* and the responsibilities of retailers in this regard. The NECF is guided by a principle that disconnection is a last resort and provides protection for customers in the form of mandatory hardship programs by retailers and protection from disconnection if customers can stick to a payment plan agreed between customer and retailer. According to the Australian Energy Regulator (AER)<sup>14</sup>:

### ***Payment plans***

*Ask your retailer for a payment plan—where you pay for your energy in regular agreed amounts (instalments). Your retailer must offer you a payment plan unless you have already been on two or more plans in the last year and did not keep to them.*

*When working out your payment plan instalment amount, your retailer must take into account your capacity to pay (what you can afford to pay each week or fortnight), as well as how much you owe and how much energy you are likely to use over the coming year. (emphasis added)*

*Only agree to an instalment amount you can realistically afford, because if you don't stick to the payment plan or skip payments your plan will be cancelled and you could be disconnected. If you do stick to your payment plan, your retailer cannot disconnect you.*

Disconnection can be initiated by a Retailer when a customer accrues arrears for which they do not demonstrate a willingness or capacity to repay. The Energy Retailer's Association of Australia, the representative organisation of Australia's licensed energy retailers, publishes a hardship policy that outlines the role seen by retailers in this regard<sup>15</sup>:

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<sup>12</sup> <http://www.scer.gov.au/workstreams/energy-market-reform/national-energy-customer-framework/>

<sup>13</sup> Community service obligations primarily refer to energy concessions and state-wide price equalisation schemes.

<sup>14</sup> AER webpage “Experiencing trouble paying your energy bills?” [www.aer.gov.au/consumers/my-energy-bill/problems-paying](http://www.aer.gov.au/consumers/my-energy-bill/problems-paying) accessed 15.09.2013

<sup>15</sup> [http://eraa.com.au/wp-content/uploads/Hardship\\_Support.pdf](http://eraa.com.au/wp-content/uploads/Hardship_Support.pdf) accessed 15.09.13

*“At any one time there will be members of the community facing financial hardship. This can be either temporary hardship, where someone might be going through a difficult period, or chronic hardship, where people are indefinitely in a financially disadvantaged position. Energy retailers provide hardship programs for people who are having temporary difficulty paying for their energy consumption.”*

As can be seen, emphasis is placed on differentiating *temporary* and *chronic* hardship. In relation to chronic hardship, the ERAA policy also states:

*“The role of an energy retailer is not to administer social welfare policy: this is a core function of Governments. Hardship is best addressed through comprehensive social welfare policies, because after all, if someone is having difficulty paying their energy bills, then they are also probably having trouble paying their other bills and debts.*

*... Price regulation is not an effective mechanism to protect people facing hardship.”*

The ERAA position is consistent with the earlier summary of the energy policy perspective that social policy has a key role to play in ensuring access to affordable energy that market-focussed energy policy either cannot or should not play – especially for those considered to be in “chronic” hardship. From a consumer’s perspective, it is the combined influence of social policy and energy policy that they experience day to day. Any efforts to reconcile this policy dilemma should be based on an understanding of those households most affected. This is the rationale behind this project.

## WHAT’S CHANGED SINCE 2009-10?

In the time since the Household Expenditure Survey, financial year 2009-10, energy prices have significantly outpaced general inflation in the Australian economy as shown in Figure 1 (over 40% in nominal terms). As well as persistent media and political commentary on price rises<sup>16</sup>, the consumption patterns of households have been materially impacted by the combined impact of prices on energy conservation and the uptake of solar photovoltaic power systems. Figure 2 is adapted from the latest energy forecasts from the Australian Energy Market Operator (AEMO) and illustrates the decline in consumption of around 5% across the residential and commercial sectors since around 2009-10, the time of the Household Expenditure Survey.

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<sup>16</sup> As Simshauser and Nelson (2012) say: “... the political economy of energy pricing in Australia has never been so controversial.”

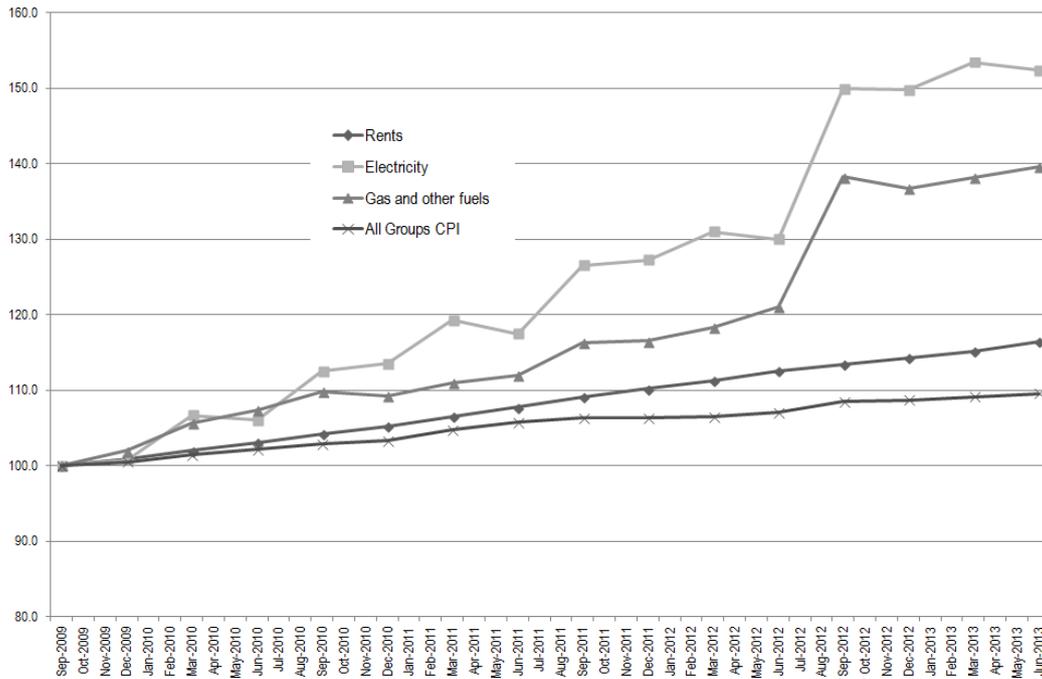


Figure 1: Price inflation since the 2009-10 Household Expenditure Survey (source: ABS 6401.0 Consumer Price Index, Australia)

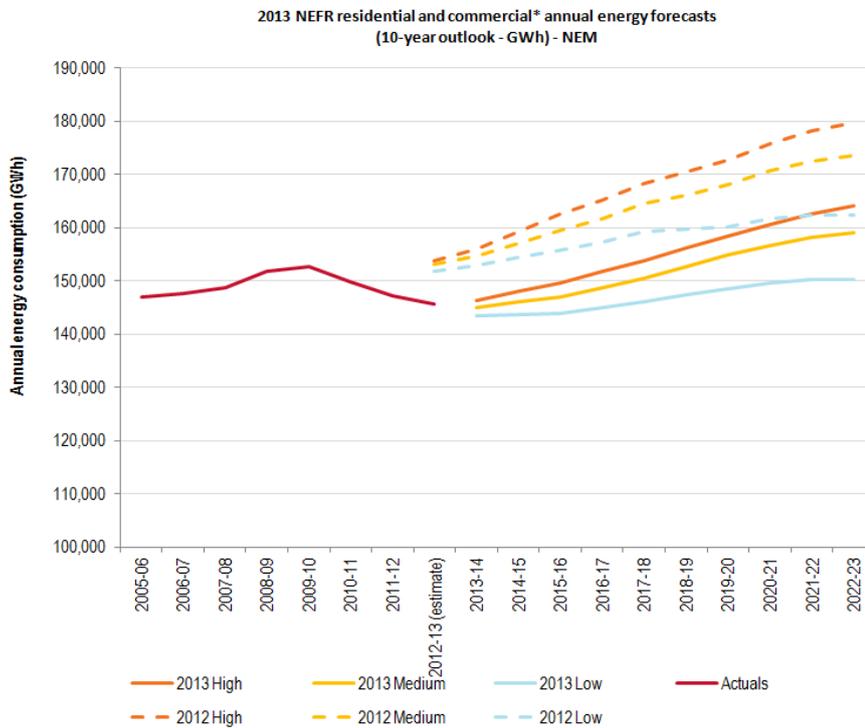
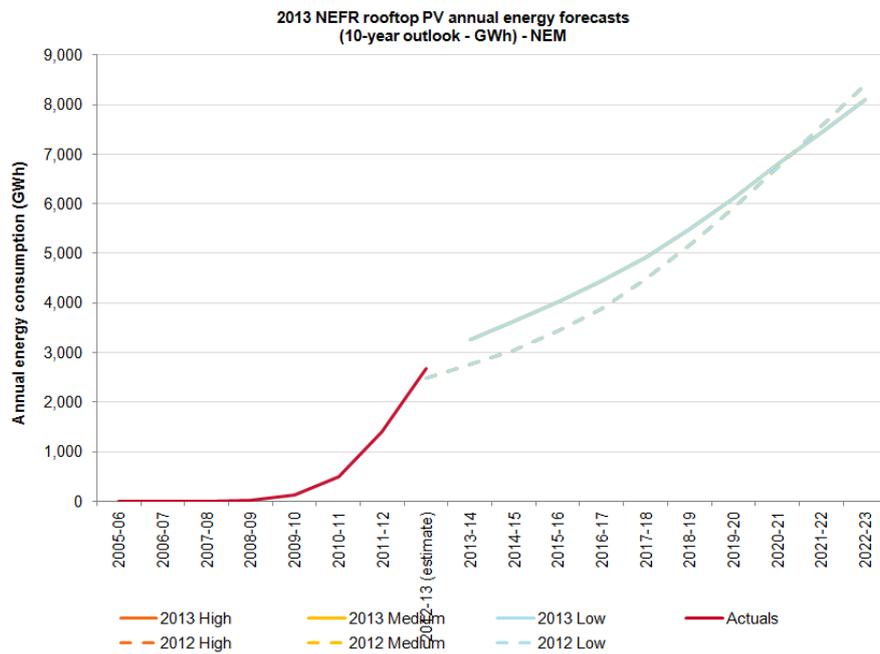


Figure 2: Residential and commercial electricity consumption trends since the 2009-10 Household Expenditure Survey (source: AEMO National Energy Forecasting Report 2013)<sup>17</sup>

<sup>17</sup> <http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013>

Figure 3 is also adapted from the latest forecasts from the Australian Energy Market Operator (AEMO) and illustrates the exponential growth in small scale solar photovoltaic power systems in the NEM since 2009-10.



**Figure 3:** Small scale solar power system uptake trends since the 2009-10 Household Expenditure Survey (source: AEMO National Energy Forecasting Report 2013) <sup>18</sup>

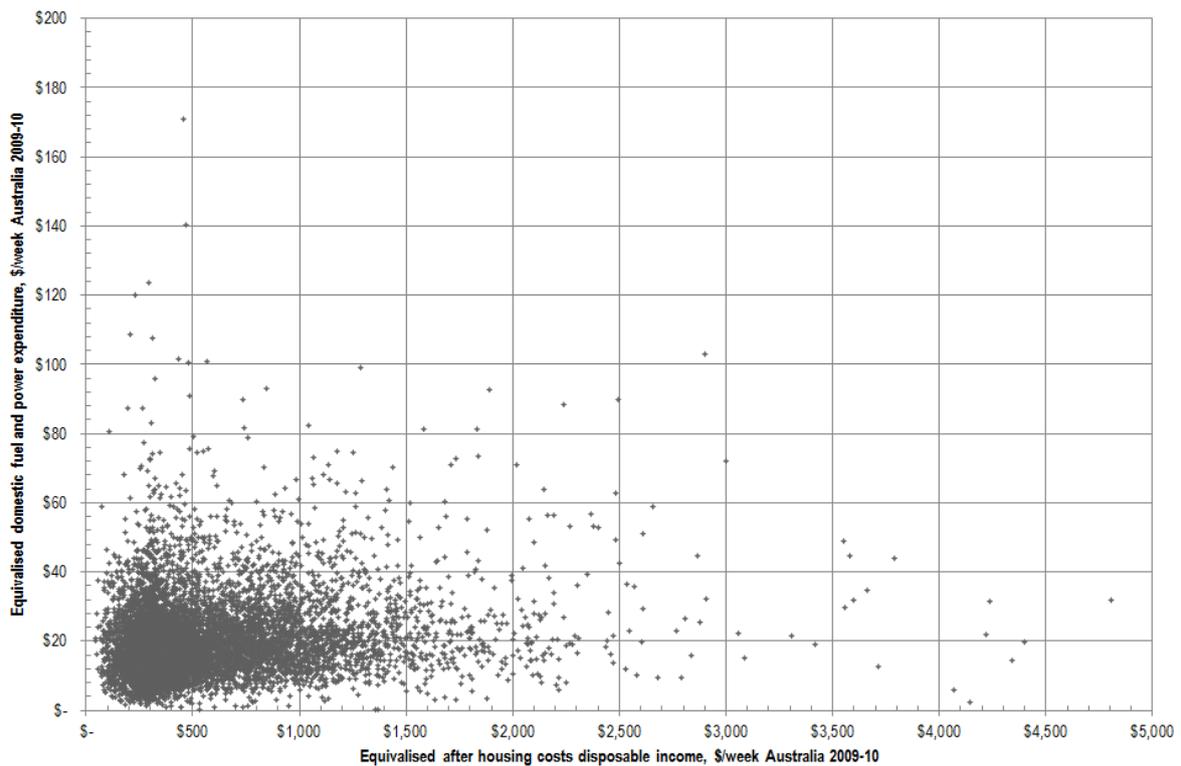
The implications of these developments for the findings from the HES analysis have been considered. The analysis has sought to understand the distributional impacts of energy expenditure so the findings can be expected to be impacted if the subsequent price rises have been distributed differently to expenditure during the survey. There is reason to believe that the uptake of solar and redistribution of costs via feed-in tariffs will have skewed costs toward those without solar. It is expected, but not known for sure, that the relative energy poverty cohort would have a relatively low uptake of solar due to having limited financial capacity for the upfront costs but also because of the high proportion of renters.

On the basis that solar is the main contributor to redistribution, it is considered that the conclusions drawn from the 2009-10 HES data will remain valid at the time of this report (2013): the price rises since the HES are expected to deepen the energy poverty of those affected but not materially change the composition of households in question.

<sup>18</sup> <http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013>

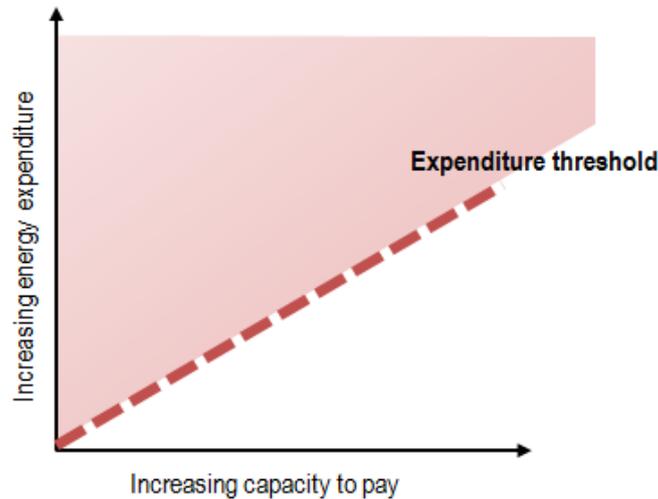
## METHODOLOGY SUMMARY

Just like its predecessor, the UK's new fuel poverty measure plays out on the relationship between income and expenditure. However, the new indicator utilises an equivalised, after-housing-cost measure and expenditure is also equivalised to allow comparability between households of different sizes. For this research, the income dimension is referred to as 'capacity to pay' and is represented by equivalised after housing cost disposable income on the horizontal axis and equivalised energy expenditure on the vertical. The 2009-10 HES data maps onto these axes as shown in Figure 12.



**Figure 4:** Scatter diagram of equivalised energy expenditure vs capacity to pay 2009-10 Household Expenditure Survey

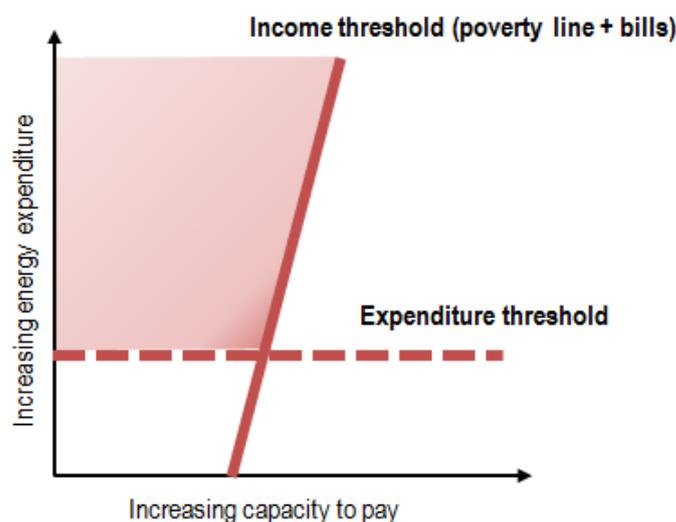
The UK fuel poverty approach is to identify a cohort of households considered most at risk. In general terms, the previous UK approach of 10% of income required to be spent on energy would identify a cohort such as that illustrated in Figure 5.



**Figure 5:** Illustration of 'energy poverty' defined by exceeding an expenditure threshold expressed as a % of income (or capacity to pay)

The UK's new LIHC approach defines the fuel poverty cohort by setting two separate thresholds: one for income and one for expenditure. The new indicator, depicted in Figure 6 finds a household to be fuel poor if:

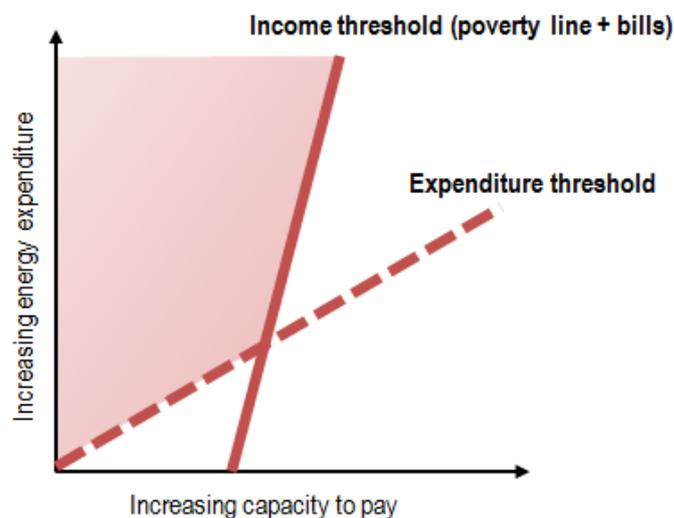
- a. Their income is below the poverty line (taking into account energy costs); and
- b. Their energy costs are higher than is typical for their household type.



**Figure 6:** Illustration of 'energy poverty' defined by exceeding an expenditure threshold expressed as a fixed amount and falling below an income threshold

The income threshold is set at the poverty line (after housing costs) plus an amount to cover the cost of the energy bills. That is, the income threshold captures all households who, after paying for their energy bills and housing costs, are left with an income at or below the poverty line. In turn, the poverty line is set as a percentage of the median income for a household of the same size.

A hybrid approach has also been examined as part of this research. This combines the two UK approaches to identify the energy poverty cohort as depicted in Figure 7.



**Figure 7:** Illustration of 'energy poverty' defined by exceeding an expenditure threshold expressed as a % of income (or capacity to pay) and falling below an income threshold

These three alternative definitions of relative energy poverty are discussed in more detail in the Technical Appendix accompanying this report.

In a review of the UK fuel poverty measure for UK energy regulator OFGEM, Owen (2010)<sup>19</sup> discusses subjective measures as supplements or alternates to the objective measures (i.e. based on actual incomes and expenditures). The 2009-10 HES included questions relating to Financial Stress Indicators<sup>20</sup> that can similarly provide subjective indicators relevant to the research objective. There are two indicators directly related to energy expenditure:

- “Whether could not pay gas/electricity/telephone bill on time due to shortage of money” in variable [*cf/electr*]
- “Unable to heat home due to shortage of money” in variable [*cf/noheat*]

The “could not pay utility bill” cohort represents 14% of households (weighted) while the “unable to heat home” represents a cohort of 2% of households.

A set of five cohorts, three objective and two subjective, can therefore be identified and compared. These are shown in Table 2.

<sup>19</sup> Review of the UK fuel poverty measure, Report for Ofgem, Gill Owen, Sustainability First March 2010 from <http://www.sustainabilityfirst.org.uk/publications.htm>

<sup>20</sup> Australian Bureau of Statistics, 6530.0 Household Expenditure Survey 2009-10, Summary of Results, p59

Cohort name	Description	Weighted Count.	% of All households
1. Low Income High Cost	Below income threshold, above median energy expenditure	782,409	12%
2. Low Income and energy > 10%	Below income threshold, energy expenditure > 10% of capacity to pay	386,936	5.7%
3. Energy > 10%	energy expenditure > 10% of capacity to pay	434,054	6.4%
4. could not pay utility bill	Financial Stress Indicator: could not pay utility bill in last 12 months due to shortage of money	939,254	14%
5. unable to heat home	Financial Stress Indicator: unable to heat home in last 12 months due to shortage of money.	138,520	2.0%

**Table 2:** Five possible energy poverty cohorts for comparison

These five cohorts have then been compared across a range of attributes. The categories of attributes considered are:

- State or territory of usual residence
- The number of adults and children in the household, family composition and ‘lifecycle’ stages
- Housing status in terms of tenure and landlord type
- The source of income and the dominant types of pensions and benefits received
- The use of gas versus ‘all electric’

The findings from the analysis and implications for policy follow. The Technical Appendix contains more detailed results.

## FINDINGS

- There is no need to select a single definition of ‘energy poverty’ in order to inform policy: the five alternative definitions considered in this research identify similar groups of households.
- Significant proportions of those in relative energy poverty rely on wage and salary income and therefore fall outside of the traditional safety nets of the welfare system.
- Other characteristics that increase the likelihood of being in energy poverty are:
  - Single parent households;
  - People living alone, particularly Aged and Disability pensioners living alone;
  - Low income renters, particularly those who rent privately;
  - Dual Fuel households – those reliant on mains or bottled gas.

### **A. State or territory of usual residence**

#### Findings

The risk of energy poverty varies significantly between the states. This is due to a range of factors including the range of climates, differences in incomes and housing costs as well as differences in energy prices and concession regimes.

In 2009-10, on objective measures, households in Victoria and Tasmania were more likely to be in energy poverty than for other jurisdictions. This is due to colder climates driving above average consumption. The climate also drives relatively high consumption in the ACT and NT but this was offset by lower prices and higher incomes.

However, on subjective measures, the difference between states was less pronounced.

#### Implications for policy

On objective measures, the incidence of hardship varied substantially between states. The variations are due to a range of factors not just differences in energy prices. The NECF provides a common national framework for the relationship between households and energy businesses but the local context can be expected to continue to be a strong determinant of who is most at risk of relative energy poverty.

Both Victoria and Tasmania have reformed their concession regimes in the years since the 2009-10 survey. A longitudinal study that repeats this analysis on the next Household Expenditure Survey may be able to identify the impact of changes to jurisdictional energy prices and concession regimes since 2009-10.

## **B. The size and structure of the households**

### Findings

Energy expenditure is strongly influenced by both income and household size. Income also tends to increase as household size increases. The methodology has sought to equalise both expenditure and capacity to pay so that households of different sizes can be compared. Further research in this area of equalisation for household size may be useful for refining energy consumption benchmarks.

Couple-only households are clearly the least likely to fall into relative energy poverty. This is particularly true for couples under 65. Couple-only households are around one quarter of all households in the study.

Those identified as being in relative energy poverty include a significant proportion of people living alone (around 40% in each case compared to 23% of all households in the study)

The family compositions most likely to fall into relative energy poverty are single parent households and couples with very young children (eldest < 5 years).

### Implications for policy

People living alone, single parents and families with young children are the most likely to fall into energy poverty.

Cost reflective pricing is likely to increase fixed supply charges (to, for example, include more capacity-based prices) and this may particularly impact those living alone, for whom these charges represent a greater proportion of bills.

## **C. Housing Status**

### Findings

On all measures, relative energy poverty is biased towards renters and those renting privately in particular.

All three objective cohorts have households renting from state and territory housing authorities (public rental) at lower rates than the proportion of these households that fall below the income threshold. This is likely to be a result of capped housing costs. However, the subjective measures show greater proportions for public renters, especially those unable to heat their homes due to a shortage of money. This may reflect the influence of the 'worst performing' public housing stock.

### Implications for Policy

Renters face particular barriers to energy efficiency (often referred to as the landlord-tenant split incentive) and this may explain why those renting privately are most at risk of energy poverty. Renting can also mean moving house relatively often and needing to negotiate new energy contracts each time. This can represent both a risk and opportunity.

## **D. The source of income and the types of pensions and benefits received**

### Findings

This study has only considered those households whose main source of income is wages and salaries or government pensions and benefits. This is around 80% of all households.

By all measures, at least one quarter of those in relative energy poverty have wages or salaries as the main source of household income. At least half of these households receive ‘no social assistance benefits in cash’ and would therefore be considered to be outside the welfare system. The other half mainly receives the Family Tax Benefit. All of these households would be unlikely to be eligible for an energy concession in any jurisdiction.

Households reliant on government pensions and allowances as their main source of income represent around two-thirds to three quarters of each energy poverty cohort. The adequacy of the income *safety net* is therefore a critical determinant of relative energy poverty, but not a comprehensive one.

### Implications for Policy

The safety nets of income support and concessions do not reach a significant proportion (around one quarter) of those in relative energy poverty. These households are still eligible to access the various jurisdictional emergency payment schemes (discretionary payments dispensed on need rather than regular payments based on fixed eligibility criteria). Policymakers should consider the relative resourcing of these safety net elements.

## **E. Concessions**

### Findings

The concession information in the HES microdata is added post-survey as part of the ABS Fiscal Incidence Study (FIS) based on interpreting eligibility criteria. There are significant mismatches in the number of eligible households between the ABS data and that published by jurisdictional regulators.

### Implications for Policy

Issues exist in relation to reconciling the FIS data with the concession data published by jurisdictional regulators. However, the results indicate that around 30-40% of those in relative energy poverty are not eligible to receive a concession and suggest that further work on the targeting of concessions is warranted.

## **F. Dual Fuel households versus ‘all electric’**

### Findings

Even when corrected for household size, dual fuel households tend to spend 25-30% more on energy than all-electric households.

For low income households, being all-electric reduces the likelihood of falling into energy poverty.

### Implications for Policy

Gas prices have risen significantly since 2009-10 and are projected to increase even further as export parity pricing increases its influence on domestic gas markets. Concessions and emergency payments will need to consider their ability to preserve affordability as prices rise.

## **G. Analysis of Specific Household Types**

### **G1. Aged Pension Recipients**

#### Findings

Aged Pension recipients most likely to be in relative energy poverty are those living alone (>50% of all cohorts), those renting (especially privately) and dual fuel households.

#### Implications for Policy

The UK’s approach to fuel poverty<sup>21</sup> considers the aged to be particularly vulnerable to negative health effects of cold homes and this is consistent with the findings of recent climate risk and adaptation vulnerability analyses being developed for Australia<sup>22</sup>. Combined with the analysis in this report, a particular focus on the elderly living alone may be justified.

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<sup>21</sup> For example, John Hills 2012 “Getting the measure of fuel poverty. Final report of the Fuel Poverty Review” p15

<sup>22</sup> This work is being coordinated by the National Climate Change Adaptation and Research Facility (NCCARF; [www.nccarf.edu.au](http://www.nccarf.edu.au)). For example refer to Sevoyan, A, Hugo, G, Feist, H, Tan, G, McDougall, K, Tan, Y & Spoehr, J 2013, *Impact of climate change on disadvantaged groups: Issues and interventions*, National Climate Change Adaptation Research Facility, Gold Coast, 182 pp.

## **G2. Disability Support Pension Recipients**

### Findings

Disability Support Pension recipients most likely to be in relative energy poverty are those living alone, single parents, those renting (especially privately) and dual fuel households.

### Implications for Policy

The findings here should be interpreted in conjunction with other sources such as the 2012 Public Interest Advocacy Centre (PIAC) report “MORE POWER TO YOU: electricity and people with physical disability”<sup>23</sup> and the Productivity Commission’s 2011 “Disability Care and support – Inquiry Report”. The introduction of medical heating and cooling rebates and utilities allowances should be considered in a broader review of concessions.

## **G3. Households with dependent children**

### Findings

The households with children most likely to be in relative energy poverty are single parent households, couples with very young children (eldest < 5 years) and those renting (especially privately). Of note, households whose primary source of income is wages or salaries make up over 40% of each of the energy poverty cohorts.

### Implications for Policy

Families in energy poverty include a large proportion that fall outside of the traditional safety nets and are ineligible for most jurisdictional concession regimes.

## **G4. Wage and Salary earners**

### Findings

In summary, other than falling outside the traditional safety nets, this cohort does not appear to have any particular distinguishing risk factors other than those seen in other analyses: people living alone, renters, single parents and couples with young children.

### Policy implications

The source of income defines entitlements to energy concessions and this group, while being a substantial proportion of those in relative energy poverty (>25%), are not currently eligible for such assistance. This highlights the need for a review of concessions and a consideration of the resources allocated to concessions compared to other forms of assistance (such as emergency payments).

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<sup>23</sup> <http://www.piac.asn.au/sites/default/files/news/attachments/morepowertoyou.pdf> ISBN 978-0-9757934-8-0

# RELATIVE ENERGY POVERTY IN AUSTRALIA

Australia's national, state and territory governments provide a number of safety nets to ensure households are able to pay their energy bills and remain connected. As energy prices rise, who is most at risk of falling through the net?

A research report for policy makers and consumer advocates funded by the Consumer Advocacy Panel (Project No. 565)

## TECHNICAL APPENDIX

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## THE UK APPROACH

The UK Government released its new approach to tackling Fuel Poverty in England<sup>24</sup> in July 2013. The new policy follows the conclusion of the independent Hills Review of Fuel Poverty<sup>25</sup> in 2012. The principal task of the Hills review was to provide a first principles examination of the way in which trends in fuel poverty, and identification of those at risk from it, have been measured. The new policy adopts the recommendation of Professor Hills for a new way of measuring the breadth and depth of the problem: the Low Income, High Cost (LIHC) indicator.

The Hills Review also confirmed the concept of *fuel poverty* as a distinct and serious problem. The concept has had cross-party support at least since the introduction of the Warm Homes and Energy Conservation Act (WHECA) in 2000. The policy response from successive UK governments has seen a unique alignment of health, energy, climate change and economic development policies to focus on improving the energy efficiency of dwellings and avoiding excess winter deaths.

Public policy in Australia has not embraced the concept in anything like the same way.

Australian research and analysis is quite limited. In “*A new form of energy poverty has become the scourge of ‘liberalised’ electricity sectors*”, Chester & Morris<sup>26</sup> explore energy market liberalisation globally and identifies rapidly rising electricity prices as a common out-turn of this process. The paper then goes on to translate the largely northern hemisphere concept of *fuel poverty* to the Australian context. The work of Chester & Morris emphasises and highlights the relative paucity of data and analysis in Australia. This is particularly apparent in comparisons with the relatively mature and sophisticated approach of the UK, highlighted most recently in the finalisation of the Hills Fuel Poverty Review (Hills, 2012). Another important contribution to the literature is from AGL Energy’s Simshauser and Nelson<sup>27</sup>. The analysis of AGL Energy’s 2.4m electricity and gas customer provided some important insights – especially around the incidence of hardship on families and working families in particular.

Before seeking to apply the UK approach to Australia it is important to acknowledge that there are very material contextual differences between the UK and Australia – in relation to drivers of consumption and the governance arrangements of a response - including the climate, the number and roles of the layers of government. Yet there are of course significant similarities in terms of the liberalisation of energy markets; from where Australia has sourced many of its reform cues over the years. The Hills review had measurement of fuel poverty as its prime object and there are some very relevant lessons for Australia in this regard – certainly in terms of approach if not results.

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<sup>24</sup> <https://www.gov.uk/government/publications/fuel-poverty-a-framework-for-future-action>

<sup>25</sup> <https://www.gov.uk/government/publications/final-report-of-the-fuel-poverty-review> “Getting the measure of fuel poverty” Prof John Hills, London School of Economics, Final report 2012.

<sup>26</sup> Chester, Lynne and Morris, Alan, 2012, ‘A new form of energy poverty has become the scourge of ‘liberalise electricity sectors’

<sup>27</sup> Paul Simshauser and Tim Nelson “The Energy Market Death Spiral – Rethinking Customer Hardship”, AGL Applied Economics and Policy Research Working Paper No. 31 June 2012 available from <http://www.aglblog.com.au/wp-content/uploads/2012/07/No-31-Death-Spiral1.pdf>

The Hills review aimed to overcome a number of shortcomings in the original headline indicator derived from the *Warm Homes and Energy Conservation Act 2000* (WHECA) of 10% of income being required to maintain a prescribed level of warmth. The review recommended that the Government:

*“...adopt a new approach based on directly measuring the overlap between low income and high costs ... under which households are considered fuel poor if:*

- *They have required fuel costs that are above the median level; and*
- *Were they to spend that amount they would be left with a residual income below the official poverty line.”*

The comparable data sources for Australia are collected and published by the Australian Bureau of Statistics (ABS). Of particular relevance was the release in late 2011 of the 2009-10 Household Expenditure Survey (HES) (6530.0) and, from the Survey of Income and Housing (SIH), the 2009-10 Housing Occupancy and Costs (4130.0) and 2009-10 Household Income and Income Distribution (6523.0).

The new indicator is part of changing the definition of fuel poverty. The consultation report “Fuel Poverty: Changing the framework for measurement”<sup>28</sup> outlines the rationale behind details of the new indicator.

*“At its most basic, a household is fuel poor if it is below the poverty threshold and has higher than typical energy costs”*

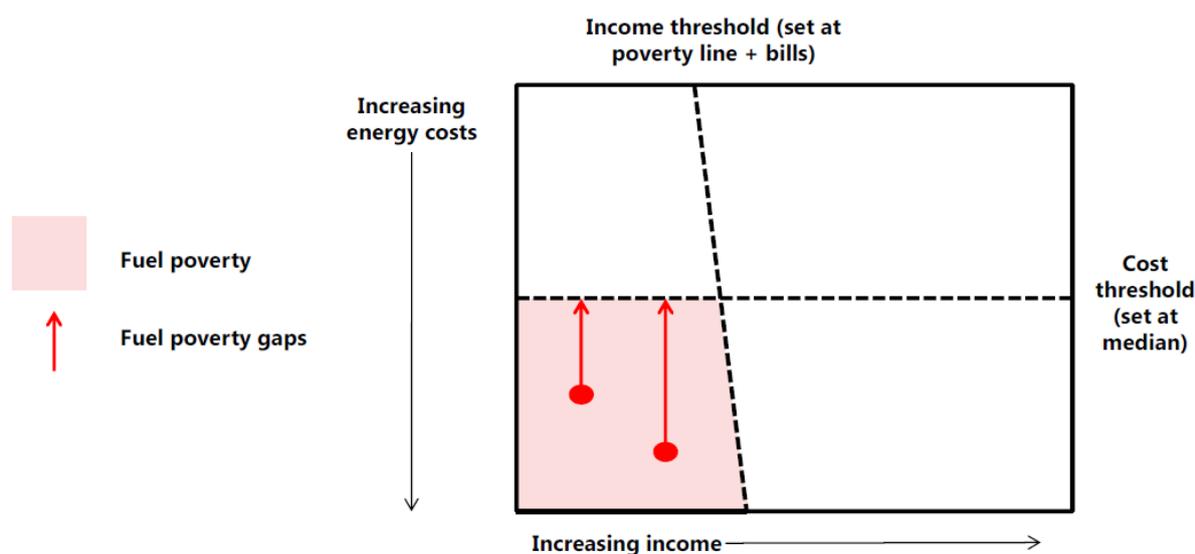
The new indicator (Figure 8) finds a household to be fuel poor if:

- a. Their income is below the poverty line (taking into account energy costs); and
- b. Their energy costs are higher than is typical for their household type.

It also reveals what is referred to as the “fuel poverty gap”. This is the difference between a household’s modelled bill and what their bill would need to be for them to no longer be fuel poor. In Figure 8, example fuel poverty gaps are depicted by the red arrows. The end result is twin indicators of the ‘extent’ and ‘depth’ of fuel poverty – how many households are considered fuel poor and how much they are spending in excess of the median bill for a household of their size.

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<sup>28</sup> <https://www.gov.uk/government/consultations/fuel-poverty-changing-the-framework-for-measurement>



**Figure 8:** The low income high costs definition (source: UK Department of Environment and Climate Change, 2013)

The income threshold is set at the poverty line (after housing costs) plus an amount to cover the cost of the energy bills. That is, the income threshold captures all households who, after paying for their energy bills and housing costs, are left with an income at or below the poverty line. In turn, the poverty line is set as a percentage of the median income for a household of the same size.

The UK Government states that, historically, the main fuel poverty numbers reported have always used Before Housing Costs (BHC) income<sup>29</sup>. This issue had been raised by stakeholders as a concern. Professor Hills recommended that housing costs could not be considered to be discretionary and so should not be included when calculating income. The new indicator is therefore based on After Housing Cost (AHC) income.

The new indicator entails equivalising income and energy costs in order to be able to compare households of a different size on the same scale. Adjusting income thresholds to account for different household sizes is a widely used practice and the equivalence scale used by the UK government is the same as that utilised by the ABS to produce equivalised income estimates for Australian households: the modified OECD equivalence scale. Unlike income, there are no widely used factors for equivalising energy costs. In his review Professor Hills proposed a number of factors to be used as the basis of equivalising based on the different energy costs for different household types.

Statistics on fuel poverty in England have been derived using information from the English Housing Survey, combined with the Building Research Establishment Domestic Energy Model (BREDEM) to calculate household energy costs. It is an important attribute of the UK approach that cost thresholds are set based on “need to spend” – the cost of the energy required to deliver a warm home, as opposed to the actual costs incurred. In this way, the definition captures those who economise to the point of being detrimental to their health.

<sup>29</sup> Department of Energy and Climate Change, UK Government July 2013 “Fuel Poverty: changing the framework for measurement. Government response to the consultation on the framework for measurement”, p14

In applying the LIHC indicator to Australia, no equivalent of the BREDEM is applied with the ABS Survey of Income and Housing (SIH) and Household Expenditure Survey (HES). As a result, the Australian application is based on actual costs incurred rather than “need to spend”. This approach will therefore not capture those households who under-consume and would therefore be more likely to underestimate the extent and depth of the problem compared to the UK approach.

An Australian approach based on actual expenditure should therefore be complemented by consideration of other factors. To this end, two *subjective* indicators were also considered<sup>30</sup>. These two are ‘financial stress indicators’ from the survey that directly related to energy: a question about being unable to pay utility bills due to a shortage of money and a question about whether they were unable to heat their home due to a shortage of money.

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<sup>30</sup> As suggested by Gill Owen in “Review of the UK fuel poverty measure, Report for Ofgem, Sustainability First March 2010 from <http://www.sustainabilityfirst.org.uk/publications.htm>

## A METHODOLOGY FOR AUSTRALIA

As shown, the UK's new fuel poverty measure examines the relationship between income and modelled expenditure. Deriving a meaningful LIHC indicator for Australia requires consideration of the available data (the HES unit record files in this case) and the purpose for which the measure is intended to be used.

For an Australian application, the income dimension or 'capacity to pay' is represented by equivalised after housing cost disposable income. The rationale adopted for the Australian context is discussed below:

The source data is the Australian Bureau of Statistics (ABS) 2009-10 Household Expenditure Survey (HES) confidentialised unit record files (CURF)<sup>31</sup>.

### The Sample

The overall HES sample has been edited in order to ensure the analysis is representative of the vast majority of household situations. As recommended by Saunders et al (2012)<sup>32</sup>, two groups were excluded:

- All households who report zero or negative incomes
- All self-employed households

The rationale being that reported income data is often an unreliable indicator of living standards and is therefore not suitable for assessing poverty status. For this research, this was extended to all households who reported before housing cost income of less than \$200 per week on the basis that this was below the safety net income available in Australia at the time and would be unlikely to represent the ongoing circumstances of the household. Further, records related to households who reported energy expenditure for multiple properties (such as holiday homes) were excluded as being unrepresentative (due to multiple supply charges).

The end result was a sample size of 8272 HES records representing households who reported their main source of income<sup>33</sup> as either *wage and salary* or *government pensions and allowances*. This constrains the analysis to just over 80% of all households. These were then analysed using the IBM SPSS® statistical software package. The ABS provides the microdata with survey weight information to reflect how representative each record is of the broader population. The statistical analysis was performed with weights included.

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<sup>31</sup> The May 2013 Federal Budget include a funding allocation to conduct the HES four-yearly. If achieved, the results of the next HES might be available late 2015.

<sup>32</sup> Poverty in Australia: New Estimates and Recent Trends - Research Methodology October 2012. Peter Saunders, Bruce Bradbury and Melissa Wong; Social Policy Research Centre (SPRC), University of New South Wales.

<sup>33</sup> As reflected in variable PSRSCH8: Main Source of Income [psrsch8] = "2" [own unincorporated business income] AND "4" [other]

## Capacity to pay

A household's capacity to pay is determined by a range of factors but it is important to select an appropriate measure from the possibilities provided by the combined Survey of Income and Housing and Household Expenditure Survey responses. For the purposes of this analysis, it was decided to use "disposable household income" since it accounts for (unavoidable) taxation and Medicare Levy expenditure<sup>34</sup>.

- Variable = *dispscb8* "Current weekly HH disposable income"

Similarly, the survey results provide a number of ways of estimating housing costs. The HES results include a summary expenditure item "current housing costs". This item includes the following components:

- Variable = *exp01* "Household weekly expenditure on current housing costs (selected dwelling)" which combines<sup>35</sup>:
  - Weekly rent payments
  - Weekly body corporate payments
  - Weekly general and water rates payments
  - Weekly mortgage payments (interest only)
  - House and contents insurance
  - Repairs and maintenance (generally applies to owners not renters)

Guidance on the derivation of poverty line estimation was taken from the research methodology (Saunders et al 2012)<sup>36</sup> adopted by the Australian Council of Social Service (ACOSS) for their 2012 "Poverty in Australia" report<sup>37</sup>. The basic income variable used in the analysis is household disposable (i.e. after-tax) income, adjusted for need using the modified OECD equivalence scale. The OECD scale assigns a value of 1.0 to the first adult in the household, 0.5 to each subsequent household and 0.3 to each dependent child (where dependent children are defined as being under 15 years of age). Income is divided by this scale to calculate equivalised income.

The equivalence value is calculated by the ABS and attached to each survey record in the variable EQUIVH. Consistent with the approach of Saunders et al, in producing the after housing costs estimates, weekly housing costs are deducted from income, and this difference is then divided by the equivalence scale. The median of this adjusted measure is then derived and the poverty line is set as a percentage of the new median.

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<sup>34</sup> ABS 6503.0 SIH and HES User Guide 2009-10 page 2

<sup>35</sup> ABS SIH and HES User Guide 2009-10, p102

<sup>36</sup> Poverty in Australia: New Estimates and Recent Trends - Research Methodology October 2012. Peter Saunders, Bruce Bradbury and Melissa Wong; Social Policy Research Centre (SPRC), University of New South Wales.

<sup>37</sup> Available from <http://acoss.org.au/policy/poverty/>

The equivalised AHC income measure is calculated as  $EAHCDI = (dispsch8 - exp01)/EQUIVH$ . The attributes of this variable are shown in Figure 9.

**SPSS Descriptive Statistics**

EAHCDI1

N	Valid	6812785
	Missing	0
Mean		696.4881
Median		576.9200
Std. Deviation		492.53811
Range		8354.70
Minimum		41.30
Maximum		8396.00

**Figure 9:** Descriptive statistics of the equivalised disposable AHC income variable

The median value determined above has been used as the basis for the establishment of the poverty lines that define the income thresholds. It is noted that the median of \$577 per week is slightly lower than that used in the 2012 Poverty in Australia Report of \$584.80<sup>38</sup>. This appears to be due to the selection of the comprehensive housing expenditure variable as the ACOSS result can be replicated by using housing cost variable *bcosts2b* rather than *exp01*. The key difference between *exp01* and *bcosts2b* is inclusion of the costs of house and contents insurance and repairs and maintenance on the dwelling<sup>39</sup>.

According to Saunders et al, almost all Australian poverty researchers now use one of two poverty lines set at 50% and 60% of median income. The poverty line recommended in the Hills Fuel Poverty Review is the households below average income (HBAI) produced by the Department for Work and Pensions. This approach defines someone as receiving a relative low income if they receive less than 60% of the median equivalised net household income.

In order to preserve comparability with the UK, the 60% poverty line threshold has been adopted for the final report of this research project. Consistent with the Hills recommendation, the income threshold is applied so that income net of energy expenditure is less than the poverty line.

This provides an income threshold of **\$346 + energy expenditure per week** for 2009-10

<sup>38</sup> Poverty in Australia: New Estimates and Recent Trends - Research Methodology October 2012. Peter Saunders, Bruce Bradbury and Melissa Wong; Social Policy Research Centre (SPRC), University of New South Wales, p2

<sup>39</sup> ABS Household Expenditure Survey and Survey of Income and Housing, User Guide 6503.0 2009-10 page 101.

## Energy Expenditure

The HES reports energy expenditure as *Domestic fuel and power*, and includes electricity, gas and other fuels such as firewood. This represents actual expenditure incurred and bill totals are net of concessions (ie concessions are accounted for as reduced expenditure rather than as increased income).

- Variable = *exp02* “Household weekly expenditure on domestic fuel and power”

The energy expenditure variable aggregates detailed expenditures on electricity, mains gas, bottled gas and other fuels such as firewood. The only analysis performed on this next layer is to examine the results for dual fuel households – those using mains or bottled gas (LPG) as well as electricity.

The Low Income High Costs (LIHC) indicator, as it is known, utilises equivalence scales to adjust for household size and composition. In doing so, the indicator identifies some 2.5 million<sup>40</sup> households as living in fuel poverty compared to 4.0 million using the original indicator (Hills, 2012). The recommendations of the final report differed somewhat from the 2011 draft in how the equivalence scale for consumption is derived. The subsequent Government response included a further change.

The UK LIHC approach has highlighted the sensitivity of the approach to how it seeks to ‘equivalise’ the indicator of fuel poverty between households of different size. Put simply, if energy poverty is indicated by some relationship between disposable income and (actual or required) expenditure, how can a single person household’s risk of fuel poverty be compared to that of a couple or a household with children. Equivalisation of income is a widely accepted concept in both Australia and the UK and is based on attempting to equate *well-being* or *standard of living* between households of different sizes and compositions.

It is apparent that if the measure is to equivalised income to ensure comparability between samples then an equivalent must be applied to expenditure as well.

Options include adopting an income equivalence scale such as the modified-OECD scale (1 point for the first adult, 0.5 points for each subsequent adult and 0.3 for each child) as used by the ABS or the square-root scale as used in some OECD publications<sup>41</sup> where the value of each additional person is the square root of the household size e.g the second person contributes  $\sqrt{2}$  (=1.41), the next person takes the scale to  $\sqrt{3}$  (=1.73), the fourth to  $\sqrt{4}$  (=2) and so on.

Alternatively, the actual expenditure patterns of households can be examined to see the impact of household size. A summary of energy expenditure by income and household size is shown in Figure 10. An equivalence scale can be estimated from the change in median expenditure from a single person household in each. For the purposes of this research, the equivalence scale across the bottom two income quintiles is compared to the two income scales discussed above.

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<sup>40</sup> Department of Environment and Climate Change (DECC) Fuel Poverty: A Framework for future action – Analytical annex, p6 2.5m households out of a total 21.6 (12%) were categorised as “fuel poor”.

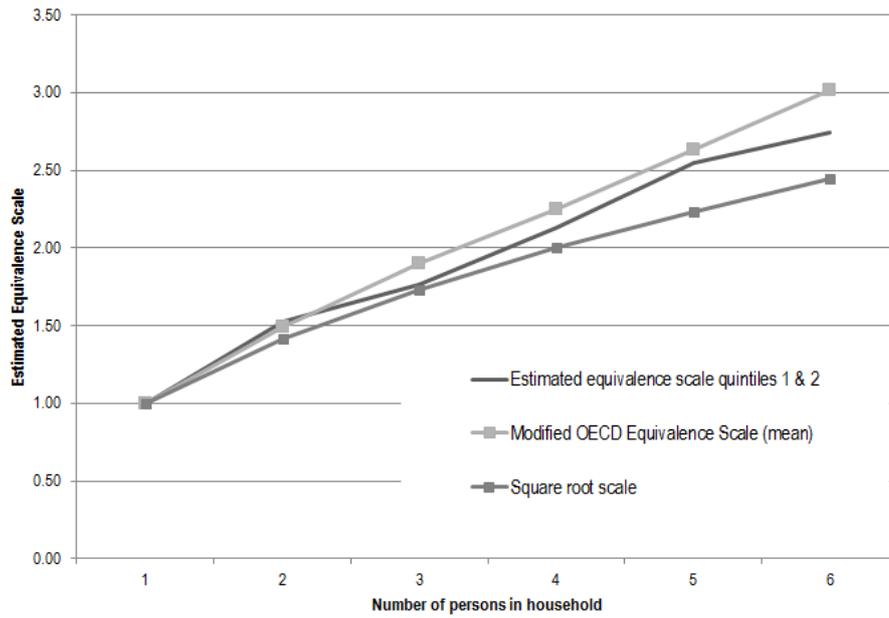
<sup>41</sup> Refer to OECD (2013), *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*, OECD Publishing. <http://dx.doi.org/10.1787/9789264194830-en> pages 173-177

For example, estimating the equivalence scale for a 2 person household compared to a one person household: For the lowest income quintile expenditure increases from \$15.57 to \$24.62, a multiple of 1.58. For the second quintile expenditure increases from \$16.64 to \$24.51, a multiple of 1.47. The arithmetic mean of 1.58 and 1.47 is 1.53 and that is the estimate used. The same approach is then applied to three person households, four person households and so on.

		No. persons in household					
		1	2	3	4	5	6+
		energy expenditure	energy expenditure	energy expenditure	energy expenditure	energy expenditure	energy expenditure
		Median	Median	Median	Median	Median	Median
Equivalised	1	\$ 15.57	\$ 24.62	\$ 29.31	\$ 33.91	\$ 37.21	\$ 47.95
after housing	2	\$ 16.64	\$ 24.51	\$ 27.62	\$ 33.75	\$ 44.88	\$ 40.51
cost	3	\$ 18.87	\$ 24.82	\$ 30.08	\$ 36.81	\$ 37.13	\$ 44.80
disposable	4	\$ 18.80	\$ 27.84	\$ 33.83	\$ 40.66	\$ 49.87	\$ 55.00
income	5	\$ 20.17	\$ 28.69	\$ 38.97	\$ 44.88	\$ 54.28	\$ 39.36
(quintiles)							
Estimated equivalence scale		1.00	1.53	1.77	2.13	2.55	2.75
quintiles 1 & 2							
Modified OECD Equivalence		1.00	1.49	1.90	2.25	2.63	3.02
Scale							
Square root scale		1.00	1.41	1.73	2.00	2.24	2.45

**Figure 10:** Derivation of an estimate of an energy expenditure equivalence scale, Australia 2009-10

As can be seen in Figure 11 each method provides a similar result and the scale derived from actual expenditure patterns is largely bracketed by the two income scales. This suggests that there is little reason, for this initial level of analysis at least, to pursue a bespoke expenditure equivalence scale that is different to that used for the equivalence of income. Since both the Australian Bureau of Statistics and the UK National Statistics Office use the modified OECD equivalence scale, this project has used this for both income and expenditure.



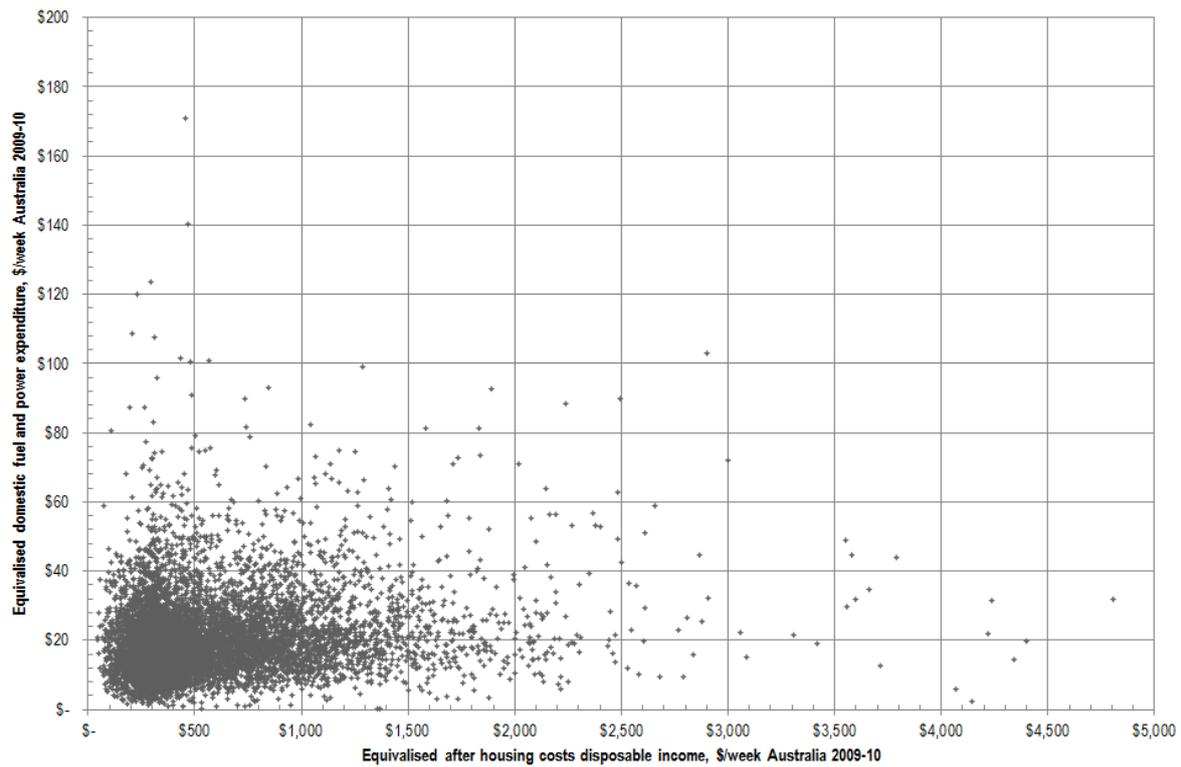
**Figure 11:** Estimated energy expenditure equivalence scales, Australia 2009-10

This allows for the development of a new variable for equivalised expenditure:  $eqexp02 = exp02 / eqinh$

This provides an expenditure threshold of median *equivalised* consumption of **\$17.36** for 2009-10

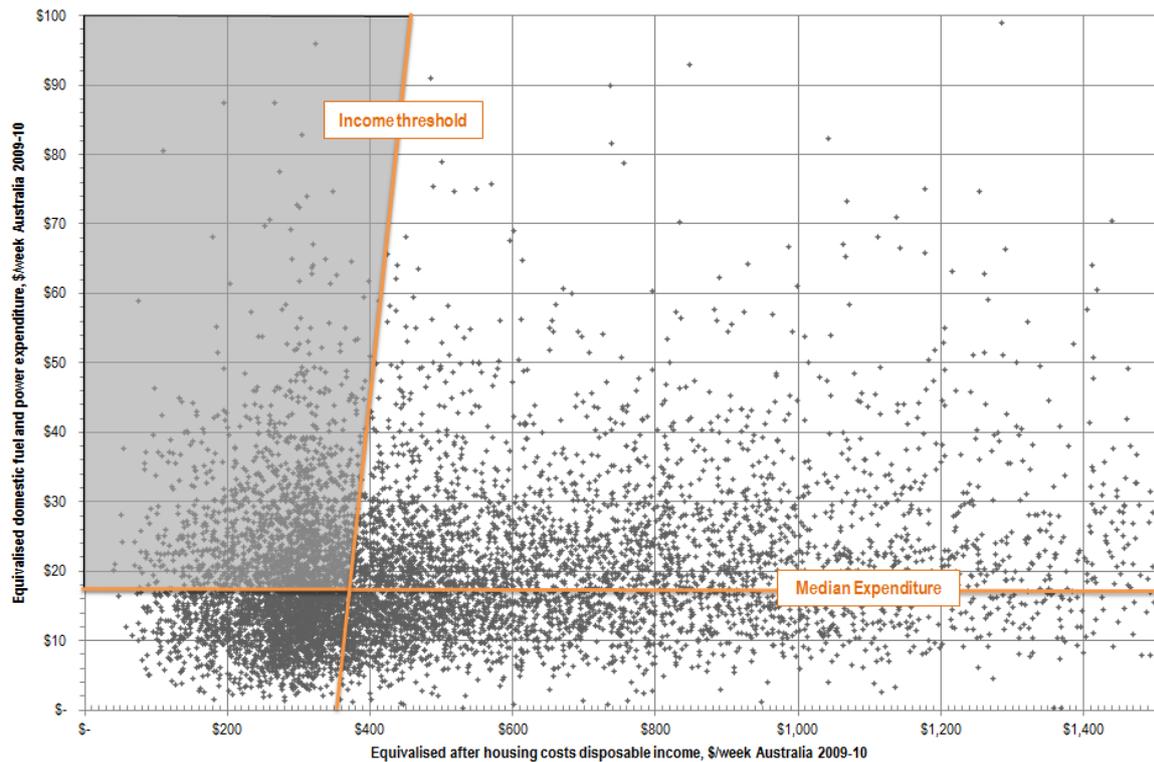
## THE SPECTRUM OF INCOME AND EXPENDITURE

As shown in the discussion of the UK's new LIHC indicator, the UK's fuel poverty measures play out on the relationship between income and expenditure. For this research, the income dimension is referred to as 'capacity to pay' and is defined as equivalised after housing cost disposable income on the horizontal axis and equivalised energy expenditure on the vertical. The 2009-10 HES data maps onto this as shown in Figure 12.



**Figure 12:** Scatter diagram of equivalised energy expenditure vs capacity to pay 2009-10 Household Expenditure Survey

This scatter plot can be enhanced with the addition of the income and expenditure thresholds (\$346pw +energy bills, \$17.36pw respectively) and by changing axis scales accordingly as shown in Figure 13:



**Figure 13:** Scatter diagram of Figure 12 with income and expenditure thresholds shown

The expenditure threshold (the median equivalised expenditure) is shown as a horizontal line. The income threshold is shown as a right leaning vertical line (indicating that the threshold is a constant after consideration of energy expenditure: \$346 for expenditure = \$0, \$446 for expenditure = \$100). Consistent with the UK LIHC approach, the upper left quadrant (shaded grey in Figure 13) represents those that would be categorised as being in energy poverty.

An alternative way of defining an energy poverty cohort would be similar to the previous UK threshold of 10% of income. The ratio of energy expenditure to capacity to pay can be illustrated as dotted lines through the origin in Figure 14. An energy poverty cohort is represented by the shaded area above the 10% line. As can be seen, this type of approach can include households with incomes well above the poverty line threshold. These instances reduce significantly at a threshold of 10%.

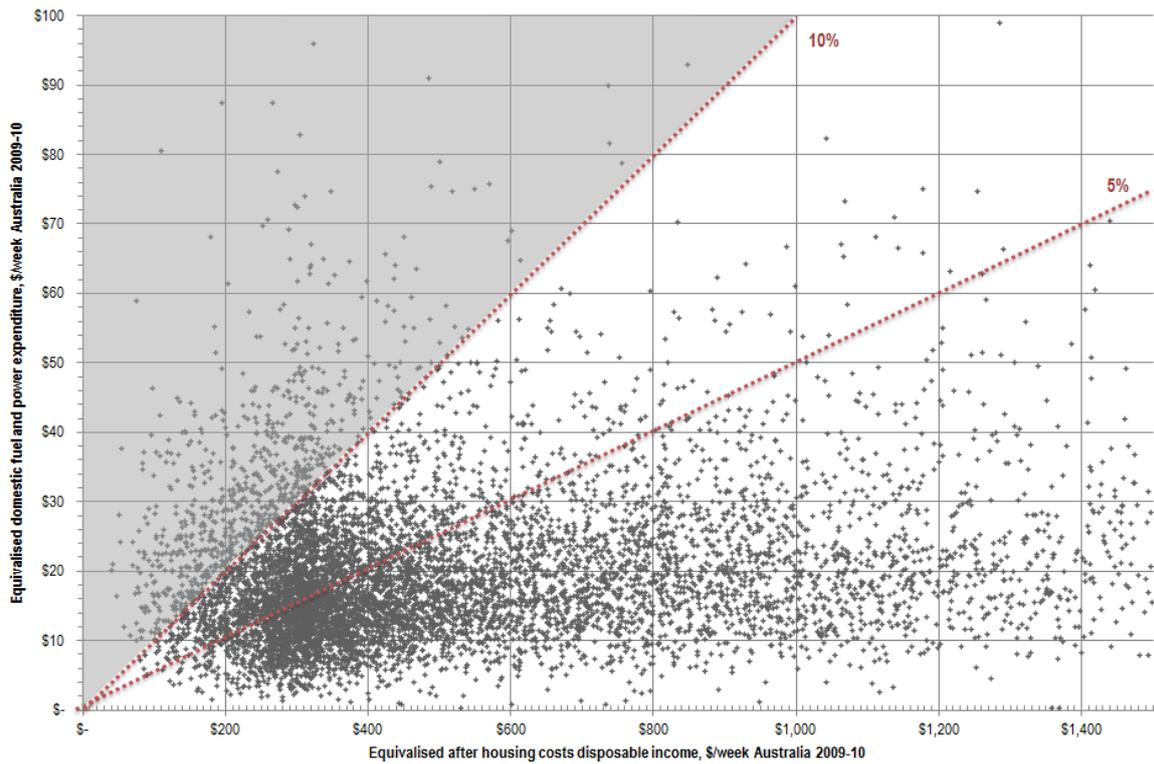


Figure 14: Scatter diagram of equivalised energy expenditure vs capacity to pay with various thresholds shown

A hybrid approach has also been examined that combines the expenditure ratio with the income threshold to identify the cohort illustrated in Figure 15.

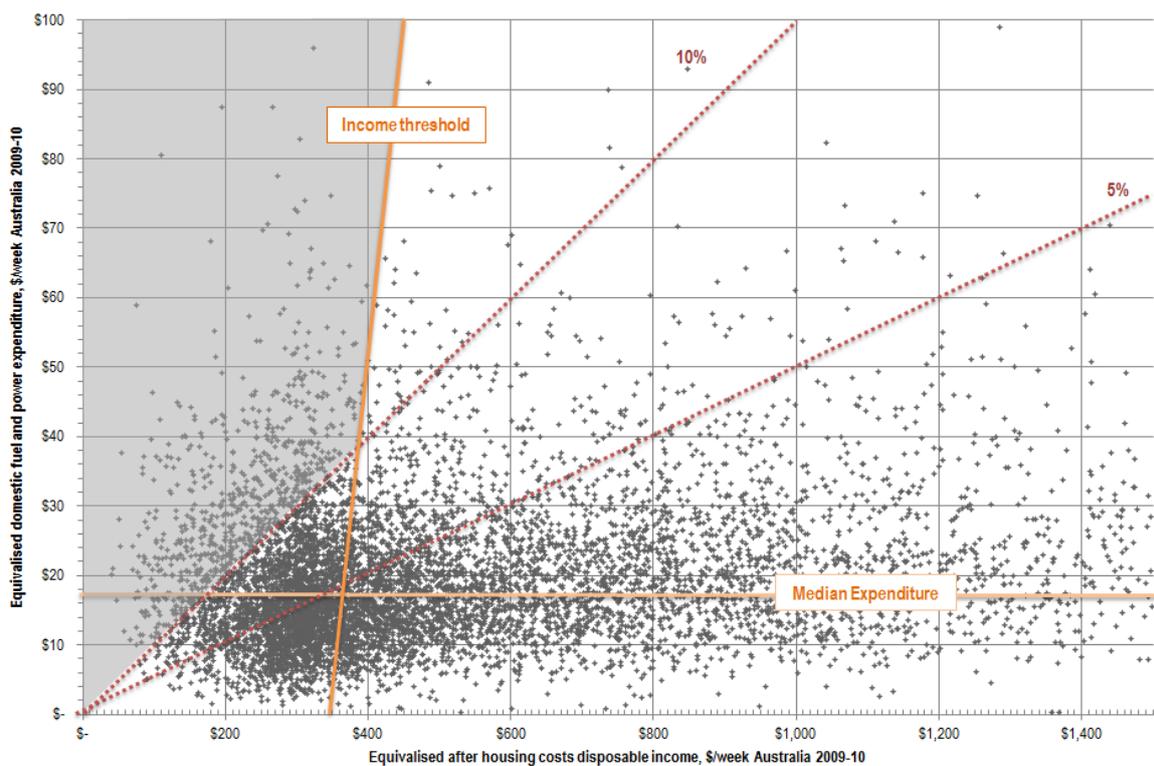


Figure 15: Scatter diagram of equivalised energy expenditure vs capacity to pay with hybrid cohort illustrated

In a review of the UK fuel poverty measure for UK energy regulator OFGEM, Owen (2010)<sup>42</sup> discusses subjective measures as supplements or alternates to the objective measures based on actual income and expenditure information. The 2009-10 HES included questions relating to Financial Stress Indicators<sup>43</sup> that can similarly provide subjective indicators relevant to the research objective. There are two indicators directly related to energy expenditure:

- “Whether could not pay gas/electricity/telephone bill on time due to shortage of money” in variable [*cfelectr*]
- “Unable to heat home due to shortage of money” in variable [*cfnoheat*]

The “could not pay utility bill” cohort represents 14% of households (weighted) while the “unable to heat home” represents a cohort of 2% of households.

A set of five cohorts can therefore be identified and compared.

Cohort name	Description	Weighted Count.	% of All households
1. Low Income High Cost	Below income threshold, above median energy expenditure	782,409	12%
2. Low Income and energy > 10%	Below income threshold, energy expenditure > 10% of capacity to pay	386,936	5.7%
3. Energy > 10%	energy expenditure > 10% of capacity to pay	434, 054	6.4%
4. could not pay utility bill	Financial Stress Indicator: could not pay utility bill in last 12 months due to shortage of money	939,254	14%
5. unable to heat home	Financial Stress Indicator: unable to heat home in last 12 months due to shortage of money.	138,520	2.0%

**Table 3:** Five possible energy poverty cohorts for comparison

These five cohorts have then been compared across a range of attributes. The attributes considered are:

- State or territory of usual residence
- The number of adults and children in the household, family composition and ‘lifecycle’ stages
- Housing status in terms of tenure and landlord type
- The source of income and the dominant types of pensions and benefits received
- The use of gas versus ‘all electric’

The following sections present the composition of the five cohorts against these attributes. Commentary is provided to interpret the results.

<sup>42</sup> Review of the UK fuel poverty measure, Report for Ofgem, Gill Owen, Sustainability First March 2010 from <http://www.sustainabilityfirst.org.uk/publications.htm>

<sup>43</sup> 6530.0 HES Summary of Results, p59

## A. State or territory of usual residence

Table 4 presents the composition of the five cohorts (columns 1-5) by state or territory of usual residence. The ABS basic CURF data used for this analysis consolidates the sample for the Australian Capital Territory (ACT) and the Northern Territory (NT) so no separate results are provided for the territories.

		A	1	2	B	3	4	5	
		All Households	Low Income	Low Income and High Costs	Low Income and energy > 10%	All Households	energy > 10%	Financial Stress indicator (Utility Bills)	Financial Stress indicator (unable to heat)
State or Territory of usual residence	NSW	32.3%	33.8%	32.1%	32.7%	32.3%	31.7%	33.5%	26.8%
	VIC	25.5%	25.9%	37.3%	36.2%	25.5%	37.1%	22.2%	24.5%
	QLD	19.5%	18.9%	8.1%	8.2%	19.5%	9.1%	20.1%	19.0%
	SA	8.1%	8.3%	8.1%	8.6%	8.1%	8.4%	9.3%	10.8%
	WA	9.9%	8.6%	8.5%	9.1%	9.9%	8.4%	10.3%	13.6%
	TAS	2.4%	3.2%	4.3%	3.6%	2.4%	3.6%	2.3%	3.4%
	ACT NT	2.4%	1.3%	1.5%	1.6%	2.4%	1.8%	2.2%	1.8%

**Table 4:** State and territory distribution of five possible energy poverty cohorts

The composition of cohorts 1 and 2 (those that include the income threshold) should be compared to the composition of the ‘low income’ cohort in column A. Cohort 3 (energy expenditure >10% of capacity to pay) should be compared to the composition of all households in the survey sample (ie, representing 80% of all households) in column B. As can be seen, cohorts 1, 2 and 3 provide similar results to each other but notably different compositions to the low income cohort. Both Victoria and Tasmania can be seen to be significantly over-represented while Queensland is under-represented in each cohort.

The AER’s energy bill benchmarking project<sup>44</sup> and the recent ABS Household Energy Consumption Survey (HECS)<sup>45</sup> confirm relatively high electricity and gas consumption in Victorian and Tasmania as well as high expenditure and, particularly for Tasmania, relatively low incomes. The Queensland result appears to be due to relatively low energy prices. The ACT and NT also include relatively high consumption but this is apparently offset by higher incomes and lower prices.

The composition of the financial stress cohorts, 4 and 5, (the “subjective” measures) should be compared to the composition of all households in the survey sample (ie, representing 80% of all households) in column B. In contrast to the objective measures, the composition of these cohorts is closer to the proportions of the full sample for Victoria, Tasmania and Queensland. This mismatch between objective and subjective measures has parallels with observations discussed in Owen (2010, p19)<sup>46</sup>.

<sup>44</sup> Refer to the technical reports of the AER’s consultants ACIL Tasman at <http://www.aer.gov.au/node/9751>

<sup>45</sup> Australian Bureau of Statistics 4670.0 - Household Energy Consumption Survey, Australia: Summary of Results, 2012

<sup>46</sup> As part of a review of alternate fuel poverty measures, Owen (2010) discusses the findings of Waddams Price, C et al. Identifying fuel poverty using objective and subjective measures. CCP Working Paper 07-11. UEA, 2007

Colder climates in Victoria and Tasmania see them represented at well above their population shares in the 'high costs' cohorts. It is noted that both jurisdictions have increased their concessions since the 2009-10 survey. In particular, the Victorian concession has been extended to a fixed percentage of bills, the most generous of the state concession regimes<sup>47</sup>. However, the full distributional impact of these changes and of price rises since 2009-10 will be revealed in the next Household Expenditure Survey<sup>48</sup>.

### Findings

The risk of energy poverty varies significantly between the states. This is due to a range of factors including the range of climates, differences in incomes and housing costs as well as differences in energy prices and concession regimes.

In 2009-10, on objective measures, households in Victoria and Tasmania were more likely to be in energy poverty than for other jurisdictions. This is due to colder climates driving above average consumption. The climate also drives relatively high consumption in the ACT and NT but this is offset by lower prices and higher incomes.

However, on subjective measures, the difference between states was less pronounced.

### Implications for policy

On objective measures, the incidence of hardship varies between states. The variations are due to a range of factors not just differences in energy prices. The NECF provides a common national framework for the relationship between households and energy businesses but the local context can be expected to continue to be a strong determinant of who is most at risk of relative energy poverty.

Both Victoria and Tasmania have reformed their concession regimes in the years since the 2009-10 survey. A longitudinal study that repeats this analysis on the next Household Expenditure Survey may be able to identify the impact of changes to jurisdictional energy prices and concession regimes since 2009-10.

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<sup>47</sup> A good annual summary of concessions in jurisdictions can be found in the Price Comparison Reports of the Office of the Tasmanian Energy Regulator (OTTER) available from <http://www.economicregulator.tas.gov.au>

<sup>48</sup> The May 2013 Federal Budget include a funding allocation to conduct the HES four-yearly. If achieved, the results of the next HES might be available late 2015.

## B. The size and structure of the households

Table 5 presents the composition of the five cohorts (columns 1-5) by household ‘types’ defined using the standard ABS nomenclature.

		A		1		2		B		3		4		5	
		All Households	Low Income	Low Income and High Costs	Low Income and energy > 10%	All Households	energy > 10%	Financial Stress indicator (Utility Bills)	Financial Stress indicator (unable to heat)						
Family composition of household	Couple family with dependent children only	23.2%	14.8%	13.6%	17.6%	23.2%	18.6%	26.9%	13.7%						
	Couple family with dependent children and other persons	4.2%	1.4%	2.5%	1.9%	4.2%	2.6%	4.3%	3.1%						
	One parent family with dependent children only	5.0%	11.0%	10.8%	12.6%	5.0%	12.3%	16.0%	16.6%						
	One parent family with dependent children and other persons	1.3%	1.6%	2.1%	2.0%	1.3%	1.8%	4.2%	3.6%						
	Couple only	25.0%	23.4%	24.1%	17.5%	25.0%	17.4%	11.4%	8.1%						
	Other one family households	13.4%	6.3%	6.7%	6.6%	13.4%	6.3%	10.9%	7.9%						
	Multiple family households with dependent children	1.3%	.7%	.3%	0.0%	1.3%	0.0%	1.9%	4%						
	Multiple family households with no dependent children	0.6%	.1%	.0%	0.0%	0.6%	0.0%	.6%	0.0%						
	Lone person household	22.9%	39.2%	38.3%	40.2%	22.9%	39.5%	18.7%	41.8%						
	Group household	3.0%	1.4%	1.7%	1.6%	3.0%	1.5%	5.2%	4.9%						
Life cycle group	NA	28.8%	21.7%	23.1%	28.5%	28.8%	28.7%	31.2%	37.8%						
	Lone person aged under 35	3.8%	2.5%	2.8%	4.6%	3.8%	4.9%	3.5%	7.3%						
	Couple only, reference person aged under 35	6.5%	1.8%	1.6%	1.2%	6.5%	1.3%	4.4%	1.2%						
	Couple with dependent children only - Eldest child under 5	5.6%	4.0%	4.5%	6.4%	5.6%	6.7%	6.9%	2.3%						
	Couple with dependent children only - Eldest child 5 to 14	10.7%	6.7%	5.6%	7.2%	10.7%	7.7%	14.5%	4.3%						
	Couple with dependent children only - Eldest child 15 to 24	6.9%	4.1%	3.5%	4.0%	6.9%	4.2%	5.5%	7.1%						
	One parent with dependent children	6.6%	13.1%	13.0%	14.6%	6.6%	14.1%	21.1%	20.6%						
	Couple with dependent and non-dependent children only	3.5%	1.1%	2.0%	1.5%	3.5%	1.3%	4.1%	3.1%						
	Couple with non-dependent children only	6.4%	2.1%	2.5%	3.1%	6.4%	2.9%	2.3%	1.4%						
	Couple only, reference person aged 55 to 64	5.5%	4.2%	5.3%	3.0%	5.5%	3.1%	2.0%	4.1%						
	Couple only, reference person aged 65 and over	7.7%	15.6%	14.9%	10.2%	7.7%	9.4%	1.5%	2.0%						
	Lone person aged 65 and over	8.1%	23.0%	21.2%	15.7%	8.1%	15.7%	3.0%	8.9%						

**Table 5:** Family and lifestyle attributes of five possible energy poverty cohorts

The composition of cohorts 1 and 2 (those that include the income threshold) should be compared to the composition of the ‘low income’ cohort in [column A](#). Across the range of household types, this comparison clearly shows that couple only households are the least likely to be categorised as being in energy poverty. In most other respects, the composition of these cohorts is very similar to that of all households that fall below the income threshold.

Cohort 3 (energy expenditure >10% of capacity to pay) should be compared to the composition of all households in the survey sample in [column B](#). The composition of this cohort is biased towards single parent households, couples with very young children and people living alone.

Table 6 presents the composition of the five cohorts (columns 1-5) by household size.

	A		1	2	B	3	4	5
	All Households	Low Income	Low Income and High Costs	Low Income and energy > 10%	All Households	energy > 10%	Financial Stress indicator (Utility Bills)	Financial Stress indicator (unable to heat)
1	22.9%	39.2%	38.3%	40.2%	22.9%	39.5%	18.7%	41.8%
2	32.5%	30.6%	31.9%	25.4%	32.5%	25.4%	24.1%	23.6%
3	17.8%	12.0%	13.6%	15.3%	17.8%	15.1%	21.3%	15.1%
4	16.7%	8.9%	7.1%	8.6%	16.7%	8.4%	19.0%	8.8%
5	6.9%	5.4%	5.0%	5.1%	6.9%	6.7%	10.4%	7.2%
6+	3.2%	3.9%	4.1%	5.5%	3.2%	5.0%	6.6%	3.5%

**Table 6:** The size of households in five possible energy poverty cohorts

It should be noted that the basic CURF dataset does not include household sizes above 6 persons. The category ‘6+’ therefore refers to households with at least 6 persons. Since this is also a relatively small sample size (n=63) the ‘over-representation’ of this cohort would need further analysis before any interpretations can be made for policy development.

The composition of cohorts 1 and 2 (those that include the income threshold) should be compared to the composition of the ‘low income’ cohort in [column A](#). Again, the low income high cost cohort (column 1) generally reflects the composition of the broader low income group (column A).

Cohort 3 (energy expenditure >10% of capacity to pay) should be compared to the composition of all households in the survey sample in [column B](#). The notable attribute is the bias toward people living alone. This is however consistent with the proportion of one-person households that fall below the income threshold, and not surprising given the bias towards lower income illustrated in the scatter plot of [Figure 14](#).

The composition of the financial stress cohorts, 4 and 5, should be compared to the composition of all households in the survey sample) in column B. In contrast to the objective measures, the composition of cohort 4 (unable to pay utility bill due to shortage of money) is skewed more toward larger households. Cohort 5 (unable to heat home due to shortage of money) is closely aligned to the proportions of cohorts 2 and 3

### Findings

Energy expenditure is strongly influenced by both income and household size. Income also tends to increase as household size increases. The methodology has sought to equalised both expenditure and capacity to pay so that households of different sizes can be compared.

Couple-only households are clearly the least likely to fall into relative energy poverty. This is particularly true for couples under 65. Couple-only household are around one quarter of all households in the study.

Those identified as being in relative energy poverty include a significant proportion of people living alone (around 40% in each case compared to 23% of all households in the study)

The family compositions most likely to fall into relative energy poverty are single parent households and couples with very young children (eldest < 5 years).

### Implications for policy

People living alone, single parents and families with young children are the most likely to fall into energy poverty.

The Low Income High Cost indicator adapted from the new UK approach to measuring fuel poverty can be seen to mainly reflect the attributes of the 'low income' cohort rather than distinguish any clear attributes that might drive the 'high cost' component. This limits its potential application to the Australian Context.

Cost reflective pricing is likely to increase fixed supply charges (to, for example, include more capacity-based prices) and this may be of particular impact on those living alone, for whom these charges represent a greater proportion of bills.

### C. Housing Status

Table 7 presents the composition of the five cohorts (columns 1-5) by housing status defined using the standard ABS nomenclature.

		<b>A</b>	<b>1</b>	<b>2</b>	<b>B</b>	<b>3</b>	<b>4</b>	<b>5</b>	
	All Households	Low Income	Low Income and High Costs	Low Income and energy > 10%	All Households	energy > 10%	Financial Stress indicator (Utility Bills)	Financial Stress indicator (unable to heat)	
Tenure Type	NA								
	Owner without a mortgage	29.7%	37.7%	38.7%	26.8%	29.7%	27.0%	6.0%	14.0%
	Owner with a mortgage	38.7%	18.0%	20.9%	22.8%	38.7%	25.0%	36.5%	19.7%
	Renter	29.6%	41.6%	37.9%	47.2%	29.6%	45.1%	55.8%	62.5%
	Other	2.0%	2.7%	2.5%	3.2%	2.0%	2.9%	1.8%	3.8%
Landlord type	NA								
	Real estate agent	70.4%	58.4%	62.1%	52.8%	70.4%	54.9%	44.2%	37.5%
	State and territory housing authority	16.8%	16.9%	15.3%	20.9%	16.8%	20.4%	30.2%	23.6%
	Person not in same household - Parent/Other relative	4.5%	13.4%	10.2%	9.4%	4.5%	8.6%	10.9%	19.3%
	Person not in same household - Other person	2.0%	2.3%	2.9%	1.6%	2.0%	1.4%	3.0%	9.6%
	Other	5.5%	7.4%	7.7%	12.9%	5.5%	12.4%	10.1%	7.6%
	Other	0.8%	1.7%	1.7%	2.5%	0.8%	2.3%	1.6%	2.5%
	<i>Private Rental subtotal</i>	22.3%	24.2%	23.1%	33.7%	22.3%	32.8%	40.3%	31.2%

**Table 7:** Housing status of households in five possible energy poverty cohorts

The composition of cohorts 1 and 2 (those that include the income threshold) should be compared to the composition of the ‘low income’ cohort in column A. Again, the low income high cost cohort (column 1) generally reflects the composition of the broader low income group (column A). Cohort 2 however shows a bias towards renters and those renting privately in particular (taken as the sum of landlord types ‘real estate agent’ and ‘person not in same household – other person’ 33.7% of the cohort compared to 24.2% of all low income households) .

Cohort 3 (energy expenditure >10% of capacity to pay) should be compared to the composition of all households in the survey sample in column B. The composition of this cohort is similar to that of cohort 2 and similarly biased towards private renters (32.8% compared to 22.3% of all households in the study)

The composition of the financial stress cohorts, 4 and 5, should be compared to the composition of all households in the survey sample) in column B. Similar to cohorts 2 and 3, cohorts 4 and 5 are clearly skewed to renters.

### Findings

On all measures, relative energy poverty is biased towards renters and those renting privately in particular.

All three objective cohorts have households renting from state and territory housing authorities (public rental) at lower rates than the proportion of these households that fall below the income threshold. This is likely to be a result of capped housing costs. However, the subjective measures show greater

proportions for public renters, especially those unable to heat their homes due to a shortage of money. This may reflect the influence of the ‘worst performing’ public housing stock.

### Implications for Policy

Renters face particular barriers to energy efficiency (often referred to as the landlord-tenant split incentive) and this may explain why those renting privately are most at risk of energy poverty. Renting can also mean moving house relatively often and needing to negotiate new energy contracts each time. This can represent both a risk and opportunity.

## D. The source of income and the types of pensions and benefits received

Table 8 presents the composition of the five cohorts (columns 1-5) by income source defined using the standard ABS nomenclature. As discussed, the full survey sample has been culled through the removal of households who reported zero or negative income or own unincorporated business income.

		A	1	2	B	3	4	5	
		All Households	Low Income	Low Income and High Costs	Low Income and energy > 10%	All Households	energy > 10%	Financial Stress indicator (Utility Bills)	Financial Stress indicator (unable to heat)
Main source of current household income	Household has zero or negative income	-	-	-	-	-	-	-	-
	Wage and Salary	71.6%	24.2%	26.9%	31.0%	71.6%	36.5%	64.2%	28.6%
	Own unincorporated business income	-	-	-	-	-	-	-	-
	Government pensions and allowances	28.4%	75.8%	73.1%	69.0%	28.4%	63.5%	35.8%	71.4%
	Other income	-	-	-	-	-	-	-	-
Main source of household social assistance benefits in cash	No social assistance benefits in cash	44.8%	9.9%	12.6%	15.2%	44.8%	17.0%	28.0%	11.9%
	Age Pension	17.8%	38.6%	37.2%	25.9%	17.8%	24.3%	5.6%	11.4%
	Disability support pension	5.7%	13.2%	13.3%	13.9%	5.7%	12.6%	12.7%	27.6%
	Veteran's Affairs pension	3.1%	3.5%	3.2%	3.5%	3.1%	3.3%	.7%	.1%
	Family Tax benefit	16.4%	17.0%	15.0%	20.8%	16.4%	22.2%	31.8%	16.4%
	Parenting Payment	2.2%	5.2%	5.5%	5.2%	2.2%	4.7%	7.7%	9.2%
	Unemployment and Student allowances	5.1%	7.2%	7.8%	10.9%	5.1%	9.9%	8.6%	14.2%
	Other government pensions and allowances	4.9%	5.3%	5.5%	4.6%	4.9%	6.0%	5.0%	9.1%

**Table 8:** Income sources of households in five possible energy poverty cohorts

The composition of cohorts 1 and 2 (those that include the income threshold) should be compared to the composition of the 'low income' cohort in column A. As would be expected, the cohorts contain households reliant on the safety net (government pensions and allowances) at a much higher proportion than for those who don't receive any such income. Again, the low income high cost cohort (column 1) generally reflects the composition of the broader low income group (column A).

Cohort 2 however includes proportionally more wage and salary earners.

Cohort 3 (energy expenditure >10% of capacity to pay) should be compared to the composition of all households in the survey sample in column B. The composition of this cohort includes proportionally more wage and salary earners than cohort 2 (which, in turn, contains more than cohort 1).

The composition of the financial stress cohorts, 4 and 5, should be compared to the composition of all households in the survey sample) in column B. In contrast to the objective measures, the composition of cohort 4 (unable to pay utility bill due to shortage of money) includes wage and salary earners at close to their population share. Cohort 5 (unable to heat home due to shortage of money) however reverses the proportion of wage and salary earners to be similar to cohorts 1-3.

### Findings

This study has only considered those households whose main source of income is wages and salaries or government pensions and benefits. This is around 80% of all households.

By all measures, at least one quarter of those in relative energy poverty have wages or salaries as the main source of household income. At least half of these households receive ‘no social assistance benefits in cash’ and would therefore be considered to be outside the welfare system. These households would be unlikely to be eligible for an energy concession in any jurisdiction.

Households reliant on government pensions and allowances as their main source of income represent around two-thirds to three quarters of each energy poverty cohort. The income *safety net* is therefore a critical determinant of relative energy poverty.

### Implications for Policy

The safety nets of income support and concessions do not reach a significant proportion (one eighth to one quarter) of those in relative energy poverty. These households are still eligible to access the various jurisdictional emergency payment schemes (discretionary payments dispensed on need rather than regular payments based on fixed eligibility criteria). Policymakers should consider the relative resourcing of these safety net elements.

## E. Concessions

The HES data includes estimates of energy concessions received in the variable *wklyeli*. The values are applied post-survey by the ABS as part of the Fiscal Incidence Study (FIS). The FIS shows the distributional effects of government benefits and taxes on household income. Concessions form part of a category called ‘social transfers in kind’ (STIK)<sup>49</sup>.

Eligibility for concessions is determined state by state but are usually based on eligibility for a range of Commonwealth health and concession cards. The value of concessions varies significantly between jurisdictions<sup>50</sup>. Further, it is apparent that differences exist between the interpreted eligibility criteria of the FIS and the number of household actually receiving a concession. In South Australia for example, the weighted HES estimate is that 123,000 households were eligible for the concession<sup>51</sup> in 2009-10. The Essential Services Commission of South Australia (ESCOSA) report a figure of 196,000 in the annual market performance report for 2009-10<sup>52</sup>. Media reports in September 2013<sup>53</sup> stated that an IT project reconciling concession payments with Centrelink (Commonwealth) records had revealed that around 20% of concession payments may have been to ineligible households over this timeframe. This would explain most of the difference. Similar comparisons for other jurisdictions suggest that the HES records also underestimate the number of concession recipients in other jurisdictions.

Noting some other small data issues<sup>54</sup>, the HES data permits an assessment of concession targeting by considering the rate of concession receipts for those households identifies as being in relative energy poverty in the above steps.

Table 9 illustrates that only around 60-70% of those identified under the objective definitions of relative energy poverty are in receipt of a concession. This also indicates that only 55% of households with concessions fall below the income threshold and only 40% have an expenditure ratio greater than 5% of disposable income.

For the subjective indicators, 71% of those reporting being unable to heat their homes due to a shortage of money were already eligible to be receiving an energy concession while less than half (46%) of those unable to pay a utility bill due to a shortage of money were concession eligible.

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<sup>49</sup> ABS 6530.0 Household Expenditure Survey and Survey of Income and Housing User Guide 2009-10, p38

<sup>50</sup> A good annual summary of concessions in jurisdictions can be found in the Price Comparison Reports of the Office of the Tasmanian Energy Regulator (OTTER) available from <http://www.economicregulator.tas.gov.au>

<sup>51</sup> Noting that the HES records analysed for this research does not include all households. However, it does include all recipients of government benefits and should therefore be considered representative.

<sup>52</sup> [www.escosa.sa.gov.au/electricity-overview/reporting-and-compliance/annual-performance-reports.aspx](http://www.escosa.sa.gov.au/electricity-overview/reporting-and-compliance/annual-performance-reports.aspx)

<sup>53</sup> Kevin Naughton, InDaily, “Manual Checking move in concessions bungle” (25.09.13) and “One in five receiving concessions “ineligible”” (24.09.13) <http://indaily.com.au/news/2013/09/25/manual-checking-move-in-concessions-bungle/>

<sup>54</sup> Errors were identified in the value of concessions applied to some jurisdictions. For example, the concession value applied for South Australian households was \$3.03 per week or \$157.50 per annum. The South Australian Government’s energy concession in 2009-10 was \$120 per annum and did not reach \$157.50 until 2011-12.

	A	1	2	B	3	4	5
	Low Income	Low Income AND High Costs	Low Income AND energy > 10%	All Households	energy > 10%	Financial stres indicator (Utility bills)	Financial stres indicator (Unable to heat)
Est. no households receiving an energy concession	1,286,784	543,825	241,284	2,360,997	252,180	431,537	98,385
Total number in cohort	1,789,036	792,409	386,936	6,812,785	434,054	939,254	138,520
% of all concession holders in the cohort	55%	23%	10%	100%	11%	18%	4%
% of cohort with a concession	72%	69%	62%	35%	58%	46%	71%

Table 9: Indicators of energy concession targeting, Australia 2009-10

Figure 16 illustrates the expenditure vs capacity to pay for concession eligible households.

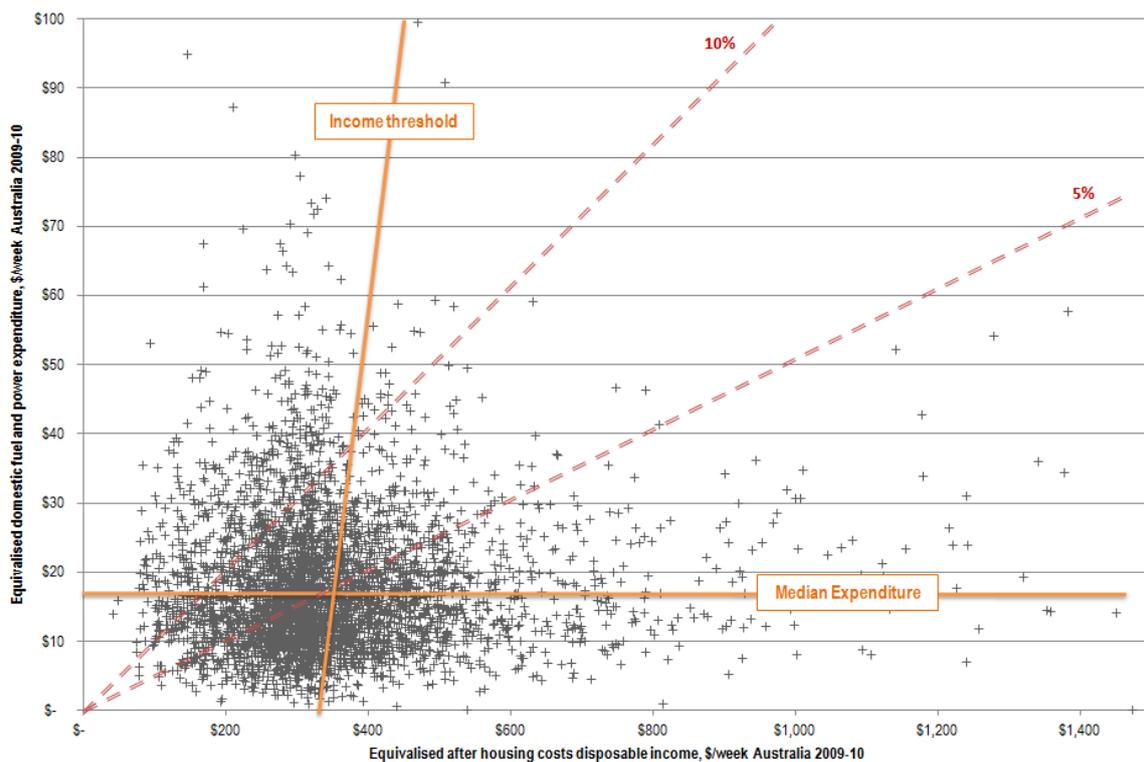


Figure 16: Scatter diagram of equivalised energy expenditure vs capacity to pay for concession eligible households

Findings:

Issues exist in relation to reconciling the FIS data with the data published by jurisdictional regulators. However, the results indicate that around 30-40% of those in relative energy poverty are not eligible to receive a concession and suggest that further work on the targeting of concessions is warranted.

## F. Dual Fuel households versus ‘all electric’

Table 10 presents the composition of the five cohorts (columns 1-5) by whether or not the household use either mains or bottled gas (other than for a BBQ).

		A	1	2	B	3	4	5	
		All Households	Low Income	Low Income and High Costs	Low Income and energy > 10%	All Households	energy > 10%	Financial Stress indicator (Utility Bills)	Financial Stress indicator (unable to heat)
Gas	No	41.1%	49.2%	36.9%	36.8%	41.1%	35.1%	47.0%	52.9%
	Yes	58.9%	50.8%	63.1%	63.2%	58.9%	64.9%	53.0%	47.1%

**Table 10:** Dual Fuel status of households in five possible energy poverty cohorts

The composition of cohorts 1 and 2 (those that include the income threshold) should be compared to the composition of the ‘low income’ cohort in column A. Cohort 3 (energy expenditure >10% of capacity to pay) should be compared to the composition of all households in the survey sample in column B. In all three cases, dual fuel households are more likely to be included than all-electric.

Table 11 provides more detail of gas expenditure and shows that dual fuel households tend to be larger and have higher incomes so that all-electric and dual fuel households tend to spend similar proportions of their incomes on energy. However, it is also clear that even when corrected for household size, dual fuel households tend to spend 25-30% more on energy than all-electric households. This supports the findings for the cohorts defined by objective measures (cohorts 1-3) discussed above.

		Capacity to pay (Equivalised After Housing Cost Disposable Income)		energy expenditure equivalised using mod OECD		energy expenditure equivalised using sqrt N		No. persons per household	Energy expenditure as % of capacity to pay	
		Mean	Median	Mean	Median	Mean	Median	Mean	Mean	Median
Gas?	No	\$ 617.85	\$ 512.50	\$ 16.95	\$ 14.93	\$ 18.00	\$ 15.84	2.4	3.92%	2.79%
	Yes	\$ 751.27	\$ 630.57	\$ 21.57	\$ 19.20	\$ 23.23	\$ 20.74	2.7	4.26%	3.09%

**Table 11:** Energy expenditure details of dual fuel vs all-electric households

The composition of the financial stress cohorts, 4 and 5, should be compared to the composition of all households in the survey sample) in column B of Table 10. In contrast to the objective measures, these cohorts are biased toward more all-electric households. One possible interpretation of this apparent conflict between the subjective and objective measures is that expenditure divided up over more but smaller bills is perceived as more manageable.

### Findings

Even when corrected for household size, dual fuel households tend to spend 25-30% more on energy than all-electric households.

For low income households, being all-electric reduces the likelihood of falling into energy poverty.

### Implications for Policy

Gas prices have risen significantly since 2009-10 and are projected to increase even further as export parity pricing increases its influence on domestic gas markets. Concessions and emergency payments will need to consider their ability to preserve affordability as prices rise.

### **G. Analysis of Specific Household Types**

In order to obtain more detailed insights, the analysis was also repeated for four discrete household types that emerged from the initial review:

- Aged Pension recipients
- Disability Pension recipients
- Households with children (dependents under 15 years of age)
- Wage and Salary earners

The results are presented and discussed in more detail below.

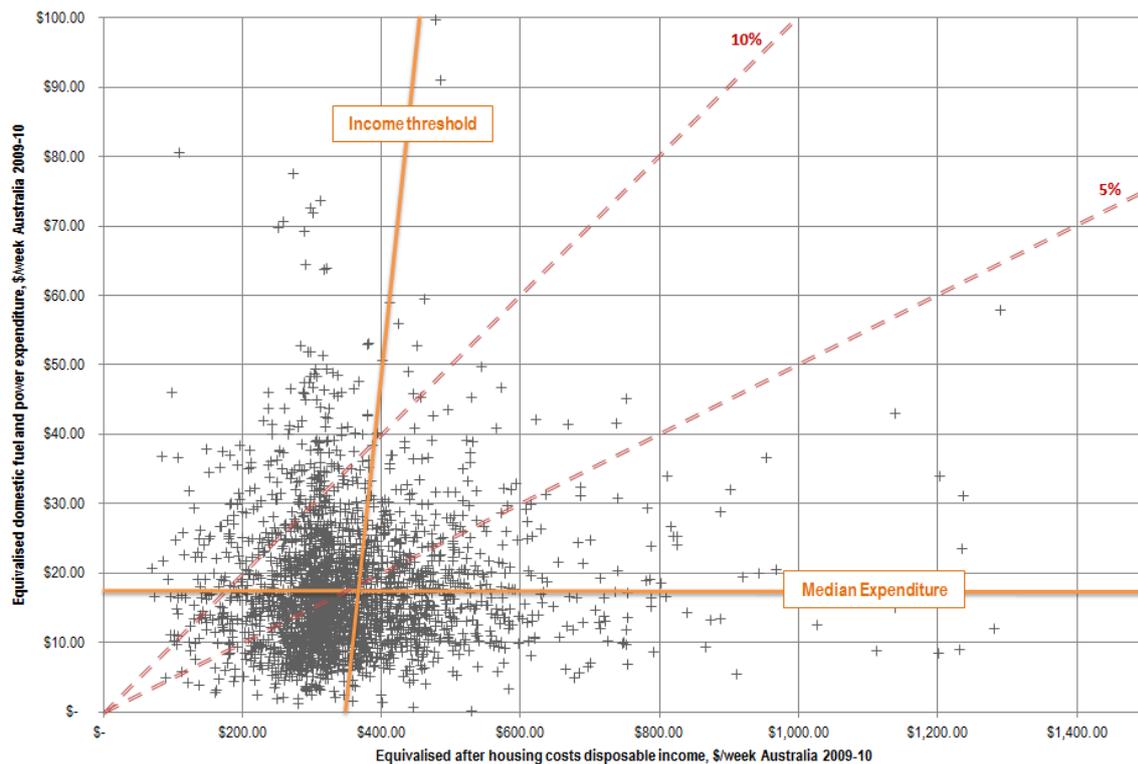
#### **G1. The Aged**

This cohort has been defined as those households who reported being in receipt of the Aged Pension. This identifies a cohort of 1.2m households (18% of the sample) that is summarised in Table 12.

	Median Capacity to Pay	Median Expenditure	Median Expenditure Ratio	Average No. persons per household
Receives Aged Pension	\$ 341	\$ 15.57	4.2%	1.8
Thresholds	\$ 346	\$ 17.37		

**Table 12:** Affordability indicators of Aged Pension Recipients, Australia 2009-10

The expenditure vs capacity to pay scatter plot is provided as Figure 17 and illustrates that this cohort tends to consume below the median expenditure and fall below the income threshold.



**Figure 17:** Scatter diagram of equivalised energy expenditure vs capacity to pay for Aged Pension recipients (ABS Household Expenditure Survey 2009-10)

Repeating the previous approach shows that Victoria and Tasmania continue to be strongly represented in all of the high costs cohorts. The full set of results can be found in Figure 18. In terms of household composition, those living alone were a majority in each case but were already a majority of those living below the income threshold. Elderly renters, especially those renting privately, are strongly represented in each cohort. The use of gas (dual fuel households) has been shown to result in greater expenditure overall and the effect of this is quite pronounced in the aged cohorts.

### Findings

Aged Pension recipients most likely to be in relative energy poverty are those living alone (>50% of all cohorts), those renting (especially privately) and dual fuel households.

### Implications for Policy

The UK's fuel poverty policy considered the aged to be particularly vulnerable to negative health effects of cold homes and this is consistent with the findings of recent climate risk and adaptation vulnerability analyses being developed for Australia<sup>55</sup>. Combined with the analysis in this report, a particular focus on the elderly living alone can be justified.

<sup>55</sup> This work is being coordinated by the National Climate Change Adaptation and Research Facility (NCCARF; [www.nccarf.edu.au](http://www.nccarf.edu.au)). For example refer to Sevoyan, A, Hugo, G, Feist, H, Tan, G, McDougall, K, Tan, Y & Spoehr, J 2013, *Impact of climate change on disadvantaged groups: Issues and interventions*, National Climate Change Adaptation Research Facility, Gold Coast, 182 pp.

		Low Income (Below Income Threshold)	Low Income AND Above Median Expenditure	Low Income AND expenditure > 5%	Low Income AND expenditure > 10%	Full Sample	expenditure > 5%	expenditure > 10%
State or Territory of usual residence	NSW	33.6%	33.3%	34.3%	35.3%	35.1%	33.4%	37.0%
	VIC	27.8%	40.7%	34.9%	41.0%	26.9%	35.0%	39.5%
	QLD	16.6%	4.7%	8.7%	3.2%	17.1%	8.5%	3.1%
	SA	9.4%	9.5%	10.6%	9.8%	9.1%	11.3%	9.4%
	WA	7.8%	6.1%	6.0%	4.1%	7.8%	6.3%	4.8%
	TAS	3.7%	4.3%	4.3%	4.9%	3.0%	4.4%	4.6%
	ACT NT	1.1%	1.3%	1.2%	1.6%	.9%	1.1%	1.6%
Life cycle group	NA	5.5%	6.5%	6.9%	8.7%	15.9%	8.4%	8.3%
	Lone person aged under 35	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Couple only, reference person aged under 35	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Couple with dependent children only - Eldest child under 5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Couple with dependent children only - Eldest child 5 to 14	.0%	.0%	.0%	.1%	.0%	.0%	.1%
	Couple with dependent children only - Eldest child 15 to 24	.0%	0.0%	.1%	0.0%	.0%	.1%	0.0%
	One parent with dependent children	.4%	.7%	.6%	1.2%	1.1%	1.0%	1.2%
	Couple with dependent and non-dependent children only	.0%	.0%	.0%	.1%	.1%	.0%	.1%
	Couple with non-dependent children only	1.4%	1.8%	1.8%	2.8%	7.1%	2.5%	2.7%
	Couple only, reference person aged 55 to 64	1.9%	2.5%	2.6%	1.1%	3.0%	2.9%	1.1%
	Couple only, reference person aged 65 and over	36.9%	37.4%	36.4%	34.6%	35.4%	37.3%	34.2%
Lone person aged 65 and over	53.9%	51.0%	51.6%	51.3%	37.4%	47.9%	52.4%	
Family composition of household	Couple family with dependent children only	.1%	.0%	.1%	.1%	.1%	.1%	.1%
	Couple family with dependent children and other persons	.4%	.9%	.7%	.1%	1.0%	.6%	.1%
	One parent family with dependent children only	.2%	.4%	.4%	1.2%	.4%	.3%	1.2%
	One parent family with dependent children and other persons	.1%	.3%	.2%	0.0%	.7%	.6%	0.0%
	Couple only	38.9%	39.9%	39.0%	35.7%	38.6%	40.1%	35.2%
	Other one family households	3.6%	4.4%	4.0%	7.5%	17.0%	6.3%	7.2%
	Multiple family households with dependent children	.6%	0.0%	1.0%	0.0%	1.5%	.8%	0.0%
	Multiple family households with no dependent children	.1%	0.0%	0.0%	0.0%	.4%	0.0%	0.0%
	Lone person household	55.7%	53.6%	54.2%	54.0%	39.1%	50.5%	55.0%
	Group household	.2%	.4%	.3%	1.2%	1.3%	.7%	1.2%
Not determined	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Main source of current HH income	Household has zero or negative income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Wage and Salary	1.7%	2.8%	2.8%	1.7%	16.4%	4.1%	1.6%
	Own unincorporated business income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Government pensions and allowances	98.3%	97.2%	97.2%	98.3%	83.6%	95.9%	98.4%
	Other income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tenure type	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Owner without a mortgage	68.3%	73.1%	66.5%	58.8%	72.7%	68.7%	60.6%
	Owner with a mortgage	5.2%	8.3%	7.8%	8.8%	8.1%	9.0%	8.5%
	Renter	22.6%	14.1%	22.1%	24.3%	15.6%	18.6%	23.2%
	Other	3.9%	4.5%	3.6%	8.1%	3.6%	3.7%	7.7%
Landlord type	NA	77.4%	85.9%	77.9%	75.7%	84.4%	81.4%	76.8%
	Real estate agent	5.3%	3.5%	6.1%	7.7%	4.4%	5.1%	7.3%
	State and territory housing authority	11.0%	4.5%	8.3%	4.6%	6.8%	7.0%	4.4%
	Person not in same household - Parent/Other relative	2.1%	1.8%	2.7%	2.9%	1.4%	2.3%	2.8%
	Person not in same household - Other person	3.0%	3.2%	4.1%	6.8%	2.2%	3.5%	6.5%
	Other	1.1%	1.2%	.9%	2.3%	.8%	.7%	2.2%
Number of persons in household	1.0	55.7%	53.6%	54.2%	54.0%	39.1%	50.5%	55.0%
	2.0	41.2%	42.5%	41.3%	40.6%	46.0%	43.8%	39.9%
	3.0	1.9%	2.9%	2.7%	5.2%	9.5%	3.8%	5.0%
	4.0	.1%	.0%	.1%	.1%	3.4%	.5%	.1%
	5.0	.6%	.1%	1.1%	0.0%	.7%	.9%	0.0%
	6.0	.4%	.9%	.6%	0.0%	1.3%	.5%	0.0%
Gas	No	50.9%	35.8%	41.6%	40.6%	47.1%	38.8%	38.7%
	Yes	49.1%	64.2%	58.4%	59.4%	52.9%	61.2%	61.3%
Number of dependent children aged under 15 years in household	.0	99.5%	99.2%	99.2%	98.5%	97.5%	98.9%	98.6%
	1.0	.4%	.7%	.7%	1.5%	1.7%	1.0%	1.4%
	2.0	.1%	.1%	.1%	0.0%	.8%	.0%	0.0%
	3.0	-	-	-	-	-	-	-
	4.0	-	-	-	-	-	-	-
	5.0	-	-	-	-	-	-	-

Figure 18: Attributes of various low income and 'high costs' cohorts for Aged Pension Recipients

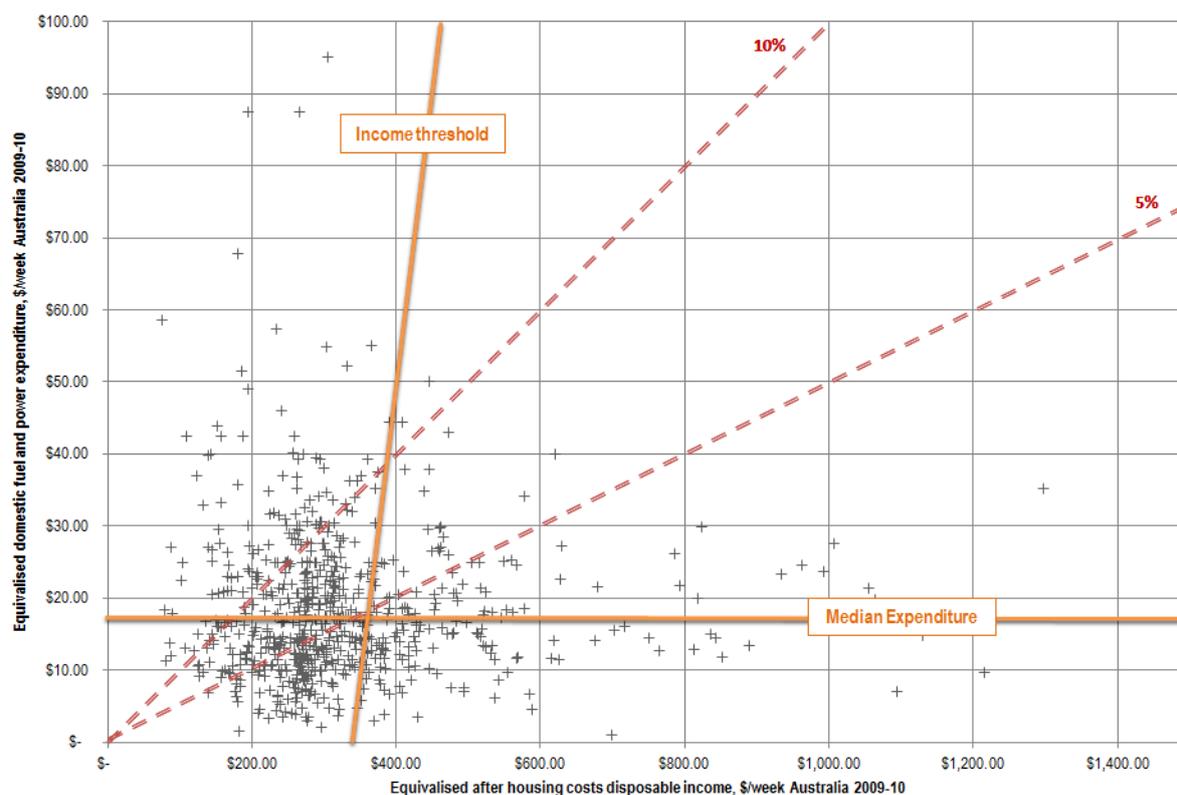
## G2. Disability

The only variable in the HES data to indicate the presence of a person with a disability or long term health condition is the receipt of the Disability Support Pension as the primary source of government pensions and allowances. This identifies a cohort of 0.4m households (6% of the sample) that is summarised in Table 13. Around 10% of this cohort also have dependents under 15 years.

	Median Capacity to Pay	Median Expenditure	Median Expenditure Ratio	Average No. persons per household
Receives Disability Support Pension	\$ 310	\$ 16.27	4.6%	2.1
Thresholds	\$ 346	\$ 17.37		

**Table 13:** Affordability indicators of Disability Support Pension Recipients, Australia 2009-10

The expenditure vs capacity to pay scatter plot of DSP recipients is provided as Figure 19 and illustrates that this cohort tends to fall well below the income threshold but have expenditure around the median.



**Figure 19:** Scatter diagram of equivalised energy expenditure vs capacity to pay for Disability Support Pension recipients (ABS Household Expenditure Survey 2009-10)

The full set of results can be found in Figure 20. Again, Victoria and Tasmania are strongly represented in the low income, high cost cohorts for this group. Single parent families and people living alone stand out as the attributes of those most likely to have relatively lower incomes but higher energy costs. Similarly, renters are the most strongly represented tenure type although there is less of a bias towards private rental as was the case for the aged. Dual fuel households are also more likely to be in the higher costs cohorts.

		Low Income (Below Income Threshold)	Low Income AND Above Median Expenditure	Low Income AND expenditure > 5%	Low Income AND expenditure > 10%	Full Sample	expenditure > 5%	expenditure > 10%
State or Territory of usual residence	NSW	34.1%	34.3%	37.7%	28.4%	31.6%	35.9%	27.7%
	VIC	21.6%	33.5%	26.4%	38.1%	20.9%	26.1%	38.8%
	QLD	18.6%	7.7%	11.2%	6.8%	19.8%	10.2%	6.7%
	SA	9.8%	8.8%	9.3%	13.0%	10.5%	11.3%	12.7%
	WA	10.5%	8.2%	9.6%	6.5%	11.0%	10.1%	6.4%
	TAS	3.5%	6.2%	4.8%	5.1%	3.8%	5.3%	5.6%
	ACT NT	1.9%	1.3%	1.0%	2.1%	2.4%	.9%	2.1%
Life cycle group	NA	66.7%	66.6%	66.1%	73.2%	62.2%	64.6%	72.3%
	Lone person aged under 35	4.4%	3.7%	5.8%	6.3%	3.2%	5.3%	6.1%
	Couple only, reference person aged under 35	.1%	.1%	.1%	.1%	1.5%	.1%	.1%
	Couple with dependent children only - Eldest child under 5	.5%	.4%	.8%	1.7%	.3%	.7%	1.7%
	Couple with dependent children only - Eldest child 5 to 14	.9%	.2%	1.2%	.1%	.8%	1.1%	.1%
	Couple with dependent children only - Eldest child 15 to 24	2.3%	2.7%	3.2%	.3%	2.1%	2.9%	.3%
	One parent with dependent children	8.7%	12.0%	9.6%	9.4%	9.1%	9.9%	9.4%
	Couple with dependent and non-dependent children only	1.9%	1.6%	1.1%	3.2%	3.1%	1.4%	3.1%
	Couple with non-dependent children only	2.4%	.2%	.1%	.3%	7.0%	1.8%	1.6%
	Couple only, reference person aged 55 to 64	10.7%	11.2%	11.0%	2.7%	9.7%	10.9%	2.7%
	Couple only, reference person aged 65 and over	0.0%	0.0%	0.0%	0.0%	.0%	.0%	0.0%
Lone person aged 65 and over	1.5%	1.4%	1.0%	2.8%	1.0%	1.3%	2.7%	
Family composition of household	Couple family with dependent children only	3.7%	3.3%	5.2%	2.1%	3.2%	4.8%	2.1%
	Couple family with dependent children and other persons	1.9%	1.6%	1.1%	3.2%	3.7%	1.5%	3.1%
	One parent family with dependent children only	4.6%	7.9%	6.4%	5.6%	3.6%	6.5%	5.7%
	One parent family with dependent children and other persons	1.9%	4.1%	2.8%	3.8%	3.7%	3.0%	3.7%
	Couple only	12.8%	14.3%	14.1%	3.3%	14.0%	14.9%	3.2%
	Other one family households	12.3%	5.7%	9.4%	2.6%	23.7%	11.3%	3.8%
	Multiple family households with dependent children	.9%	.1%	1.4%	0.0%	1.9%	1.3%	0.0%
	Multiple family households with no dependent children	0.0%	0.0%	0.0%	0.0%	.8%	0.0%	0.0%
	Lone person household	60.7%	60.7%	57.9%	79.5%	40.5%	53.8%	78.4%
	Group household	1.2%	2.2%	1.5%	0.0%	5.0%	2.9%	0.0%
Not determined	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Main source of current HH income	Household has zero or negative income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Wage and Salary	2.9%	.7%	3.2%	0.0%	27.1%	5.8%	0.0%
	Own unincorporated business income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Government pensions and allowances	97.1%	99.3%	96.8%	100.0%	72.9%	94.2%	100.0%
	Other income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tenure type	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Owner without a mortgage	23.5%	26.8%	21.8%	19.3%	27.4%	21.9%	20.5%
	Owner with a mortgage	14.2%	15.3%	13.7%	15.3%	20.6%	15.4%	15.0%
	Renter	59.0%	56.4%	62.4%	65.3%	48.9%	60.7%	64.6%
	Other	3.4%	1.5%	2.2%	0.0%	3.1%	2.0%	0.0%
Landlord type	NA	41.0%	43.6%	37.6%	34.7%	51.1%	39.3%	35.4%
	Real estate agent	16.1%	16.3%	19.2%	24.4%	15.3%	17.9%	23.9%
	State and territory housing authority	29.9%	27.5%	29.8%	20.0%	21.3%	28.6%	19.6%
	Person not in same household - Parent/Other relative	.6%	.5%	.4%	.6%	.7%	.4%	.6%
	Person not in same household - Other person	7.6%	8.1%	9.4%	12.8%	7.1%	10.3%	12.5%
	Other	4.8%	4.0%	3.5%	7.6%	4.6%	3.5%	8.1%
Number of persons in household	1.0	60.7%	60.7%	57.9%	79.5%	40.5%	53.8%	78.4%
	2.0	25.1%	28.1%	29.4%	10.9%	31.1%	30.7%	10.9%
	3.0	8.6%	6.8%	8.0%	.7%	16.2%	9.0%	2.0%
	4.0	3.8%	2.5%	2.2%	5.7%	7.3%	3.7%	5.6%
	5.0	.9%	0.0%	1.4%	0.0%	2.7%	1.4%	0.0%
	6.0	.8%	1.9%	1.1%	3.2%	2.2%	1.4%	3.1%
	7.0	.0%	.0%	.0%	.0%	.0%	.0%	.0%
Gas	0	53.6%	43.4%	49.7%	39.9%	48.9%	47.2%	39.7%
	1.0	46.4%	56.6%	50.3%	60.1%	51.1%	52.8%	60.3%
Number of dependent children aged under 15 years in household	0	91.5%	91.8%	90.8%	91.8%	90.0%	90.1%	92.0%
	1.0	7.2%	6.1%	7.5%	3.9%	8.3%	7.8%	3.8%
	2.0	1.1%	1.9%	1.7%	4.3%	1.5%	2.1%	4.2%
	3.0	.2%	.3%	0.0%	0.0%	.1%	0.0%	0.0%
	4.0	-	-	-	-	-	-	-
	5.0	-	-	-	-	-	-	-

Figure 20: Attributes of various low income and 'high costs' cohorts for Disability Support Pension Recipients

## Findings

Disability Support Pension recipients most likely to be in relative energy poverty are those living alone single parents, those renting (especially privately) and dual fuel households.

## Implications for Policy

The findings here should be interpreted in conjunction with other sources such as the 2012 Public Interest Advocacy Centre (PIAC) report “MORE POWER TO YOU: electricity and people with physical disability”<sup>56</sup> and the Productivity Commission’s 2011 “Disability Care and support – Inquiry Report”. The introduction of medical heating and cooling rebates and utilities allowances should be considered in a broader review of concessions.

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<sup>56</sup> <http://www.piac.asn.au/sites/default/files/news/attachments/morepowertoyou.pdf> ISBN9780975793480

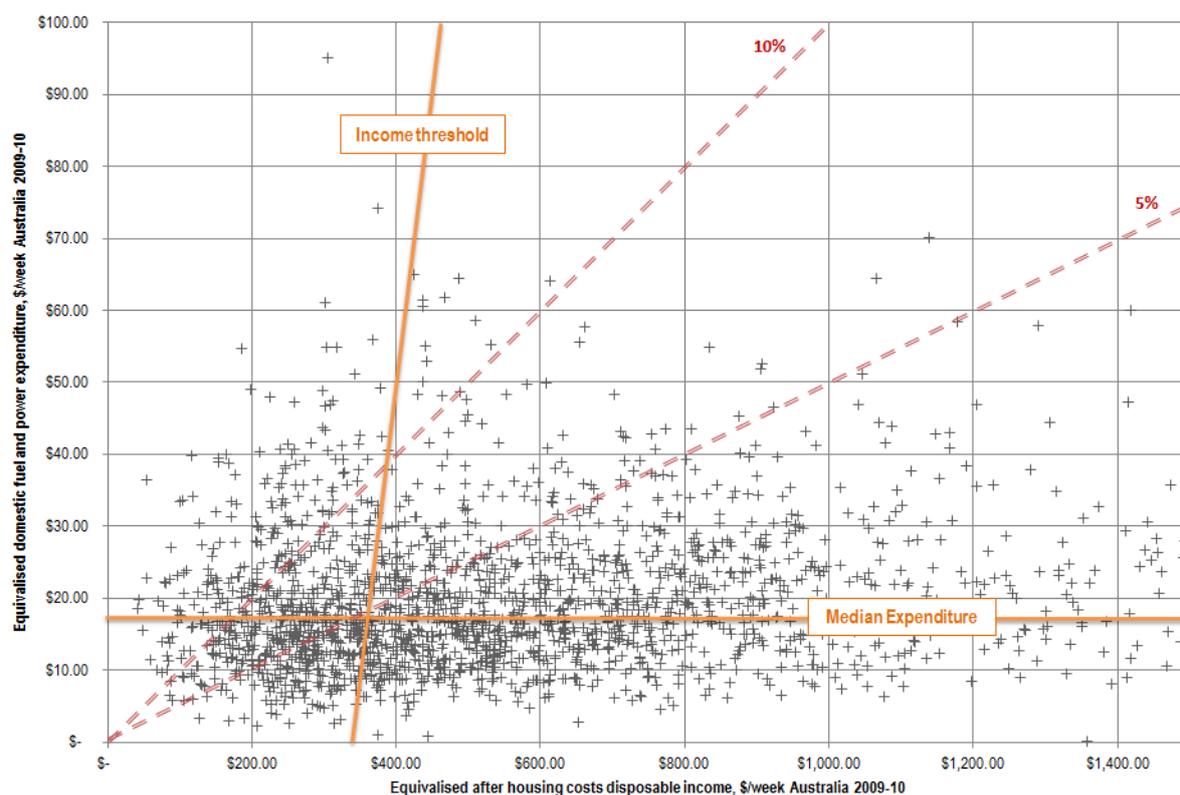
### G3. Households with dependants under 15 years

The HES data records the number of dependants under 15 for each household in variable numu15bc. This identifies a cohort of 2m households with at least one dependant under 15 (29% of the sample) that is summarised in Table 14. Around 2% also appear in the analysis of Disability Support Pension recipients.

	Median Capacity to Pay	Median Expenditure	Median Expenditure Ratio	Average No. persons per household
dependants under 15 years	\$ 546	\$ 17.32	3.2%	4.0
Thresholds	\$ 346	\$ 17.37		

**Table 15:** Affordability indicators of Households with dependants under 15 years, Australia 2009-10

The expenditure vs capacity to pay scatter plot of households with children is provided as Figure 21 and shows that this cohort tends to have a similar range of expenditures as the others but a much broader range of incomes.



**Figure 21:** Scatter diagram of equivalised energy expenditure vs capacity to pay for Households with children (ABS Household Expenditure Survey 2009-10)

The full set of results can be found in Figure 22. The standout attribute of households in the high costs cohorts are single parent households. Tasmania is mainly represented at its population share in this cohort but Victoria continues to be strongly represented at greater than its population share. Households in private rental tended to be represented at greater than their population share. The use of gas seems to be

less significant in this cohort and may be due to improved economies of scale of gas consumption for larger households.

For couples, those with the youngest children (eldest < 5 years) appear to be the most likely to be categorised as being in energy poverty.

An opportunity identified by Simshauser and Nelson<sup>57</sup>, Family Tax benefit as a mechanism to target support, appears to be well founded with around three quarters of each of the high costs households receiving either the Family Tax Benefit or Parenting Payment.

### Findings

Households with children are most likely to be in relative energy poverty are single parent households, couples with very young children (eldest < 5 years) and those renting (especially privately). Wage and salary earners make up over 40% of each of the energy poverty cohorts.

### Implications for Policy

Families in energy poverty include a large proportion that fall outside of the traditional safety nets and are ineligible for most jurisdictional concession regimes.

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<sup>57</sup> Paul Simshauser and Tim Nelson "The Energy Market Death Spiral – Rethinking Customer Hardship", AGL Applied Economics and Policy Research Working Paper No. 31 June 2012 available from <http://www.aglblog.com.au/wp-content/uploads/2012/07/No-31-Death-Spiral1.pdf>

		Low Income (Below Income Threshold)	Low Income AND Above Median Expenditure	Low Income AND expenditure > 5%	Low Income AND expenditure > 10%	Full Sample	expenditure > 5%	expenditure > 10%
State or Territory of usual residence	NSW	31.4%	28.2%	28.9%	29.9%	32.0%	26.9%	26.4%
	VIC	28.1%	39.5%	30.9%	39.2%	25.8%	33.2%	42.0%
	QLD	22.0%	10.5%	19.5%	9.1%	20.5%	18.9%	12.5%
	SA	6.3%	7.5%	6.9%	8.2%	7.1%	7.7%	7.0%
	WA	8.3%	9.8%	9.1%	10.9%	9.9%	7.9%	9.3%
	TAS	2.3%	2.5%	2.9%	.8%	2.1%	2.6%	.7%
	ACT NT	1.6%	2.0%	1.8%	1.7%	2.6%	2.7%	2.1%
Life cycle group	NA	2.2%	1.5%	1.8%	1.4%	6.9%	3.5%	3.8%
	Lone person aged under 35	-	-	-	-	-	-	-
	Couple only, reference person aged under 35	-	-	-	-	-	-	-
	Couple with dependent children only - Eldest child under 5	15.3%	17.9%	15.8%	21.1%	19.6%	16.8%	20.9%
	Couple with dependent children only - Eldest child 5 to 14	25.8%	22.4%	22.8%	23.6%	37.2%	28.3%	24.2%
	Couple with dependent children only - Eldest child 15 to 24	10.3%	8.4%	10.0%	9.4%	12.8%	11.1%	10.0%
	One parent with dependent children	44.4%	45.6%	47.0%	42.1%	17.9%	36.5%	39.0%
	Couple with dependent and non-dependent children only	2.0%	4.1%	2.7%	2.5%	5.6%	3.7%	2.1%
	Couple with non-dependent children only	-	-	-	-	-	-	-
	Couple only, reference person aged 55 to 64	-	-	-	-	-	-	-
	Couple only, reference person aged 65 and over	-	-	-	-	-	-	-
	Lone person aged 65 and over	-	-	-	-	-	-	-
Family composition of household	Couple family with dependent children only	51.4%	48.7%	48.5%	54.0%	69.7%	56.2%	55.1%
	Couple family with dependent children and other persons	2.0%	4.1%	2.7%	2.5%	7.3%	4.5%	4.8%
	One parent family with dependent children only	38.3%	39.8%	42.0%	37.0%	14.5%	32.2%	34.6%
	One parent family with dependent children and other persons	4.4%	5.4%	4.2%	5.0%	2.9%	3.8%	4.2%
	Couple only	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other one family households	2.4%	1.3%	1.5%	1.5%	1.1%	1.0%	1.3%
	Multiple family households with dependent children	1.5%	.7%	1.1%	0.0%	4.4%	2.3%	0.0%
	Multiple family households with no dependent children	-	-	-	-	-	-	-
	Lone person household	-	-	-	-	-	-	-
	Group household	-	-	-	-	-	-	-
Main source of current HH income	Household has zero or negative income	-	-	-	-	-	-	0.0%
	Wage and Salary	42.6%	42.2%	40.1%	42.6%	83.0%	58.5%	51.3%
	Own unincorporated business income	-	-	-	-	-	-	-
	Government pensions and allowances	57.4%	57.8%	59.9%	57.4%	17.0%	41.5%	48.7%
	Other income	-	-	-	-	-	-	-
Main source of household social assistance benefits in cash	No social assistance benefits in cash	7.5%	11.0%	8.9%	11.6%	28.9%	12.5%	10.7%
	Age Pension	.7%	1.1%	.9%	1.2%	1.6%	1.0%	1.1%
	Disability support pension	4.3%	4.4%	4.2%	3.7%	2.0%	3.3%	3.2%
	Veteran's Affairs pension	.0%	0.0%	0.0%	.1%	.6%	.3%	.1%
	Family Tax benefit	60.6%	55.6%	58.2%	62.6%	51.7%	59.3%	64.7%
	Parenting Payment	17.5%	17.0%	17.9%	12.5%	6.9%	13.1%	10.6%
	Unemployment and Student allowances	3.9%	5.0%	5.0%	4.4%	2.0%	4.5%	3.7%
	Other government pensions and allowances	5.4%	5.8%	4.9%	3.8%	6.4%	6.0%	5.9%
Tenure type	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Owner without a mortgage	5.6%	4.3%	4.6%	4.2%	10.4%	5.4%	3.6%
	Owner with a mortgage	34.9%	35.7%	34.2%	36.3%	56.4%	42.4%	40.7%
	Renter	57.5%	59.6%	60.1%	59.1%	31.6%	51.4%	55.5%
	Other	2.0%	.4%	1.2%	.3%	1.6%	.8%	.3%
Landlord type	NA	42.3%	40.4%	39.9%	40.9%	68.3%	48.6%	44.5%
	Real estate agent	29.5%	26.4%	29.2%	27.2%	19.3%	26.8%	25.7%
	State and territory housing authority	13.0%	15.7%	14.7%	13.3%	4.3%	11.0%	11.6%
	Person not in same household - Parent/Other relative	3.9%	6.6%	5.1%	2.4%	2.2%	4.5%	2.0%
	Person not in same household - Other person	10.1%	9.6%	9.5%	14.7%	5.2%	8.0%	14.8%
	Other	1.2%	1.3%	1.5%	1.5%	.7%	1.1%	1.3%
Number of persons in household	1.0	-	-	-	-	-	-	-
	2.0	10.2%	13.9%	11.4%	13.8%	4.8%	9.6%	13.5%
	3.0	29.1%	29.6%	30.9%	28.1%	24.8%	27.5%	28.0%
	4.0	28.8%	24.2%	28.2%	25.0%	41.7%	33.2%	23.5%
	5.0	18.5%	18.0%	16.4%	16.6%	19.0%	19.4%	20.8%
	6.0	13.3%	14.2%	13.2%	16.5%	9.7%	10.3%	14.3%
Gas	No	42.7%	36.9%	41.2%	35.6%	37.3%	35.9%	34.3%
	Yes	57.3%	63.1%	58.8%	64.4%	62.7%	64.1%	65.7%
Number of dependent children aged under 15 years in household	0	-	-	-	-	-	-	-
	1.0	34.0%	36.5%	35.3%	36.6%	41.8%	36.5%	37.0%
	2.0	36.9%	33.4%	36.0%	31.9%	40.7%	39.3%	33.7%
	3.0	17.7%	18.2%	17.0%	17.2%	13.4%	15.6%	15.7%
	4.0	10.2%	11.4%	10.5%	13.5%	3.7%	7.7%	12.9%
	5.0	1.2%	.6%	1.3%	.9%	.4%	.9%	.7%

Figure 22: Attributes of various low income and 'high costs' cohorts for Households with children

#### **G4. Wage and Salary earners**

The earlier analysis of households by income source and the analysis of households with children above, have highlighted the presence of a sizeable group that essentially falls outside the welfare system – those low income families who rely mainly or exclusively on wages or salaries rather than pensions and benefits.

Of the households in the study, 71.6% have wage and salary as their primary source of income (refer to Table 8). As shown in Table 16, 62.6% of this subset report receiving ‘no social assistance benefits in cash’ and are analysed separately in Table 17.

The composition of each of the five cohorts (columns 1-5) should be compared to that of households in column A in each case. People living alone, single parents and couples with young children again appear strongly in the energy poverty cohorts.

Around half are homeowners with a mortgage (50.5% compared to 38.7% of all households in the study) and this continues into the energy poverty cohorts at around 40-50% by composition. Renters make up 28.1% of this group but 40-50% of those considered to be in relative energy poverty. Those renting privately are most likely to fall into relative energy poverty.

#### Findings

In summary, other than falling outside the traditional safety nets, this cohort does not appear to have any particular distinguishing risk factors other than those seen in other analyses: people living alone, renters, single parents and couples with young children.

#### Policy implications

The source of income defines entitlements to energy concessions and this group, while being a substantial proportion of those in relative energy poverty (>25%), are not currently eligible for such assistance. This highlights the need for a review of concessions and a consideration of the resources allocated to concessions compared to other forms of assistance (such as emergency payments).

		A	1	2	3	4	5
Wage and Salary as Primary Income		Wage and Salary as Primary Income	Low Income and High Costs	Low Income AND energy > 10%	Energy > 10%	Financial stress indicator (utility bills)	Financial stress indicator (unable to heat)
STATEHBC	NSW	31.9%	29.7%	31.3%	28.3%	31.1%	20.8%
	VIC	25.6%	36.5%	32.1%	35.7%	21.5%	18.5%
	QLD	19.6%	14.4%	12.3%	13.9%	21.8%	26.8%
	SA	7.5%	3.6%	5.5%	6.0%	9.2%	13.1%
	WA	10.4%	10.6%	14.2%	10.7%	11.5%	13.2%
	TAS	2.0%	2.9%	2.8%	3.0%	2.1%	4.1%
	ACT NT	2.9%	2.4%	1.8%	2.4%	2.8%	3.5%
LIFECYCH	NA	32.0%	28.7%	27.7%	29.8%	30.1%	34.8%
	Lone person aged under 35	4.9%	5.6%	7.7%	8.1%	4.2%	12.6%
	Couple only, reference person aged under 35	9.0%	4.8%	3.6%	3.2%	6.8%	3.8%
	Couple with dependent children only - Eldest child under 5	7.4%	12.6%	15.0%	14.1%	9.3%	6.8%
	Couple with dependent children only - Eldest child 5 to 14	14.0%	15.3%	14.8%	14.8%	19.7%	7.5%
	Couple with dependent children only - Eldest child 15 to 24	8.9%	7.2%	5.0%	5.6%	7.4%	10.3%
	One parent with dependent children	4.3%	7.6%	10.1%	10.5%	12.8%	16.2%
	Couple with dependent and non-dependent children only	4.6%	4.4%	2.9%	2.2%	4.8%	1.5%
	Couple with non-dependent children only	7.9%	6.1%	8.5%	6.4%	2.9%	0.0%
	Couple only, reference person aged 55 to 64	5.5%	7.1%	3.7%	2.8%	1.8%	6.5%
	Couple only, reference person aged 65 and over	.9%	.7%	.9%	.6%	.2%	0.0%
	Lone person aged 65 and over	.6%	.0%	.1%	1.8%	.0%	0.0%
FAMILYCOM	Couple family with dependent children only	30.3%	35.2%	34.9%	34.5%	36.4%	24.6%
	Couple family with dependent children and other persons	5.6%	6.4%	4.5%	5.7%	5.1%	1.5%
	One parent family with dependent children only	2.8%	5.9%	8.6%	9.3%	7.8%	11.3%
	One parent family with dependent children and other persons	1.2%	1.3%	1.5%	1.1%	4.1%	3.5%
	Couple only	22.6%	18.2%	15.2%	14.8%	13.4%	11.1%
	Other one family households	15.4%	13.0%	12.0%	9.5%	11.6%	6.4%
	Multiple family households with dependent children	1.5%	0.0%	0.0%	0.0%	2.0%	0.0%
	Multiple family households with no dependent children	.9%	0.0%	0.0%	0.0%	1.0%	0.0%
	Lone person household	16.2%	17.3%	22.1%	24.0%	12.4%	31.7%
	Group household	3.5%	2.6%	1.2%	1.0%	6.2%	10.0%
Not determined	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
PSINC	No social assistance benefits in cash	62.6%	46.7%	49.0%	46.7%	43.6%	41.6%
	Age Pension	4.1%	3.9%	1.4%	1.1%	1.1%	0.0%
	Disability support pension	2.2%	.3%	0.0%	0.0%	3.2%	1.5%
	Veteran's Affairs pension	.9%	.7%	1.2%	.9%	.5%	0.0%
	Family Tax benefit	19.5%	30.0%	32.1%	34.4%	36.5%	31.5%
	Parenting Payment	1.1%	1.5%	0.0%	0.0%	3.8%	5.8%
	Unemployment and Student allowances	5.2%	11.0%	9.4%	7.5%	7.8%	16.3%
	Other government pensions and allowances	4.4%	5.8%	7.0%	9.4%	3.6%	3.3%
TENURECF	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Owner without a mortgage	20.2%	13.0%	10.1%	11.2%	4.3%	1.2%
	Owner with a mortgage	50.5%	45.7%	47.7%	48.8%	47.2%	27.4%
	Renter	28.1%	41.3%	42.2%	39.9%	47.4%	71.3%
	Other	1.3%	0.0%	0.0%	0.0%	1.1%	0.0%
LDLRDHCF	NA	71.9%	58.7%	57.8%	60.1%	52.6%	28.7%
	Real estate agent	19.1%	23.1%	24.4%	23.3%	31.8%	41.2%
	State and territory housing authority	1.1%	2.1%	2.1%	2.2%	3.6%	6.0%
	Person not in same household - Parent/Other relative	1.8%	1.9%	0.0%	0.0%	2.5%	10.3%
	Person not in same household - Other person	5.6%	12.4%	14.6%	13.6%	8.6%	12.3%
	<i>Private rental subtotal</i>	24.7%	35.4%	39.0%	36.8%	40.4%	53.6%
	Other	.4%	1.9%	1.2%	.9%	.9%	1.6%
Gas	No	37.9%	34.7%	33.4%	31.0%	43.8%	45.3%
	Yes	62.1%	65.3%	66.6%	69.0%	56.2%	54.7%

Table 16: Affordability indicators of Households whose main source of income is wages and salaries, Australia 2009-10

		A	1	2	3	4	5	
No Social Assistance Benefits in Cash		No Social Assistance Benefits in Cash	Low Income and High Costs	Low Income and energy > 10%	energy >10%	Financial stress indicator (Utility Bills)	Financial stress indicator (unable to heat)	
STATEHBC	NSW	32.2%	31.9%	35.7%	32.4%	29.5%	6.1%	
	VIC	24.9%	29.6%	20.6%	26.2%	24.3%	22.8%	
	QLD	19.5%	15.9%	13.7%	10.8%	20.4%	24.7%	
	SA	7.6%	4.9%	6.5%	9.2%	9.5%	22.7%	
	WA	10.9%	14.0%	19.1%	15.2%	12.9%	12.8%	
	TAS	1.7%	2.2%	3.1%	4.2%	.8%	6.1%	
	ACT NT	3.3%	1.6%	1.3%	1.9%	2.7%	4.9%	
LIFECYCH	NA	38.5%	40.0%	39.2%	44.0%	47.1%	32.2%	
	Lone person aged under 35	7.5%	11.9%	14.0%	16.1%	9.1%	22.4%	
	Couple only, reference person aged under 35	13.7%	9.9%	6.8%	6.5%	14.8%	9.1%	
	Couple with dependent children only - Eldest child under 5	3.9%	9.6%	12.0%	11.2%	4.7%	6.4%	
	Couple with dependent children only - Eldest child 5 to 14	8.7%	6.4%	7.8%	6.2%	6.7%	0.0%	
	Couple with dependent children only - Eldest child 15 to 24	7.6%	3.5%	2.6%	2.1%	4.9%	0.0%	
	One parent with dependent children	1.1%	5.3%	5.8%	4.6%	2.5%	14.4%	
	Couple with dependent and non-dependent children only	3.4%	1.4%	0.0%	0.0%	3.9%	0.0%	
	Couple with non-dependent children only	7.5%	6.9%	8.9%	7.1%	2.5%	0.0%	
	Couple only, reference person aged 55 to 64	7.0%	5.0%	2.9%	2.3%	3.8%	15.6%	
	Couple only, reference person aged 65 and over	.8%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Lone person aged 65 and over	.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
FAMILYCOM	Couple family with dependent children only	20.2%	19.5%	22.4%	19.5%	16.3%	6.4%	
	Couple family with dependent children and other persons	3.7%	1.4%	0.0%	0.0%	3.9%	0.0%	
	One parent family with dependent children only	.8%	3.5%	2.7%	2.1%	1.4%	6.1%	
	One parent family with dependent children and other persons	.3%	1.8%	3.1%	2.4%	1.0%	8.3%	
	Couple only	32.3%	25.1%	21.0%	23.6%	27.9%	26.6%	
	Other one family households	13.3%	15.7%	13.3%	10.6%	13.6%	0.0%	
	Multiple family households with dependent children	.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Multiple family households with no dependent children	.9%	0.0%	0.0%	0.0%	1.2%	0.0%	
	Lone person household	24.2%	31.4%	35.0%	39.5%	24.3%	47.7%	
	Group household	4.4%	1.5%	2.5%	2.2%	10.2%	5.0%	
	Not determined	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	TENURECF	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Owner without a mortgage	19.7%	18.1%	14.3%	15.3%	1.5%	2.9%
Owner with a mortgage		50.3%	39.3%	40.9%	42.0%	48.8%	32.4%	
Renter		28.8%	42.6%	44.8%	42.7%	49.1%	64.7%	
Other		1.1%	0.0%	0.0%	0.0%	.6%	0.0%	
LDLRDHCF	NA	71.1%	57.4%	55.2%	57.3%	50.9%	35.3%	
	Real estate agent	20.5%	25.1%	25.4%	25.5%	35.1%	47.4%	
	State and territory housing authority	.5%	.0%	.1%	.8%	1.2%	0.0%	
	Person not in same household - Parent/Other relative	2.0%	1.6%	0.0%	0.0%	1.9%	5.5%	
	Person not in same household - Other person	5.5%	14.4%	19.3%	16.4%	9.9%	11.5%	
	Other	4%	1.5%	0.0%	0.0%	1.2%	.3%	
<i>Private Rental Subtotal</i>		26.0%	39.5%	44.7%	41.9%	44.9%	58.8%	
NOMEMHBC	1.0	24.6%	32.8%	35.0%	39.5%	25.3%	47.7%	
	2.0	50.8%	50.1%	48.5%	47.4%	49.9%	44.0%	
	3.0	16.2%	15.6%	16.5%	13.1%	17.4%	8.3%	
	4.0	6.6%	1.4%	0.0%	0.0%	5.1%	0.0%	
	5.0	1.7%	0.0%	0.0%	0.0%	2.3%	0.0%	
	6.0	.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
NUMU15BC	.0	81.5%	78.1%	76.7%	79.8%	80.8%	93.6%	
	1.0	9.4%	11.1%	9.7%	9.3%	12.1%	0.0%	
	2.0	7.0%	6.0%	8.1%	6.5%	4.9%	6.4%	
	3.0	1.9%	4.9%	5.5%	4.4%	1.6%	0.0%	
	4.0	.2%	0.0%	0.0%	0.0%	.6%	0.0%	
Gas	.0	37.9%	36.3%	31.2%	26.7%	40.7%	36.4%	
	1.0	62.1%	63.7%	68.8%	73.3%	59.3%	63.6%	

Table 17: Affordability indicators of Households who receive no social assistance benefits in cash, Australia 2009-10